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EDEXCEL GCSE (9-1) MATHS: QUESTIONS BY TOPIC

## Statistics (S1)

**GCSE (9-1) Mathematics (1MA1) · Foundation tier**

100 questions · 343 marks · Mark schemes included

Past papers June 2017 - June 2025 · 5 sub-topics

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**HOW TO USE THIS BOOKLET**

Questions are grouped by sub-topic and run from the lowest to the highest mark tariff, then oldest paper first.

Click any row below to jump straight to that sub-topic or question.

On every question page, click ANSWER in the top-right corner to jump to its mark scheme; < QUESTION brings you back.

A gold bar in the left margin marks exactly where the question sits on the original page.

Diagrams, graphs, grids and tables are printed exactly as they appear in the original papers.

Each question is filed under its main topic; longer questions may also test skills from other topics.

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| <b>S1e CUMULATIVE FREQUENCY, BOX PLOTS &amp; HISTOGRAMS</b> |                             |                 |            |

No questions on this sub-topic in the available past papers.



# QUESTIONS

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100 questions · 343 marks · 4 sub-topics

SUB-TOPIC S1a

## DATA COLLECTION & SAMPLING

Sub-topic S1a · 2 questions · 6 marks · lowest tariff first



22 Hannah is planning a day trip for 195 students.

She asks a sample of 30 students where they want to go.  
Each student chooses one place.

The table shows information about her results.

| Place         | Number of students |
|---------------|--------------------|
| Theme Park    | 10                 |
| Theatre       | 5                  |
| Sports Centre | 8                  |
| Seaside       | 7                  |

(i) Work out how many of the 195 students you think will want to go to the Theme Park.

(2)

(ii) State any assumption you made **and** explain how this may affect your answer.

(1)

(Total for Question 22 is 3 marks)

- 24 Each person in a fitness club is going to get a free gift.  
Stan is going to order the gifts.

Stan takes a sample of 50 people in the fitness club.  
He asks each person to tell him the gift they would like.

The table shows information about his results.

| Gift       | Number of people |
|------------|------------------|
| sports bag | 17               |
| gym towel  | 7                |
| headphones | 11               |
| voucher    | 15               |

There are 700 people in the fitness club.

- (i) Work out how many sports bags Stan should order.

.....  
(2)

- (ii) Write down any assumption you made **and** explain how this could affect your answer.

.....  
(1)

(Total for Question 24 is 3 marks)



SUB-TOPIC S1b

# AVERAGES & RANGE

Sub-topic S1b · 34 questions · 115 marks · lowest tariff first



Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 Write 1476 to the nearest 10

.....

(Total for Question 1 is 1 mark)

- 2 Write a fraction in the box to make the calculation correct.

$$1 - \frac{3}{10} =$$

.....

(Total for Question 2 is 1 mark)

- 3 Here is a list of numbers.

3      3      3      3      4      4      5      7      8

Write down the mode of the numbers.

.....

(Total for Question 3 is 1 mark)

- 4 Write down a 3 digit number that is a multiple of 5

.....

(Total for Question 4 is 1 mark)

- 5 Write 0.4 as a percentage.

.....%

(Total for Question 5 is 1 mark)



**Answer ALL questions.**

**Write your answers in the spaces provided.**

**You must write down all the stages in your working.**

- 1** Here is a list of numbers.

2      4      4      7      8

Work out the range of these numbers.

.....  
(Total for Question 1 is 1 mark)

- 2** Work out     $120 - 89$

.....  
(Total for Question 2 is 1 mark)

- 3** Simplify     $3 \times a \times 4$

.....  
(Total for Question 3 is 1 mark)



17 The table shows some information about the dress sizes of 25 women.

| Dress size | Number of women |
|------------|-----------------|
| 8          | 2               |
| 10         | 9               |
| 12         | 8               |
| 14         | 6               |

(a) Find the median dress size.

.....  
(1)

3 of the 25 women have a shoe size of 7

Zoe says that if you choose at random one of the 25 women, the probability that she has either a shoe size of 7 or a dress size of 14 is  $\frac{9}{25}$  because

$$\frac{3}{25} + \frac{6}{25} = \frac{9}{25}$$

(b) Is Zoe correct?  
You must give a reason for your answer.

.....  
.....  
(1)

(Total for Question 17 is 2 marks)

10 Jake and Sarah each played a computer game six times.

Their scores for each game are shown below.

|              |    |    |   |    |    |    |
|--------------|----|----|---|----|----|----|
| <b>Jake</b>  | 10 | 9  | 8 | 11 | 12 | 8  |
| <b>Sarah</b> | 2  | 10 | 7 | 14 | 4  | 10 |

- (a) Who had the most consistent scores, Jake or Sarah?  
You must give a reason for your answer.

(1)

Jake played a different game 20 times.

The stem and leaf diagram shows information about his scores.

|   |             |
|---|-------------|
| 0 | 9           |
| 1 | 2 3 3 4 5   |
| 2 | 5 6 6 6 6 7 |
| 3 | 1 3 4 6 8   |
| 4 | 0 2 9       |

**Key**  
1 | 2 represents 12 points

Jake said his modal score was 6 points because 6 occurs most often in the diagram.

- (b) Is Jake correct?  
You must explain your answer.

(1)

(Total for Question 10 is 2 marks)



- 16 The table gives information about the number of points scored by each of 16 students in a game.

| Number of points | Frequency |
|------------------|-----------|
| 0                | 1         |
| 1                | 3         |
| 2                | 5         |
| 3                | 4         |
| 4                | 3         |

Tina worked out the median of the number of points scored to be 5

- (a) Explain why it is **not** possible for the median to be 5

.....

.....

.....

(1)

Tina also worked out the total number of points scored by the 16 students in the game. Here is her working.

$$(0 \times 1) + (1 \times 3) + (2 \times 5) + (3 \times 4) + (4 \times 3) = 1 + 3 + 10 + 12 + 12 = 38$$

Tina made a mistake in her working to find the total number of points scored.

- (b) Describe the mistake that Tina made.

.....

.....

.....

(1)

(Total for Question 16 is 2 marks)



12 Here are 6 numbers.

13      5      4      9      3      8

Work out the mean.

.....  
(Total for Question 12 is 2 marks)

13 (a) Simplify  $\frac{15a}{3}$

.....  
(1)

(b) Simplify  $19 + 5b + 4c - 7b + c$

.....  
(2)

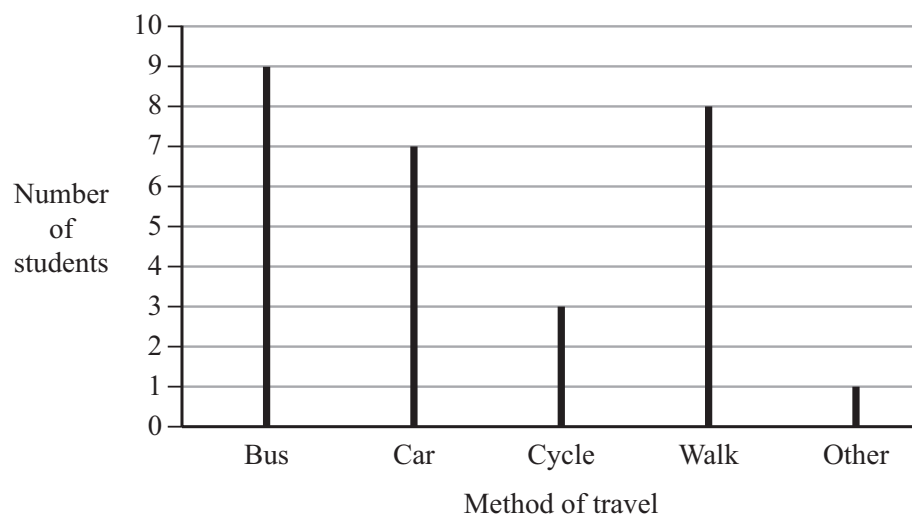
(c) Factorise  $8d - 6$

.....  
(1)

(Total for Question 13 is 4 marks)



- 7 Julie asks some students how they travel to school.  
The chart shows her results.



- (a) Write down which method of travel is the mode.

.....  
(1)

More students walk to school than cycle to school.

- (b) How many more?

.....  
(1)

(Total for Question 7 is 2 marks)

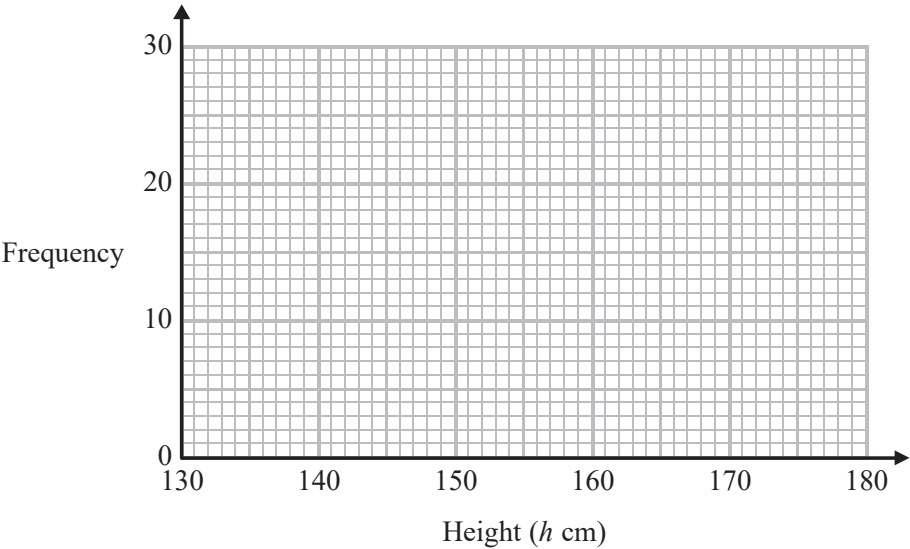
19 The table shows information about the heights of 80 children.

| Height ( $h$ cm)   | Frequency |
|--------------------|-----------|
| $130 < h \leq 140$ | 4         |
| $140 < h \leq 150$ | 11        |
| $150 < h \leq 160$ | 24        |
| $160 < h \leq 170$ | 22        |
| $170 < h \leq 180$ | 19        |

(a) Find the class interval that contains the median.

.....
  
(1)

(b) Draw a frequency polygon for the information in the table.



(2)

(Total for Question 19 is 3 marks)



**16** Marla buys some bags of buttons.

There are 19 buttons or 20 buttons or 21 buttons or 22 buttons in each bag.

The table gives some information about the number of buttons in each bag.

| Number of buttons | Frequency |
|-------------------|-----------|
| 19                | .....     |
| 20                | 7         |
| 21                | 3         |
| 22                | 1         |

The total number of buttons is 320

Complete the table.

(Total for Question 16 is 3 marks)



18 The table shows information about the numbers of points scored by 30 students in a quiz.

| Number of points | Frequency |
|------------------|-----------|
| 0                | 4         |
| 1                | 3         |
| 2                | 7         |
| 3                | 5         |
| 4                | 6         |
| 5                | 5         |

(a) Find the modal number of points.

.....  
(1)

(b) Work out the total number of points scored.

.....  
(2)

(Total for Question 18 is 3 marks)



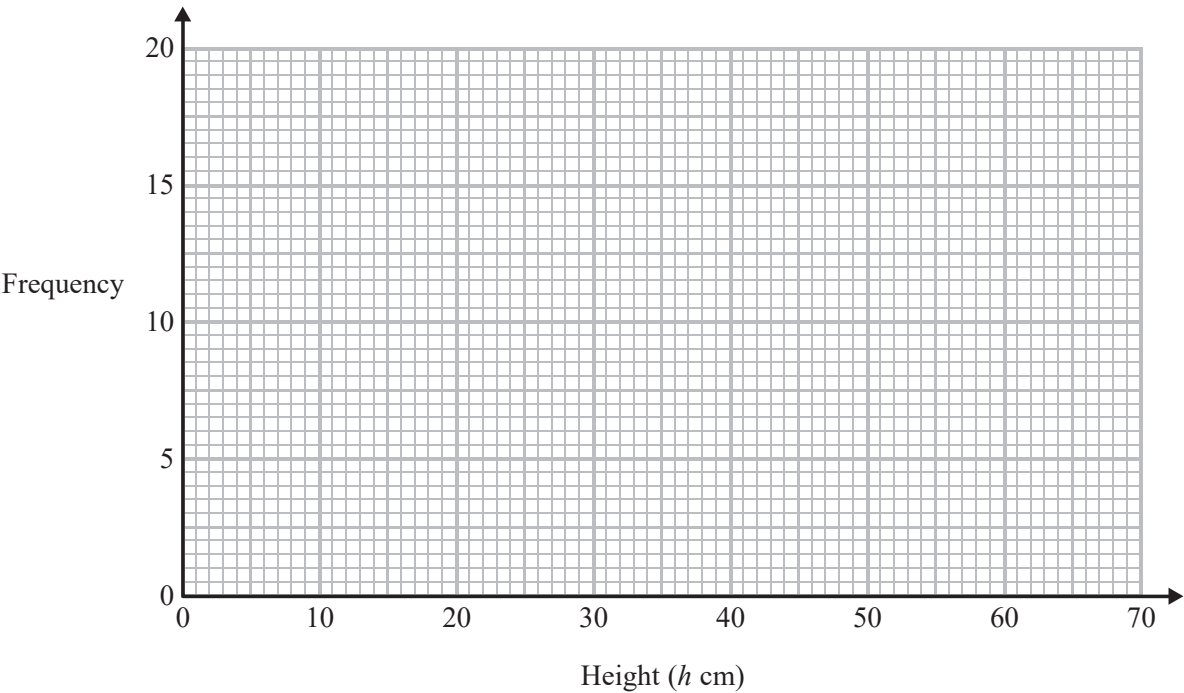
26 The table shows information about the heights of 80 plants.

| Height ( $h$ cm) | Frequency |
|------------------|-----------|
| $10 < h \leq 20$ | 7         |
| $20 < h \leq 30$ | 13        |
| $30 < h \leq 40$ | 14        |
| $40 < h \leq 50$ | 12        |
| $50 < h \leq 60$ | 16        |
| $60 < h \leq 70$ | 18        |

(a) Find the class interval that contains the median.

(1)

(b) On the grid, draw a frequency polygon for the information in the table.



(2)

(Total for Question 26 is 3 marks)



- 25 4 red bricks have a mean weight of 5 kg.  
5 blue bricks have a mean weight of 9 kg.  
1 green brick has a weight of 6 kg.

Donna says,

“The mean weight of the 10 bricks is less than 7 kg.”

Is Donna correct?

You must show how you get your answer.

---

(Total for Question 25 is 3 marks)



25 The table gives information about the times taken, in seconds, by 18 students to run a race.

| Time ( $t$ seconds) | Frequency |
|---------------------|-----------|
| $5 < t \leq 10$     | 1         |
| $10 < t \leq 15$    | 2         |
| $15 < t \leq 20$    | 7         |
| $20 < t \leq 25$    | 8         |

Work out an estimate for the mean time.  
Give your answer correct to 3 significant figures.

..... seconds

(Total for Question 25 is 3 marks)

- 18 The incomplete table gives some information about the lengths of the planks of wood in Ben's workshop.

| Length of plank (metres) | Number of planks |
|--------------------------|------------------|
| 3                        | 5                |
| 2.5                      | 8                |
| 2                        |                  |
| 1.5                      | 14               |
| 1                        | 10               |

The total length of these planks is 92 metres.

Work out the number of planks of length 2 metres in Ben's workshop.

(Total for Question 18 is 3 marks)



**18** This sign was in a doctor's waiting room.

115 appointments were missed last month.  
These missed appointments were a total of 25.3 hours.

Work out the mean length of time for each missed appointment.  
Give your answer in minutes.

..... minutes

**(Total for Question 18 is 3 marks)**



17 The table shows information about the heights of 80 teenagers.

| Height ( $h$ cm)   | Frequency |
|--------------------|-----------|
| $150 < h \leq 160$ | 8         |
| $160 < h \leq 170$ | 14        |
| $170 < h \leq 180$ | 24        |
| $180 < h \leq 190$ | 30        |
| $190 < h \leq 200$ | 4         |

Work out an estimate for the mean height of the teenagers.

..... cm

(Total for Question 17 is 3 marks)



27 (a) Change  $8000\text{ cm}^3$  to  $\text{m}^3$

.....  $\text{m}^3$   
(1)

(b) Change a speed of  $180\text{ km per hour}$  to metres per second.

..... metres per second  
(3)

(Total for Question 27 is 4 marks)

28 There are 30 women and 20 men at a gym.

The mean height of all 50 people is  $167.6\text{ cm}$

The mean height of the 20 men is  $182\text{ cm}$

Work out the mean height of the 30 women.

.....  $\text{cm}$

(Total for Question 28 is 3 marks)



- 11 The table shows information about the weights of the people in a hotel lift.

| Weight | Number of people |
|--------|------------------|
| 40 kg  | 1                |
| 50 kg  | 2                |
| 60 kg  | 4                |
| 70 kg  | 5                |
| 80 kg  | 3                |
| 90 kg  | 1                |

Show that the total weight of the people in the lift is less than 1200 kg.

(Total for Question 11 is 3 marks)



- 7 Here is a rule to work out the cost of buying a number of floorboards.

$$\text{Cost} = £55 \times \text{number of floorboards}$$

Toby buys a number of floorboards.  
The cost is £330

Work out the number of floorboards Toby buys.

.....  
(Total for Question 7 is 2 marks)

- 8 Here is a list of numbers.

7   14   6   6   8   5   6   10   11   14

- (a) Find the mode.

.....  
(1)

- (b) Work out the range.

.....  
(2)

(Total for Question 8 is 3 marks)



27 The table shows information about the weekly earnings of 20 people who work in a shop.

| Weekly earnings (£ $x$ ) | Frequency |
|--------------------------|-----------|
| $150 < x \leq 250$       | 1         |
| $250 < x \leq 350$       | 11        |
| $350 < x \leq 450$       | 5         |
| $450 < x \leq 550$       | 0         |
| $550 < x \leq 650$       | 3         |

(a) Work out an estimate for the mean of the weekly earnings.

£.....  
(3)

Nadiya says,

“The mean may **not** be the best average to use to represent this information.”

(b) Do you agree with Nadiya?  
You must justify your answer.

.....  
.....  
(1)

(Total for Question 27 is 4 marks)

**20** Akhtar, Ben and Carl each have some money.

Akhtar has £65

Ben has £100

Carl has three £5 notes, one £20 note and some £10 notes.

The mean amount of money per person is £80

How many £10 notes does Carl have?

.....  
(Total for Question 20 is 4 marks)



- 15 The table shows information about the number of social media accounts used by each of 300 students.

| Number of social media accounts | Frequency |
|---------------------------------|-----------|
| 0                               | 3         |
| 1                               | 57        |
| 2                               | 84        |
| 3                               | 75        |
| 4                               | 81        |

- (a) Work out the total number of social media accounts used by these students.

.....  
(2)

- (b) Find the median number of social media accounts used by these students.

.....  
(2)

(Total for Question 15 is 4 marks)

- 16 On a scale drawing, a building has length 12.4 cm and width 9.4 cm.  
The real length of the building is 62 metres.

Work out, in metres, the real width of the building.

..... metres

(Total for Question 16 is 3 marks)



14 Here is the shoe size of each of 12 boys in a class.

4   5   6   6   6   7   7   8   8   8   8   9

(a) Find the median.

.....  
(1)

(b) Work out the range.

.....  
(1)

For the shoe sizes of each of 12 girls in the class,

the median size is 6

the range is 3

(c) Compare the distribution of the shoe sizes of the boys with the distribution of the shoe sizes of the girls.

.....  
(2)

.....  
(Total for Question 14 is 4 marks)

15 Work out  $\frac{2.75 \times 14.6}{10 - 1.97}$

.....  
(Total for Question 15 is 2 marks)



17 There are 3 cinemas **A**, **B** and **C**.

The mean number of seats per cinema is 380

There are 350 seats in cinema **A**.

There are 250 seats in cinema **B**.

Work out the number of seats in cinema **C**.

(Total for Question 17 is 4 marks)



21 The mean length of 5 sticks is 4.2 cm.

Nawal measured the length of one of the sticks as 7 cm.

(a) Work out the mean length of the other 4 sticks.

..... cm  
(3)

Nawal made a mistake.

The stick was not 7 cm long.

It was 17 cm long.

(b) How does this affect your answer to part (a)?

.....  
.....  
.....  
(1)

(Total for Question 21 is 4 marks)



22 Seija works at a weather station.  
The table gives information about the temperature,  $T$  °C, at midday for each of 50 cities in the UK on Tuesday.

| Temperature ( $T$ °C) | Frequency |
|-----------------------|-----------|
| $10 < T \leq 15$      | 2         |
| $15 < T \leq 20$      | 8         |
| $20 < T \leq 25$      | 13        |
| $25 < T \leq 30$      | 21        |
| $30 < T \leq 35$      | 6         |

(a) Calculate an estimate for the mean temperature.

.....°C  
(3)

Seija says,

“The median temperature is 22.5 °C because 22.5 is the middle number in the middle group.”

(b) Is Seija correct?  
Give a reason for your answer.

.....  
.....  
.....  
(1)

(Total for Question 22 is 4 marks)

28 The table shows information about the weights of 120 oranges.

| Weight ( $w$ grams) | Frequency |
|---------------------|-----------|
| $50 < w \leq 100$   | 34        |
| $100 < w \leq 150$  | 29        |
| $150 < w \leq 200$  | 27        |
| $200 < w \leq 250$  | 19        |
| $250 < w \leq 300$  | 11        |

(a) Find the class interval that contains the median.

.....  
(1)

(b) Calculate an estimate for the mean weight of the 120 oranges.  
Give your answer correct to 3 significant figures.

..... grams  
(3)

(Total for Question 28 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS



15 The table gives information about the ages of the 41 children in Blackrod football club.

| Age (years) | Frequency |
|-------------|-----------|
| 8           | 6         |
| 9           | 7         |
| 10          | 15        |
| 11          | 11        |
| 12          | 2         |

- (a) Work out the mean age.  
Give your answer correct to 1 decimal place.

..... years  
(3)

Rohan is working out the modal age of the children in Blackrod football club.  
He says,  
“The highest frequency is 15, so the modal age is 15”

- (b) Is Rohan’s answer correct?  
Give a reason for your answer.

.....  
.....  
.....  
(1)

(Total for Question 15 is 4 marks)

19 Katya counted the number of people in each of 50 cars.

The table gives information about her results.

| Number of people | Frequency |
|------------------|-----------|
| 1                | 16        |
| 2                | 15        |
| 3                | 7         |
| 4                | 9         |
| 5                | 3         |

(a) Find the median number of people.

.....

(1)

(b) Work out the mean number of people.

.....

(3)

(Total for Question 19 is 4 marks)

6 Here is a list of numbers.

12    15    14    17    22    19    13

Bridgit says,

“To work out the median you find the middle number,  
so the median of these numbers is 17”

Bridgit’s answer is **not** correct.

(a) What is wrong with Bridgit’s method?

(1)

(b) Work out the range of the numbers in the list.

(2)

(c) Work out the mean of the numbers in the list.

(2)

(Total for Question 6 is 5 marks)



7 Here are the ages, in years, of 8 children.

14    10    10    13    15    9    15    10

(a) Work out the mean age.

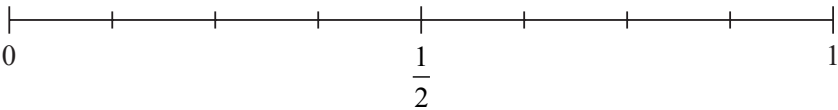
..... years  
(2)

(b) Work out the range of the ages.

..... years  
(2)

One of the children is chosen at random.

(c) On the probability scale below, mark with a cross (×) the probability that this child has an age of 15



(1)

(Total for Question 7 is 5 marks)



**25** Here are two lists of numbers.

List **A**    276    400    157    139

List **B**    530    500    270     $x$     440    320

mean of list **A** : mean of list **B** = 3 : 5

Work out the value of  $x$ .

$x =$  .....

(Total for Question 25 is 5 marks)



9 Here is a list of numbers.

6   4   8   9   4   3

(a) Work out the median.

.....  
(2)

Aisha picks at random one of the numbers.

(b) What is the probability that she picks an odd number?

.....  
(2)

Clara has five cards.

There is a number on each card.

Two of the numbers are hidden.

|   |   |   |   |   |
|---|---|---|---|---|
| 3 | ? | 8 | 5 | ? |
|---|---|---|---|---|

The mode of the five numbers is 3

The mean of the five numbers is 5

(c) Work out the two numbers that are hidden.

..... , .....  
(2)

(Total for Question 9 is 6 marks)



9 The table shows the number of books read by four people in one month.

| Person | Number of books |
|--------|-----------------|
| Ximena | 7               |
| Martha | 9               |
| Kezia  | 1               |
| Tabby  | 5               |

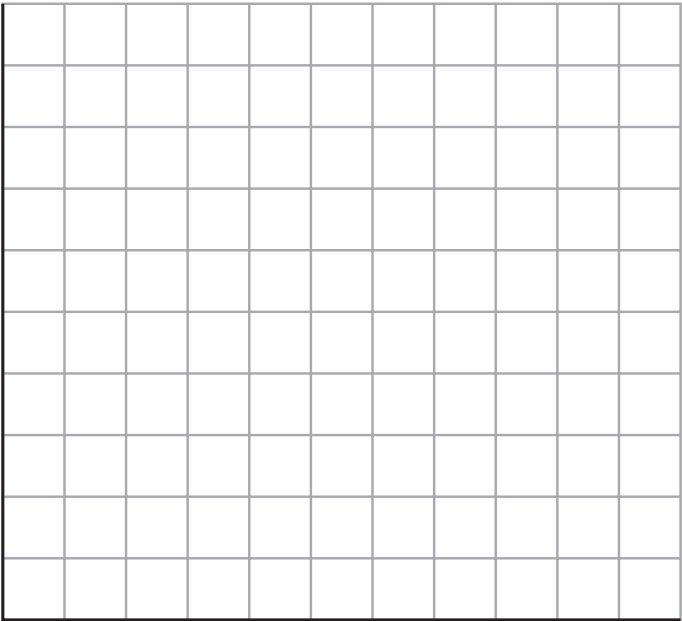
(a) Work out the median number of books.

.....  
(2)

(b) Find the range.

.....  
(1)

(c) On the grid, draw a bar chart to show the information in the table.



(3)

(Total for Question 9 is 6 marks)



SUB-TOPIC S1c

# CHARTS & DIAGRAMS

Sub-topic S1c · 56 questions · 196 marks · lowest tariff first

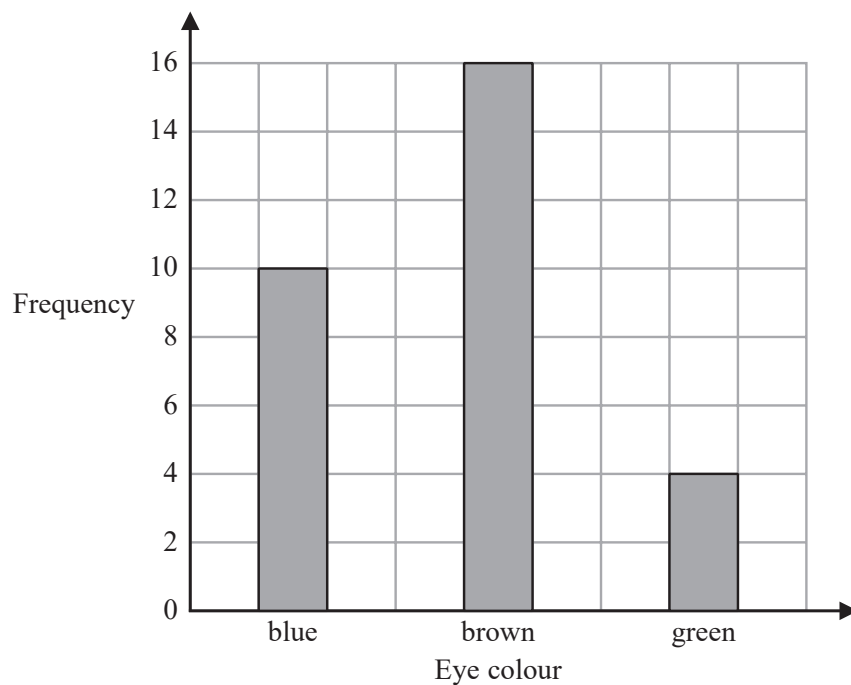


8 Grace recorded the eye colour of each of the students in her class.

The frequency table below shows her results.

| Eye colour | Frequency |
|------------|-----------|
| blue       | 10        |
| brown      | 15        |
| green      | 4         |

Grace then drew the bar chart below for this information.



Write down one thing that is wrong with this bar chart.

.....

.....

.....

(Total for Question 8 is 1 mark)



- 4 Write down the value of the 6 in the number 16 007

.....

(Total for Question 4 is 1 mark)

- 5 Write these numbers in order of size.  
Start with the smallest number.

$$\frac{1}{2}$$

0.55

45%

.....

(Total for Question 5 is 1 mark)

- 6 The pictogram gives information about the number of hours of sunshine on a Saturday and on a Sunday.

|          |                                                                                                                                                                                                                                                                                                                                                 |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Saturday |     |
| Sunday   |                                                                                                                                                                           |

Key:  represents 2 hours of sunshine

Work out the number of hours of sunshine on Saturday.

..... hours

(Total for Question 6 is 1 mark)

5 David sells CDs in a shop.

The tally chart shows information about the number of CDs David sold on Monday, on Tuesday and on Wednesday.

|           | Tally | Frequency |
|-----------|-------|-----------|
| Monday    |       | 12        |
| Tuesday   |       | 18        |
| Wednesday |       | 8         |

(a) Write down **one** thing that is wrong with the tally chart.

.....

.....

(1)

David drew this pictogram to show the information for Tuesday and Wednesday.

|           |           |
|-----------|-----------|
| Tuesday   | ⊙ ⊙ ⊙ ⊙ ⊙ |
| Wednesday | ⊙ ⊙ ⊙     |

Key: ⊙ represents 3 CDs

(b) Write down **one** thing that is wrong with this pictogram.

.....

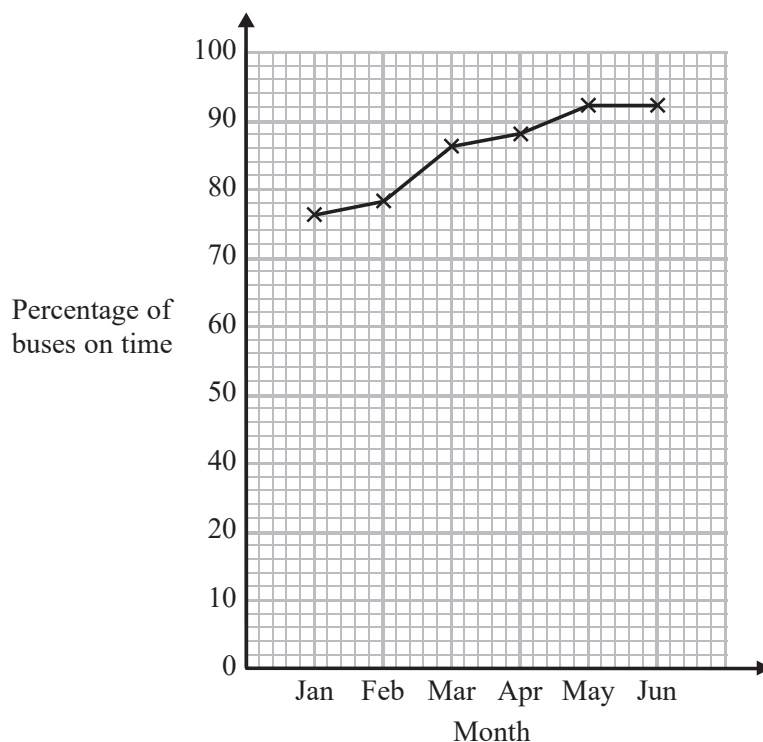
.....

(1)

(Total for Question 5 is 2 marks)



- 8 Chrissy drew this graph to show the percentage of buses that got to a bus stop on time for six months.



- (a) Write down **one** thing that is wrong with the graph.

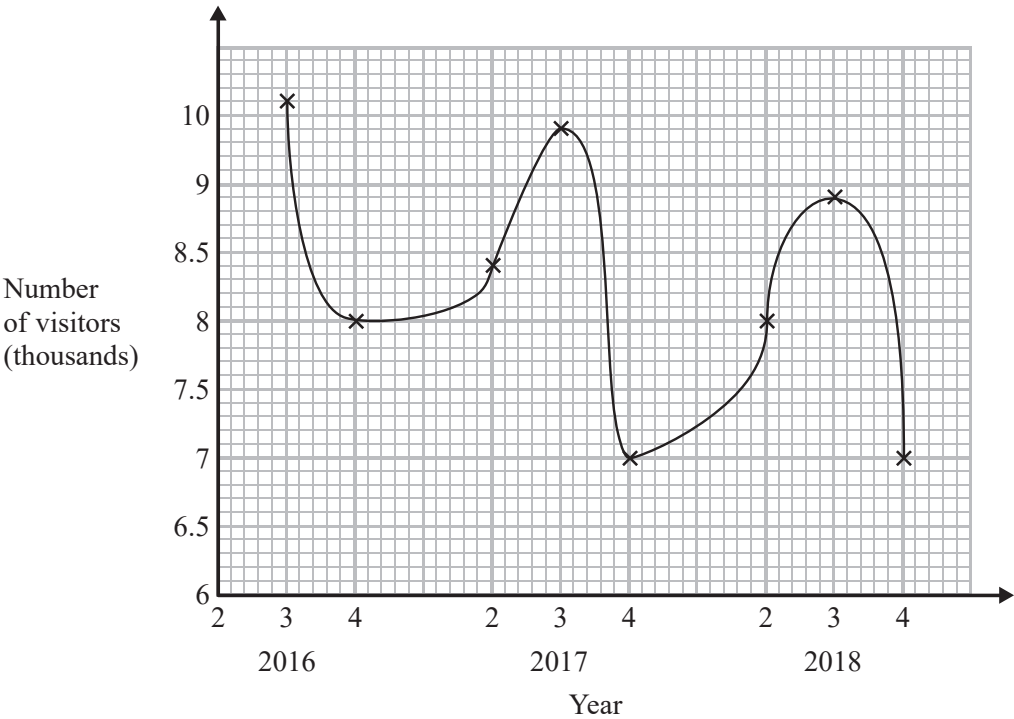
(1)

- (b) Describe the trend in the percentage of buses that got to the bus stop on time.

(1)

(Total for Question 8 is 2 marks)

27 Sean has drawn a time series graph to show the numbers, in thousands, of visitors to a fun park.



Write down two things that are wrong or could be misleading with this graph.

- 1 .....
- 2 .....

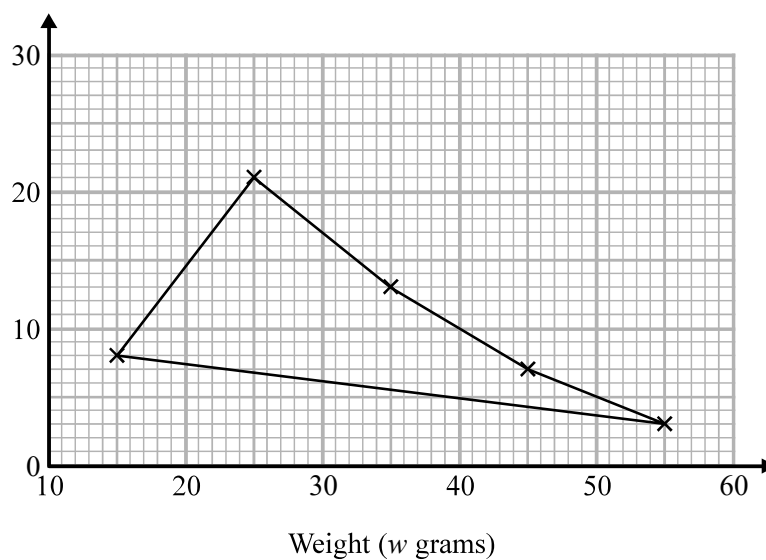
(Total for Question 27 is 2 marks)



21 The table shows some information about the weights of 50 potatoes.

| Weight ( $w$ grams) | Frequency |
|---------------------|-----------|
| $10 < w \leq 20$    | 6         |
| $20 < w \leq 30$    | 21        |
| $30 < w \leq 40$    | 13        |
| $40 < w \leq 50$    | 7         |
| $50 < w \leq 60$    | 3         |

Iveta drew this frequency polygon for the information in the table.  
The frequency polygon is **not** fully correct.



Write down **two** things that are wrong with the frequency polygon.

- 1.....
- .....
- 2.....
- .....

(Total for Question 21 is 2 marks)

13 The stem and leaf diagram below gives information about the ages of people in a social club.

|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 3 | 1 | 4 | 5 |   |   |   |
| 4 | 0 | 2 | 2 | 5 | 6 |   |
| 5 | 0 | 1 | 7 | 7 | 8 | 9 |
| 6 | 3 | 4 | 5 | 9 |   |   |
| 7 | 0 | 4 |   |   |   |   |

Key: 4|2 represents 42 years

Find the range of these ages.

..... years

(Total for Question 13 is 2 marks)



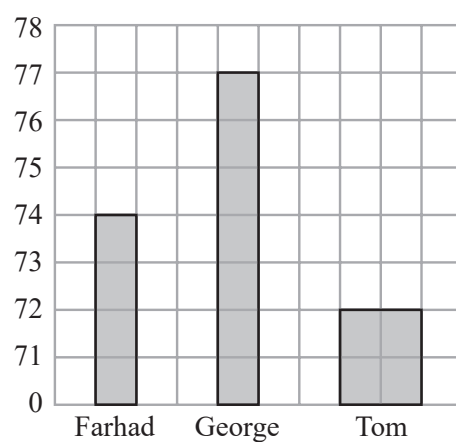
7 Farhad, George and Tom each did a test.

Here are their marks for the test.

|        |    |
|--------|----|
| Farhad | 74 |
| George | 77 |
| Tom    | 72 |

George drew this bar chart to show the marks they got.

The bar chart is **not** fully correct.

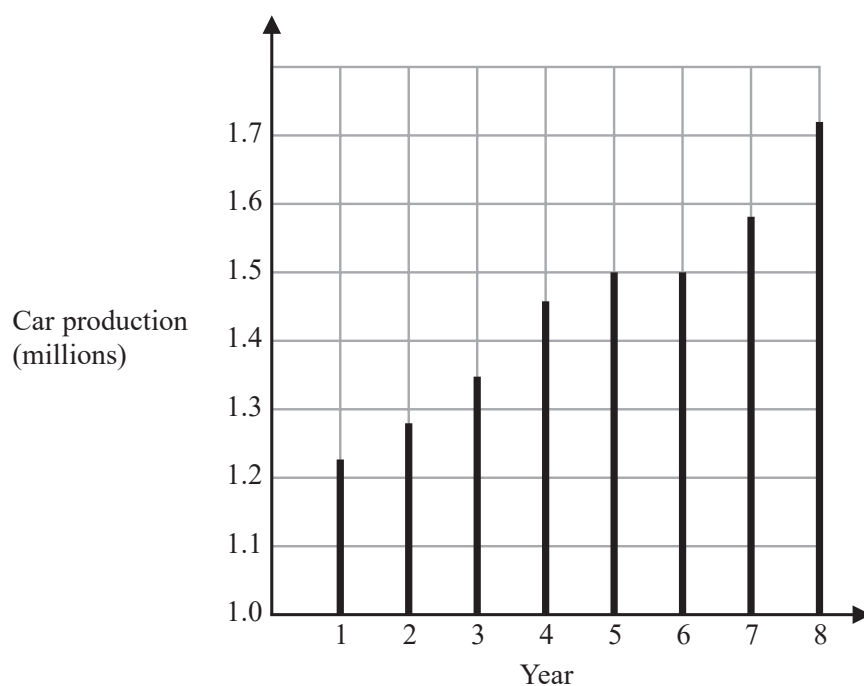


Write down **two** things that are wrong with George's bar chart.

- 1.....
- .....
- .....
- 2.....
- .....
- .....

(Total for Question 7 is 2 marks)

- 6 The graph shows some information about car production in the UK over eight years.



- (a) For how many of these years was car production more than 1.4 million?

.....  
(1)

- (b) In which two years was car production the same?

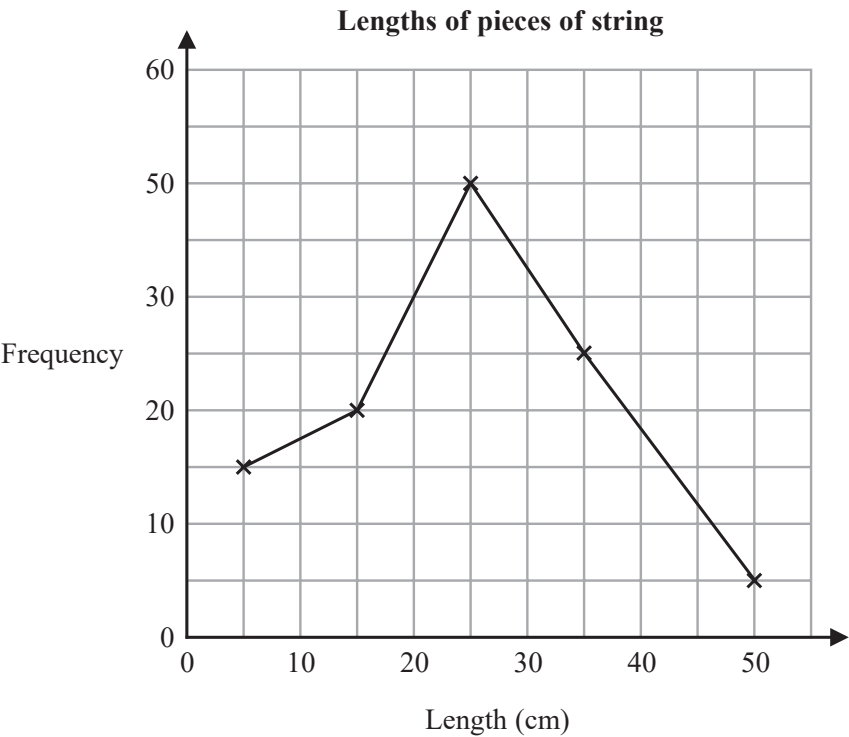
..... , .....  
(1)

(Total for Question 6 is 2 marks)

26 The table gives information about the lengths, in cm, of some pieces of string.

| Length ( $t$ cm) | Frequency |
|------------------|-----------|
| $0 < t \leq 10$  | 15        |
| $10 < t \leq 20$ | 20        |
| $20 < t \leq 30$ | 50        |
| $30 < t \leq 40$ | 25        |
| $40 < t \leq 50$ | 5         |

Amos draws a frequency polygon for the information in the table.

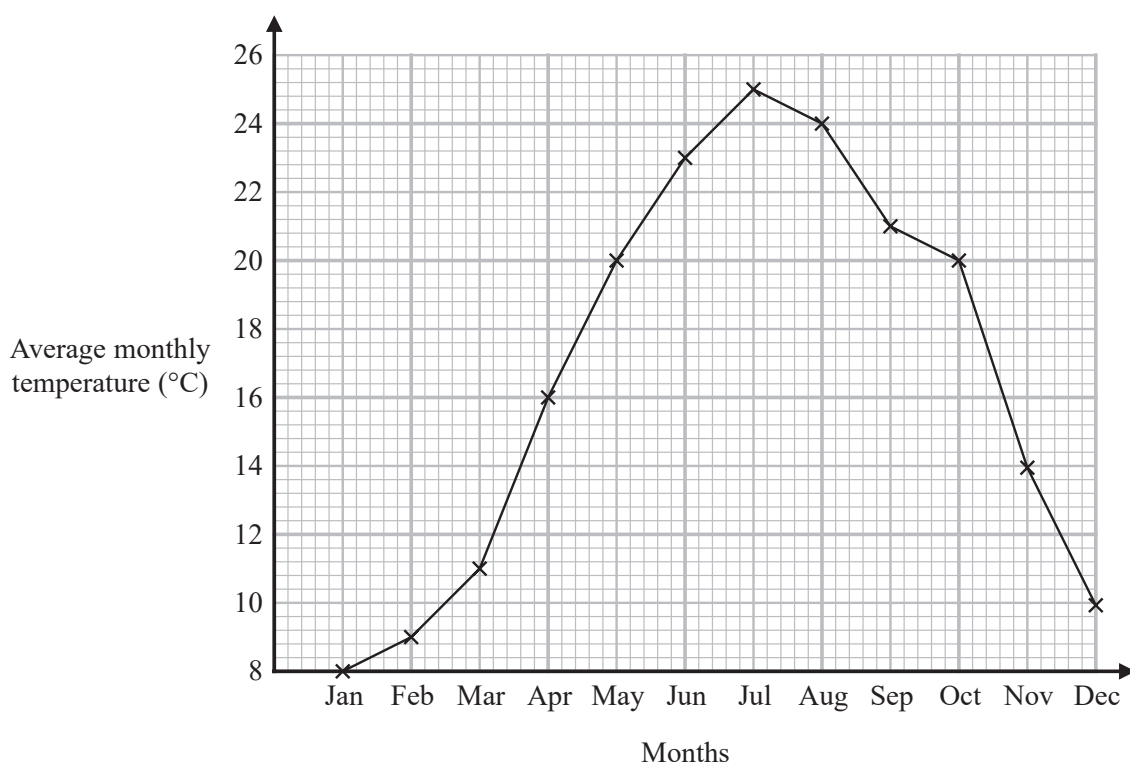


Write down **two** mistakes that Amos has made.

- 1.....  
.....
- 2.....  
.....

(Total for Question 26 is 2 marks)

- 6 The graph shows information about the average monthly temperature, in  $^{\circ}\text{C}$ , in Amman.



- (a) For how many months was the average monthly temperature greater than  $16^{\circ}\text{C}$ ?

.....  
(1)

- (b) Write down the two months that had the same average monthly temperature.

..... and .....  
(1)

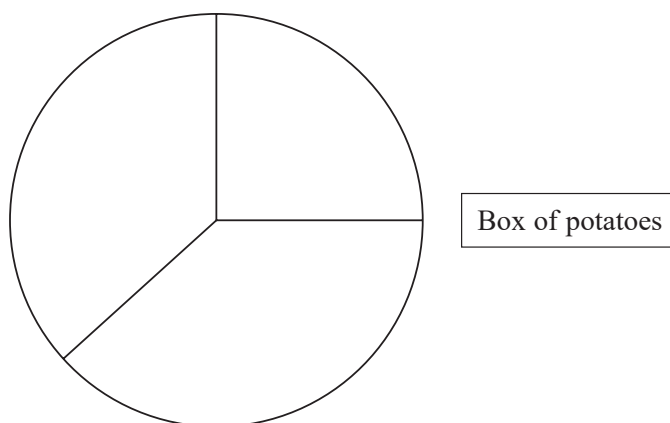
(Total for Question 6 is 2 marks)

16 There are three different types of potato in a box.

The table gives the number of each type of potato.

| Type of potato | Number of potatoes |
|----------------|--------------------|
| Jersey Royal   | 90                 |
| Charlotte      | 105                |
| Maris Piper    | 105                |

Salim draws this pie chart for the information in the table.



Write down two different things that are wrong or misleading with this pie chart.

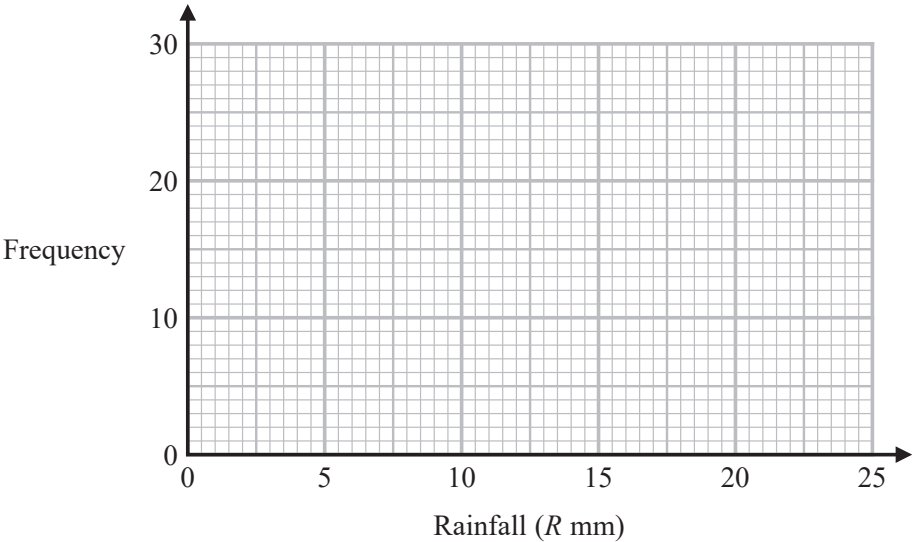
- 1.....
- 2.....

(Total for Question 16 is 2 marks)

23 The table shows information about the daily rainfall in a town for 60 days.

| Rainfall ( $R$ mm) | Frequency |
|--------------------|-----------|
| $0 \leq R < 5$     | 8         |
| $5 \leq R < 10$    | 24        |
| $10 \leq R < 15$   | 13        |
| $15 \leq R < 20$   | 11        |
| $20 \leq R < 25$   | 4         |

Draw a frequency polygon for this information.



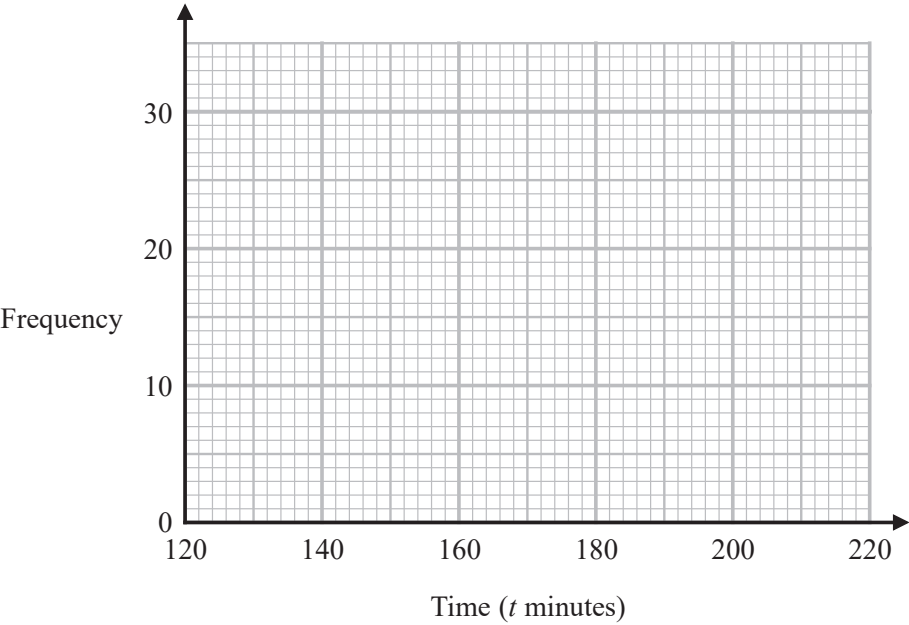
(Total for Question 23 is 2 marks)



17 The table shows information about the times, in minutes, 100 people took to complete a bike race.

| Time ( $t$ minutes) | Frequency |
|---------------------|-----------|
| $120 \leq t < 140$  | 12        |
| $140 \leq t < 160$  | 28        |
| $160 \leq t < 180$  | 30        |
| $180 \leq t < 200$  | 22        |
| $200 \leq t < 220$  | 8         |

On the grid below, draw a frequency polygon for this information.



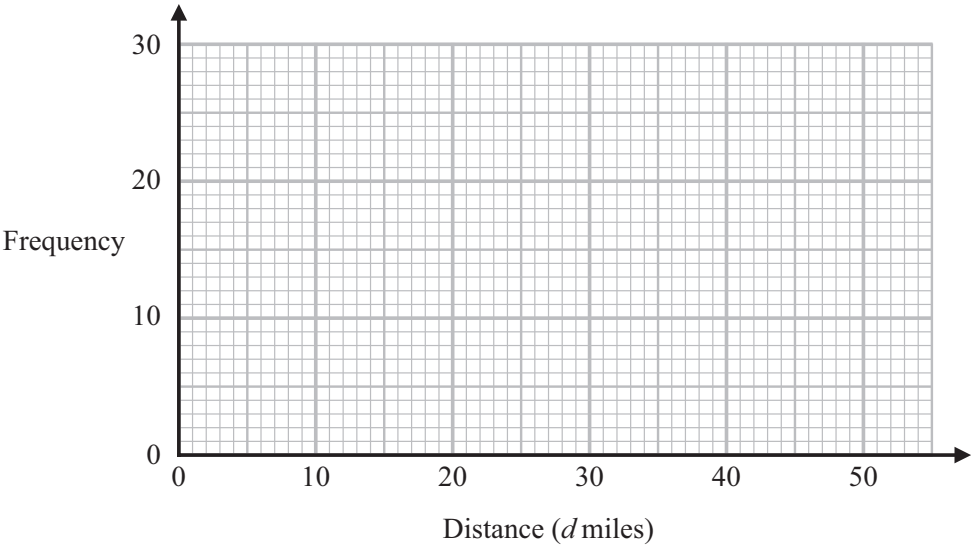
(Total for Question 17 is 2 marks)



22 The table shows information about the distances that 60 people travel to work.

| Distance ( $d$ miles) | Frequency |
|-----------------------|-----------|
| $0 < d \leq 10$       | 12        |
| $10 < d \leq 20$      | 25        |
| $20 < d \leq 30$      | 10        |
| $30 < d \leq 40$      | 8         |
| $40 < d \leq 50$      | 5         |

Draw a frequency polygon for the information in the table.



(Total for Question 22 is 2 marks)



- 5 Thais has a large bottle of shampoo.  
There are 2 litres of shampoo in the large bottle.

Thais also has some empty small bottles.  
Each small bottle can be completely filled with 150 ml of shampoo.

How many small bottles can be completely filled with shampoo from the large bottle?

(Total for Question 5 is 3 marks)

- 6 The incomplete pictogram shows information about the number of cycles sold in a shop on Tuesday, on Wednesday and on Thursday.

|           |                                                                                                                                                                                                                                                             |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tuesday   |                                                                                                                                                                          |
| Wednesday |    |
| Thursday  |                                                                                       |
| Friday    |                                                                                                                                                                                                                                                             |
| Saturday  |                                                                                                                                                                                                                                                             |

Key:

A total of 20 cycles were sold on Tuesday, Wednesday and Thursday.

8 cycles were sold on Friday.

15 cycles were sold on Saturday.

Use this information to complete the pictogram.

(Total for Question 6 is 3 marks)

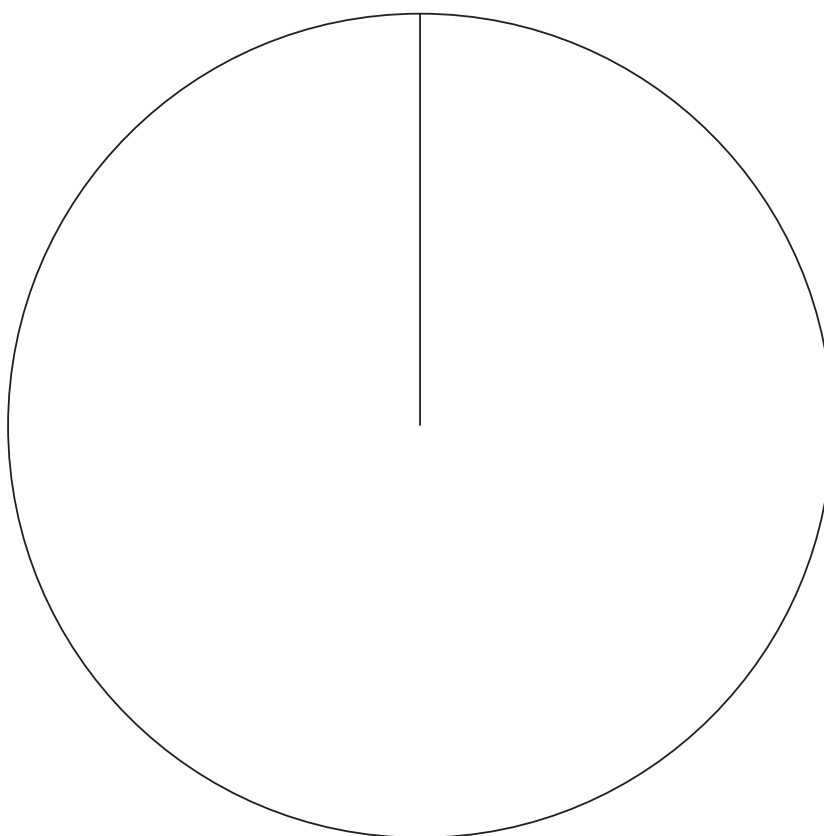


12 A group of football fans were asked what their half time snack was.

The table below gives information about their answers.

| Snack   | Number of fans |
|---------|----------------|
| burger  | 11             |
| pie     | 17             |
| hot dog | 8              |

Draw an accurate pie chart for this information.



(Total for Question 12 is 3 marks)



- 7 There are only apple trees, cherry trees, pear trees and plum trees in an orchard.

The pictogram shows information about the numbers of apple trees, cherry trees and pear trees in the orchard.

|        |                                                                                                                                                                                                                                                       |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Apple  |    |
| Cherry |                                                                                     |
| Pear   |                                                                                     |
| Plum   |                                                                                                                                                                                                                                                       |

**Key:**



represents 4 trees

There is a total of 30 trees in the orchard.

Complete the pictogram.

(Total for Question 7 is 3 marks)

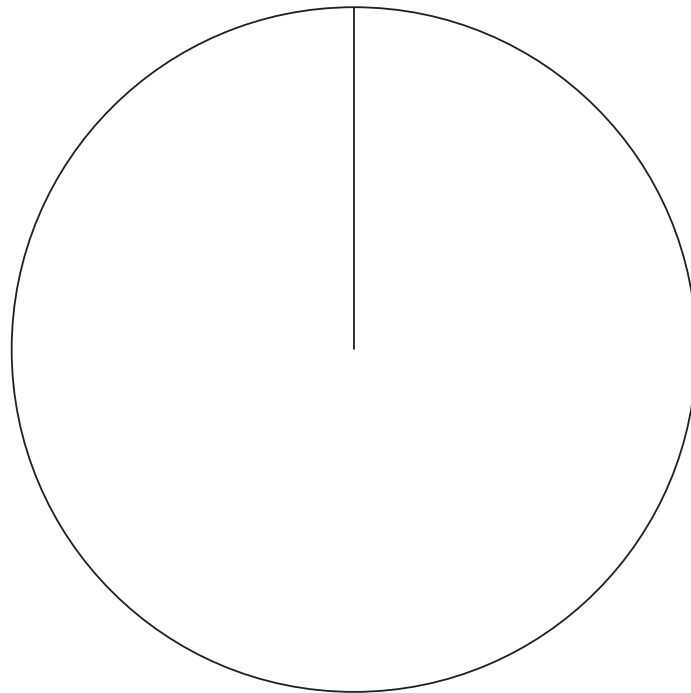


12 Joan asked each of 60 people to name their favourite vegetable.

Here are her results.

| Vegetable | Frequency |
|-----------|-----------|
| Peas      | 24        |
| Carrots   | 16        |
| Mushrooms | 20        |

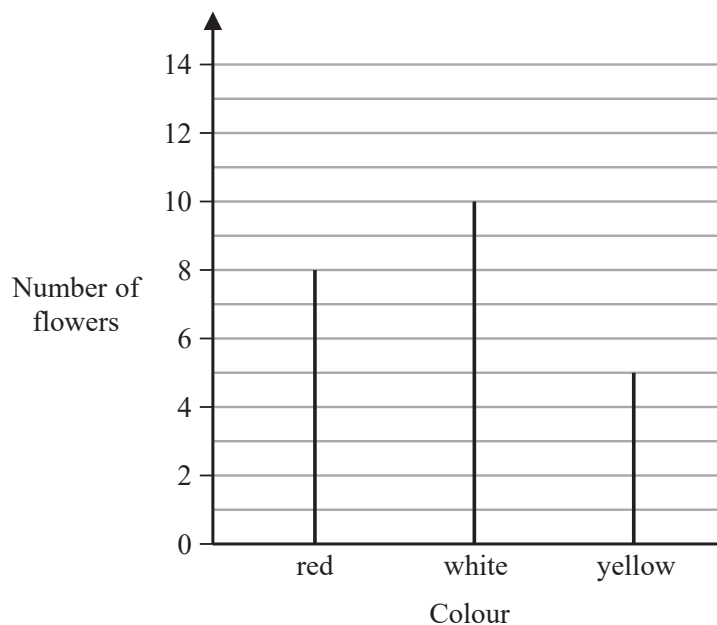
Draw an accurate pie chart for her results.



(Total for Question 12 is 3 marks)

- 7 In Adam's garden, the flowers are only red or white or yellow or blue.

The chart shows the number of red flowers, the number of white flowers and the number of yellow flowers.



The total number of flowers is 30

- (a) Work out the number of blue flowers.

.....  
(2)

- (b) Write down the mode.

.....  
(1)

(Total for Question 7 is 3 marks)



26 The table shows information about the heights, in cm, of a group of Year 9 girls.

|                 |        |
|-----------------|--------|
| least height    | 150 cm |
| median          | 165 cm |
| greatest height | 170 cm |

This stem and leaf diagram shows information about the heights, in cm, of a group of 15 Year 9 boys.

|    |           |
|----|-----------|
| 15 | 8 9 9     |
| 16 | 4 5 7 7 8 |
| 17 | 0 3 4 4 7 |
| 18 | 0 2       |

Key: 15 | 8 represents 158 cm

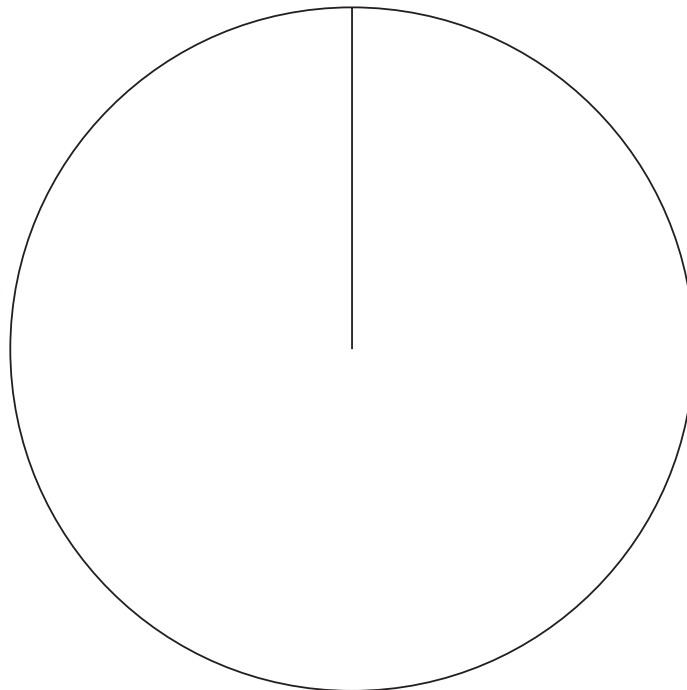
Compare the distribution of the heights of the girls with the distribution of the heights of the boys.

(Total for Question 26 is 3 marks)

14 The table gives information about the number of goals scored by each of three teams.

| Team   | Number of goals |
|--------|-----------------|
| City   | 50              |
| Rovers | 45              |
| United | 25              |

Draw an accurate pie chart for this information.



(Total for Question 14 is 3 marks)

20 Here are the heights, in centimetres, of 15 plants.

15    20    25    33    17    22    25    18  
22    19    32    35    24    28    19

Draw a stem and leaf diagram for these heights.

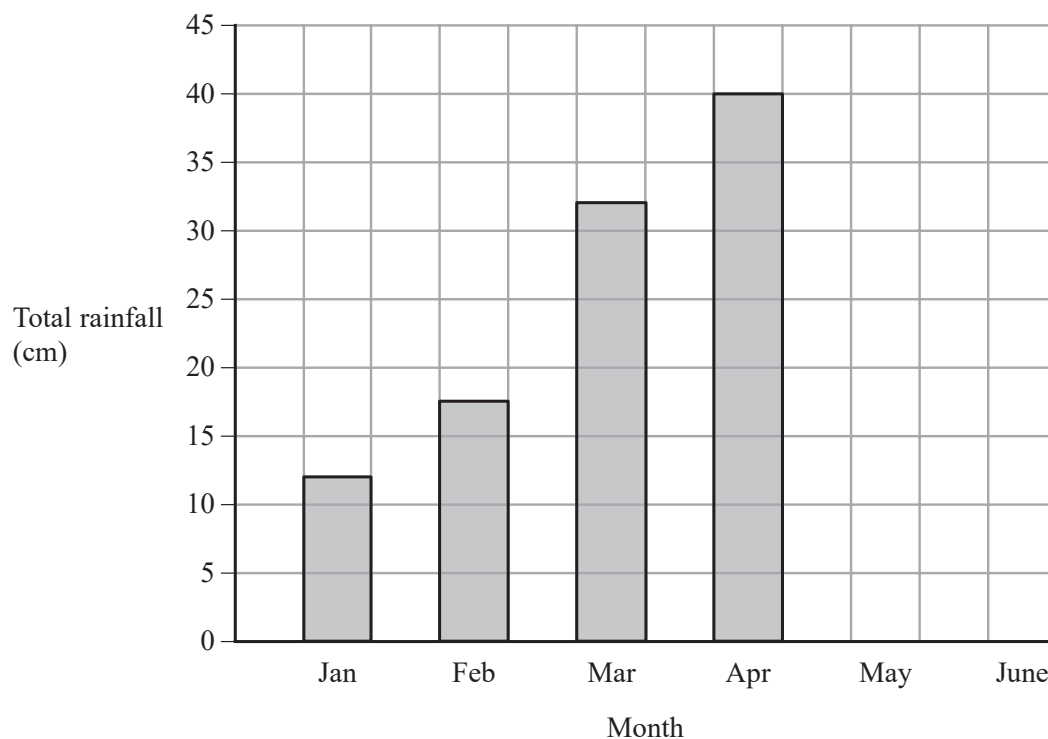
|  |  |
|--|--|
|  |  |
|  |  |
|  |  |

Key:

(Total for Question 20 is 3 marks)



- 8 The bar chart shows information about the total rainfall each month for four months in a city.



In May, the total rainfall was 35 cm.

In June, the total rainfall was 20 cm.

- (a) Use this information to complete the bar chart.

(2)

Rupa says,

“In February there was 15.5 cm of rainfall because the bar is half a square above 15”

- (b) Explain why Rupa is incorrect.

(1)

(Total for Question 8 is 3 marks)

21
Here are the ages, in years, of 15 people.

|    |    |    |    |    |
|----|----|----|----|----|
| 19 | 28 | 29 | 33 | 27 |
| 27 | 37 | 25 | 27 | 37 |
| 17 | 45 | 47 | 25 | 26 |

Show this information in a stem and leaf diagram.

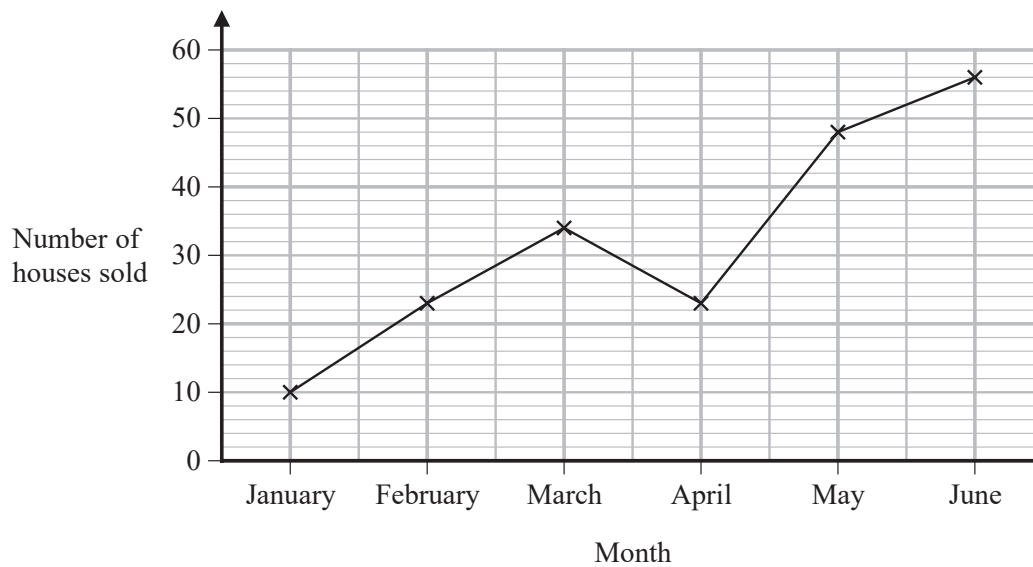


Key:

(Total for Question 21 is 3 marks)



- 9 The graph shows information about the number of houses sold by an estate agent in each of six months last year.



- (a) How many houses were sold by the estate agent in February?

.....  
(1)

- (b) For this estate agent, write down the ratio of the number of houses sold in January to the number of houses sold in June.

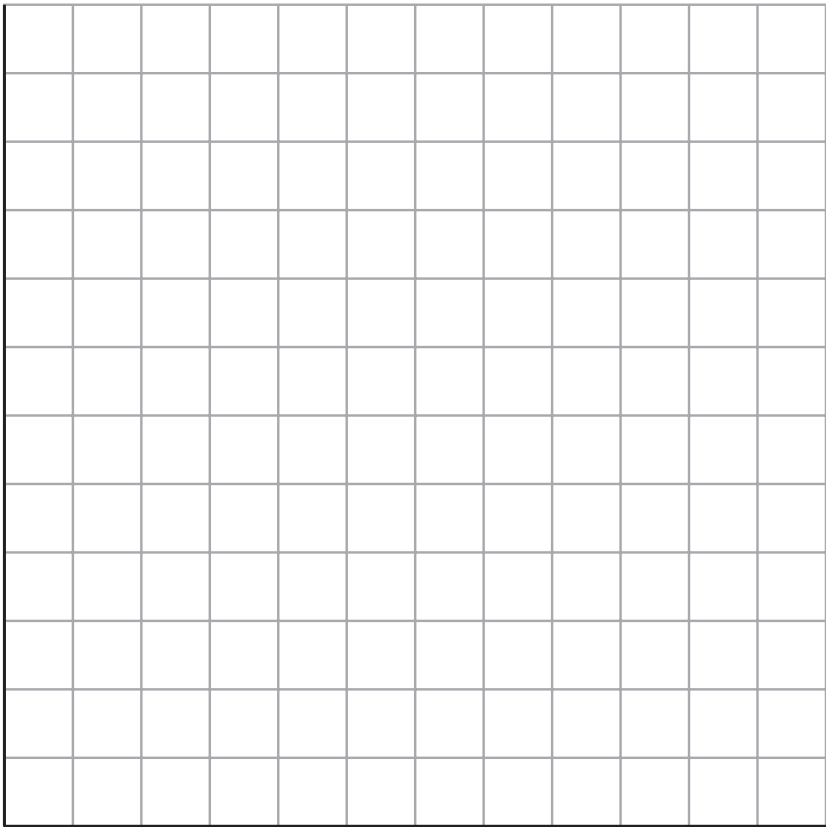
.....  
(2)

(Total for Question 9 is 3 marks)

9 The table shows information about the number of students who arrived late at school each day one week.

|           | Number of students |
|-----------|--------------------|
| Monday    | 9                  |
| Tuesday   | 10                 |
| Wednesday | 8                  |
| Thursday  | 6                  |
| Friday    | 3                  |

On the grid, draw a bar chart for this information.



(Total for Question 9 is 3 marks)

17 Here are the heights, in cm, of 16 sunflowers.

|     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 168 | 173 | 172 | 180 | 162 | 191 | 183 | 160 |
| 178 | 184 | 197 | 177 | 172 | 186 | 188 | 180 |

Show this information in a stem and leaf diagram.

Key:

(Total for Question 17 is 3 marks)

13 James asks students in Year 10 and Year 11 to name their favourite language from French or German or Spanish.

The two-way table shows information about his results.

|         | French | German | Spanish | Total |
|---------|--------|--------|---------|-------|
| Year 10 | 33     |        | 34      |       |
| Year 11 |        | 45     |         | 113   |
| Total   |        |        | 67      | 207   |

Complete the two-way table.

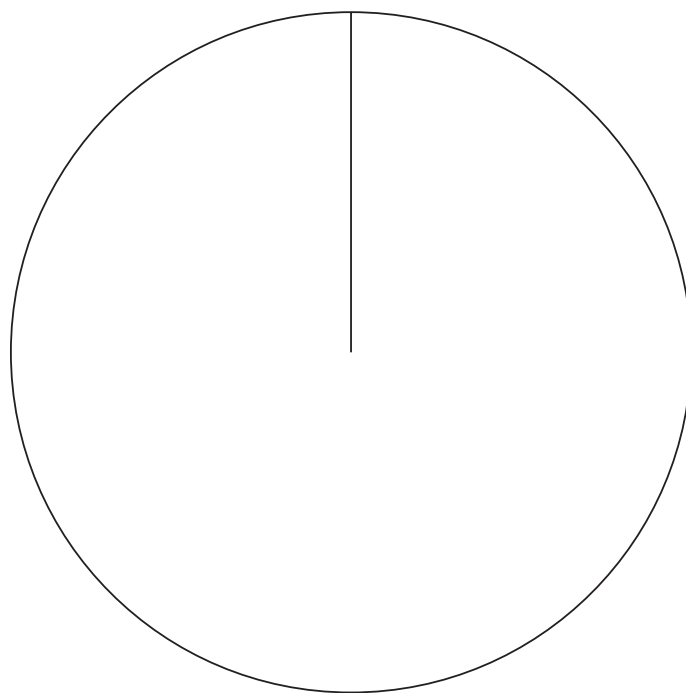
(Total for Question 13 is 3 marks)



14 The table gives information about the drinks people ordered in a cafe.

| Drink         | Number of people |
|---------------|------------------|
| Coffee        | 30               |
| Hot chocolate | 10               |
| Tea           | 50               |

Draw an accurate pie chart for this information.



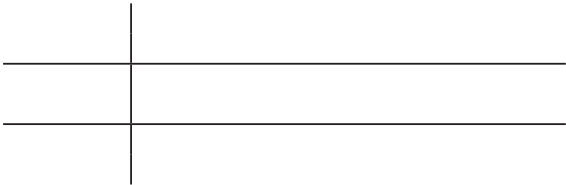
(Total for Question 14 is 3 marks)

18 Here are the heights, in cm, of 12 children.

146    135    142    150    138    149

152    146    137    154    147    144

Show this information in a stem and leaf diagram.



Key:

(Total for Question 18 is 3 marks)

19 Find the highest common factor (HCF) of 54 and 120

(Total for Question 19 is 2 marks)

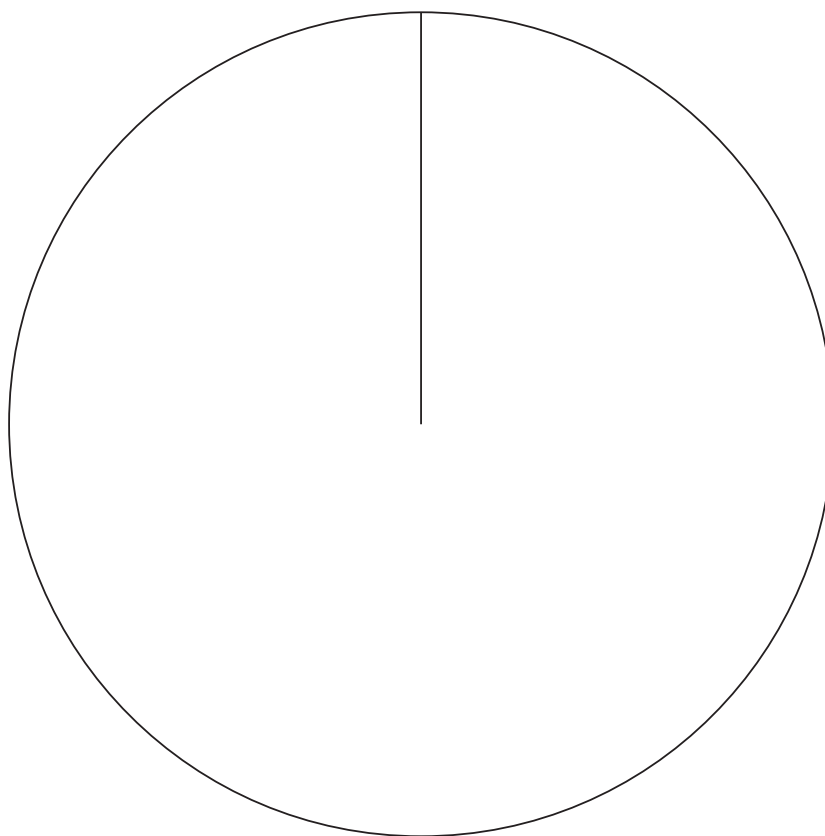


14 Year 9 students from Halle School were asked to choose one language to study.

The table shows information about their choices.

| Language | Number of students |  |
|----------|--------------------|--|
| French   | 56                 |  |
| Spanish  | 40                 |  |
| German   | 24                 |  |

(a) Draw an accurate pie chart to show this information.

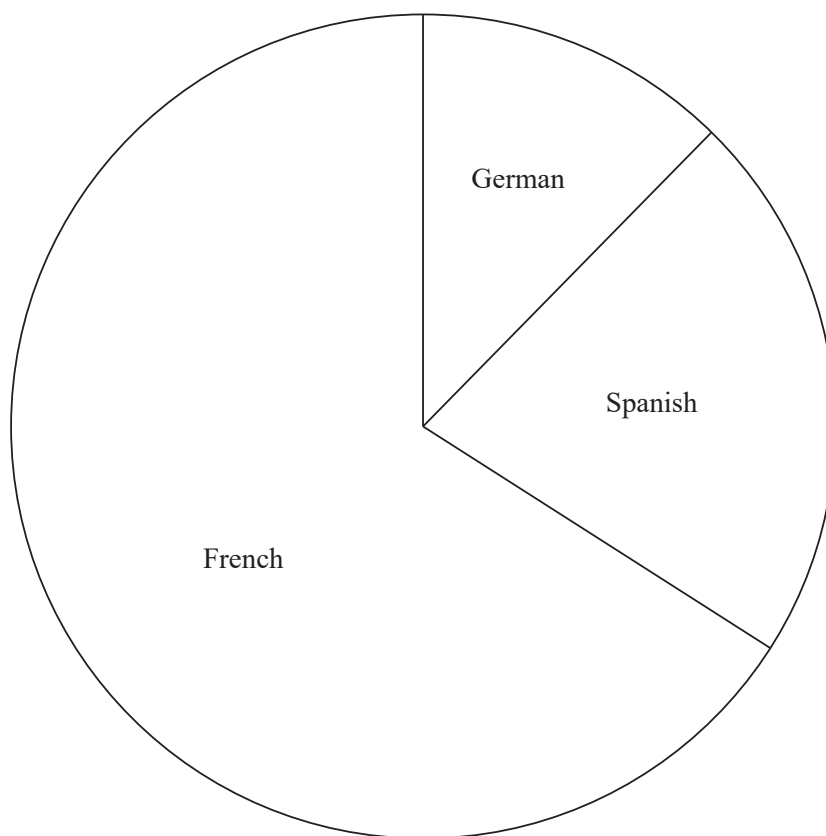


(3)



Year 9 students from Lowry School were also asked to choose one language to study.

This accurate pie chart shows information about their choices.



Shameena says,

“The pie chart shows that French was chosen by more Year 9 students at Lowry School than at Halle School.”

- (b) Is Shameena right?  
You must explain your answer.

.....

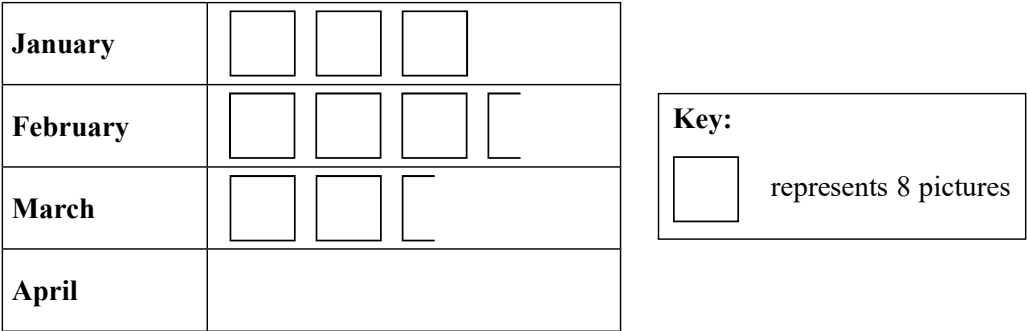
.....

.....

(1)

(Total for Question 14 is 4 marks)

6 The pictogram shows information about the number of pictures sold in an art shop in each of January, February and March.



(a) Write down the number of pictures sold in January.

.....

(1)

12 pictures were sold in April.

(b) Show this information on the pictogram.

(1)

(c) What was the total number of pictures sold in these four months?

.....

(2)

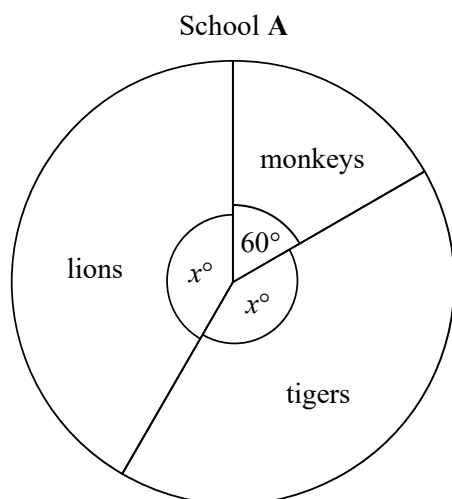
(Total for Question 6 is 4 marks)

7 Work out the difference, in minutes, between 1 hour 25 minutes and  $1\frac{1}{4}$  hours.

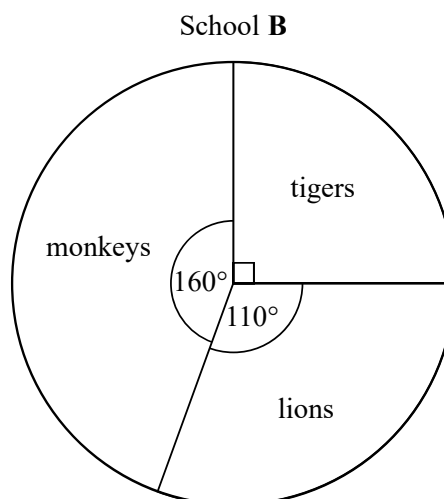
..... minutes

(Total for Question 7 is 2 marks)

- 18 The pie charts show information about the favourite animal of each student at school A and of each student at school B.



There are 480 students at school A.



There are 760 students at school B.

Henry says,

“The same number of students at each school have tigers as their favourite animal.”

Is Henry correct?

You must show how you get your answer.

(Total for Question 18 is 4 marks)



7 The incomplete pictogram shows information about the number of eggs sold from a farm shop on Monday.

|           |                                                                                                                                                                     |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monday    |   |
| Tuesday   |                                                                                                                                                                     |
| Wednesday |                                                                                                                                                                     |

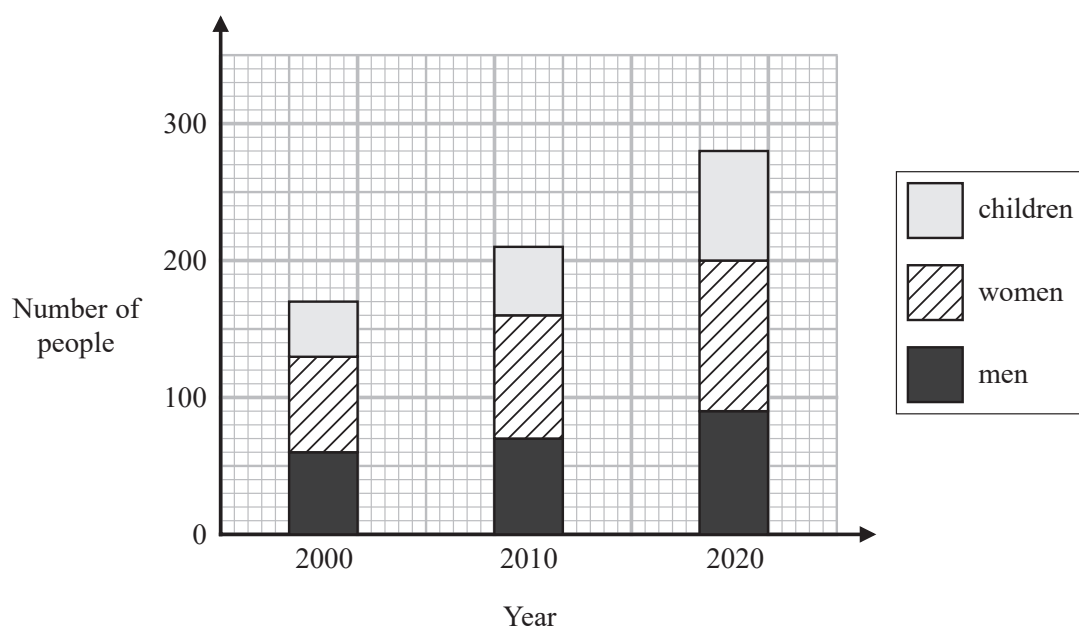
Key:

On Monday the shop sold 18 eggs.  
On Tuesday the shop sold 24 eggs.  
On Wednesday the shop sold 27 eggs.

Use this information to complete the pictogram and the key.

(Total for Question 7 is 4 marks)

13 The composite bar chart shows information about the number of people living in a village.



(a) Write down the number of men living in the village in the year 2000

.....  
(1)

(b) Find the number of children living in the village in the year 2010

.....  
(1)

For the people living in the village in the year 2020

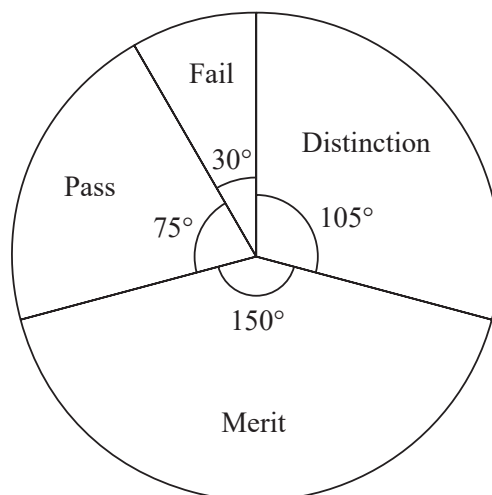
(c) find the ratio of the number of children to the **total** number of men and women.

.....  
(2)

(Total for Question 13 is 4 marks)

12 Some students took a guitar exam.

The pie chart shows information about the grades the students got.



(a) Write down the modal grade.

.....  
(1)

7 students got distinction.

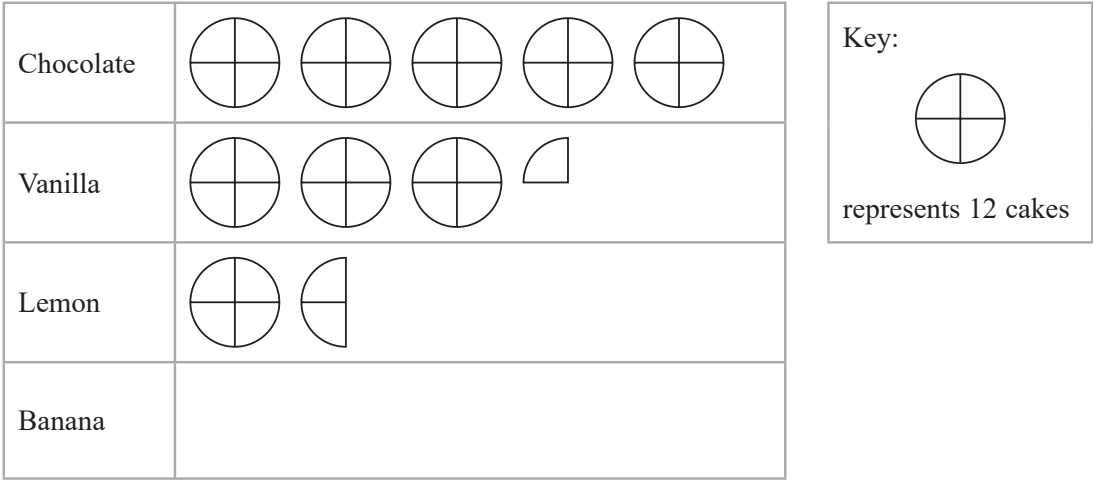
(b) Work out the total number of students who took the guitar exam.

.....  
(3)

.....  
(Total for Question 12 is 4 marks)



6 The pictogram shows information about the number of chocolate cakes, vanilla cakes and lemon cakes sold by Year 7 at a school fair.



24 banana cakes were sold by Year 7

(a) Use this information to complete the pictogram.

(1)

At the fair, Year 8 sold a total of 150 cakes.

(b) Which Year sold most cakes at the fair, Year 7 or Year 8?  
You must show how you get your answer.

(3)

(Total for Question 6 is 4 marks)



- |       | Wednesday | Thursday | Friday | Saturday |
|-------|-----------|----------|--------|----------|
| Lena  | 6         | 9        | 8      | 6        |
| Pavel | 7         | 6        | 5      | 6        |

[illegible]

15 Tessa recorded the times that 15 adults took to complete a run.  
She showed her results in a stem and leaf diagram.

|   |             |
|---|-------------|
| 4 | 5 9         |
| 5 | 3 7 8       |
| 6 | 1 2 4 5 7 7 |
| 7 | 2 6 7       |
| 8 | 1           |

Key:  
4 | 5 represents 45 minutes

(a) Find the median.

..... minutes  
(1)

(b) Find the range.

..... minutes  
(2)

Tessa also recorded the times that 15 children took to complete the run.  
For the children, the median was 75 minutes.

(c) Compare the times that the adults took with the times that the children took.

.....  
.....  
.....  
(1)

(Total for Question 15 is 4 marks)

22
The stem and leaf diagram shows the test scores of 23 students from School A.

|   |                 |
|---|-----------------|
| 3 | 0               |
| 4 | 1 2 4 4 5 7     |
| 5 | 3 4 4 6 7 8 8 9 |
| 6 | 0 8 8 9 9       |
| 7 | 1 3 9           |

Key:  
3 | 0 represents 30

23 students from School B did the same test.

Their median score was 56  
The range of their scores was 47

Compare the distribution of the test scores of the students from School A with the distribution of the test scores of the students from School B.

(Total for Question 22 is 4 marks)

- 6 Samina works in a shop that sells pens.

The table shows the number of blue pens and the number of red pens Samina sold in each of three months.

| Month | Blue pens | Red pens |
|-------|-----------|----------|
| April | 33        | 20       |
| May   | 40        | 14       |
| June  | 27        | 15       |

- (a) Work out the total number of blue pens and red pens Samina sold in June.

.....  
(1)

Samina says,

“In these three months, in total, I sold more than twice as many blue pens as red pens.”

- (b) Is Samina correct?  
You must show how you get your answer.

(3)

(Total for Question 6 is 4 marks)

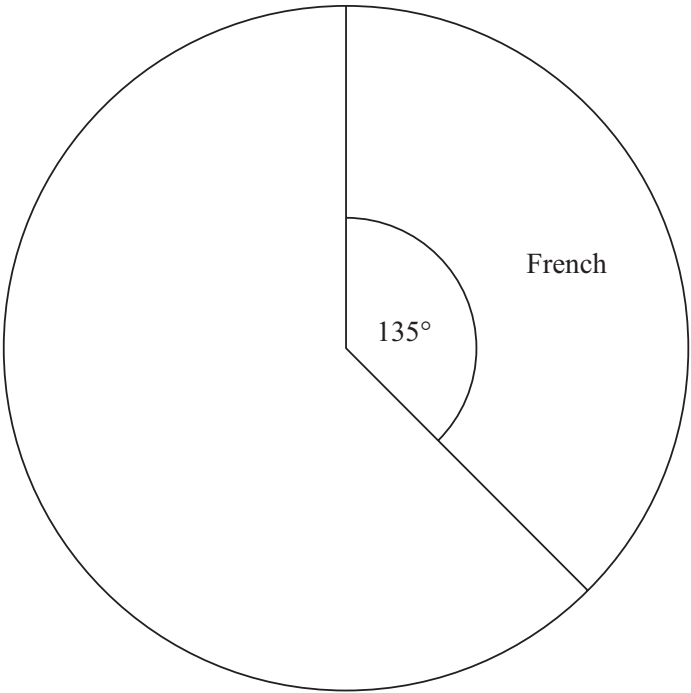


14 120 students in Year 10 each choose one language to study.

The table below shows information about their choices.

| Language | Number of students |
|----------|--------------------|
| French   | 45                 |
| Mandarin | 20                 |
| Spanish  | 55                 |

(a) Complete the accurate pie chart to show this information.



(3)



In another pie chart the number of students in Year 11 studying French is represented by an angle of  $150^\circ$

Navi says,

“This means that French was chosen by more students in Year 11 than by students in Year 10”

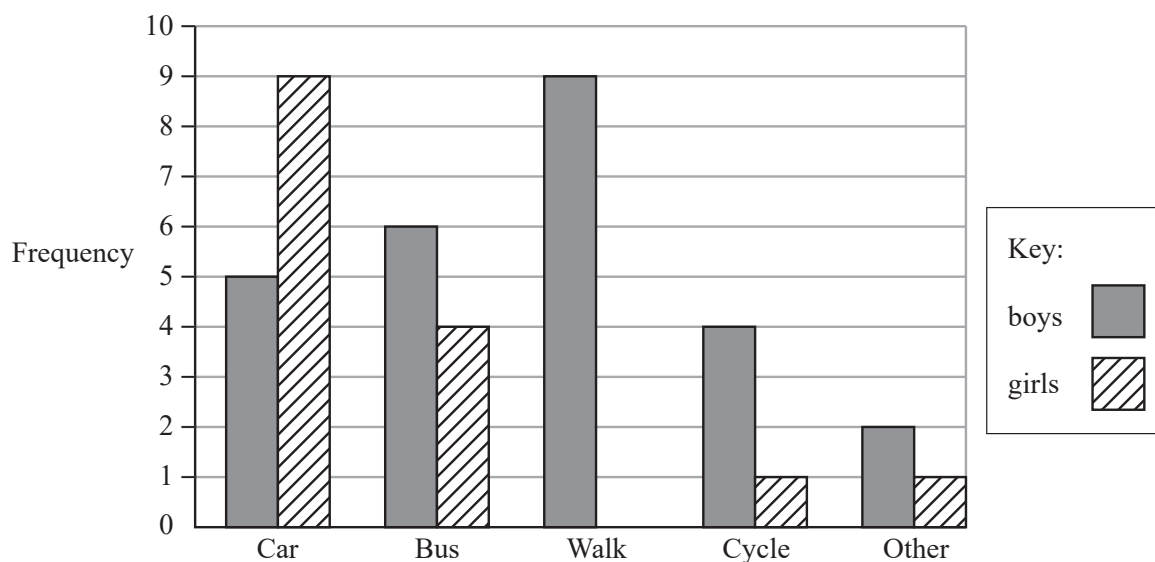
- (b) Is Navi correct?  
Explain why you think this.

(1)

(Total for Question 14 is 4 marks)



- 3 A teacher asks the students in Year 6 what type of transport they use to get to school. The dual bar chart shows some of the results.



- (a) What is the most popular type of transport used by the boys?

.....  
(1)

7 girls walk to school.

- (b) Show this information on the dual bar chart.

.....  
(1)

More of the students get to school by car than by bus.

- (c) How many more?

.....  
(1)

The number of students in Year 5 is the same as the number of students in Year 6

- (d) What is the total number of students in Years 5 and 6?

.....  
(2)

(Total for Question 3 is 5 marks)

14 Here are the marks 20 students got in a French test.

|    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|
| 76 | 82 | 84 | 69 | 80 | 64 | 70 | 81 | 75 | 91 |
| 87 | 67 | 80 | 70 | 94 | 76 | 81 | 69 | 71 | 77 |

(a) Show this information in a stem and leaf diagram.



(3)

One of these students is going to be chosen at random.

The pass mark in the French test is 71

Omar writes,

The probability that this student failed the French test is  $\frac{1}{4}$

Omar is wrong.

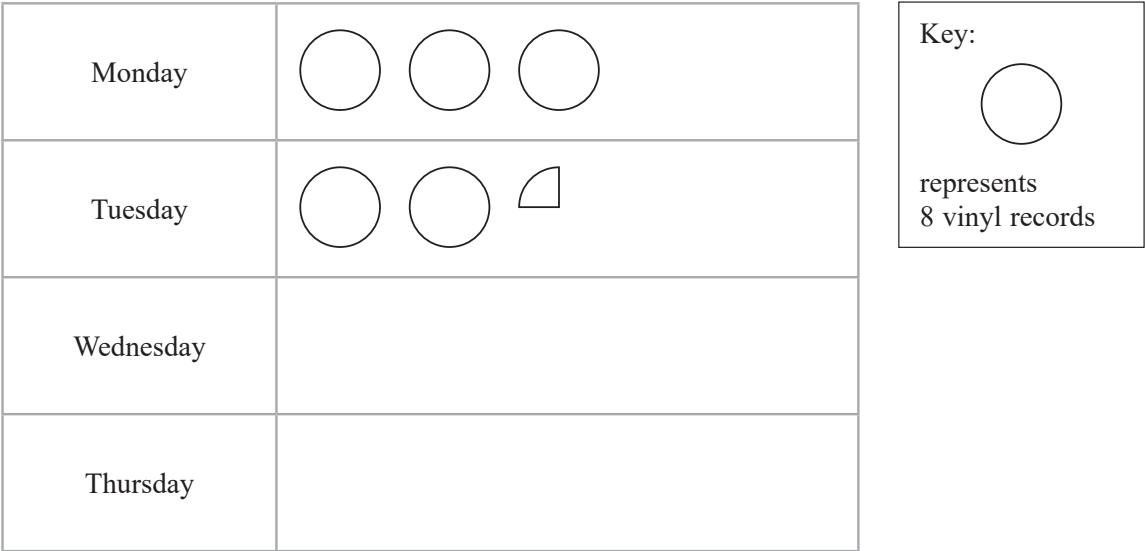
(b) Explain why.

(2)

(Total for Question 14 is 5 marks)



9 The pictogram shows information about the number of vinyl records sold in a shop on Monday and on Tuesday.



(a) Write down the number of vinyl records sold

(i) on Monday,

.....  
(1)

(ii) on Tuesday.

.....  
(1)

On Wednesday and Thursday a total of 36 vinyl records were sold.  
The number of records sold on Thursday was 8 times the number of records sold on Wednesday.

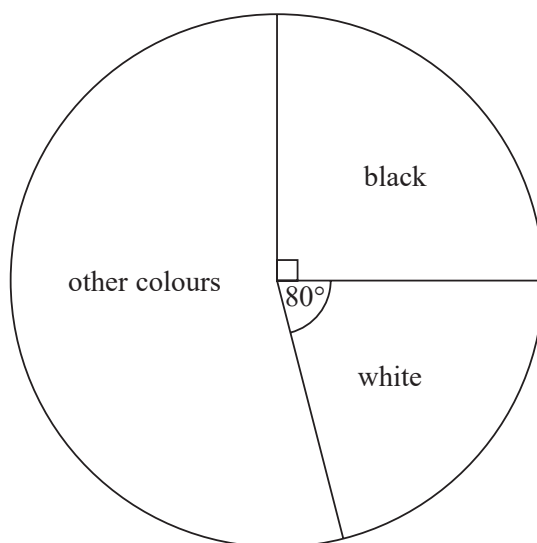
(b) Use this information to complete the pictogram.

(3)

(Total for Question 9 is 5 marks)



16 The pie chart gives information about the colour of each car in a car park.



There are 135 black cars in the car park.

(a) Work out the number of white cars in the car park.

.....  
(3)

There are 50 grey cars in the car park.

A car in the car park is picked at random.

(b) Find the probability that this car is grey.

.....  
(2)

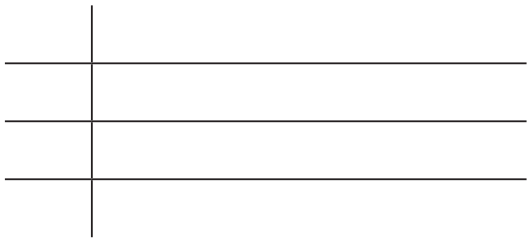
(Total for Question 16 is 5 marks)



15 Hetvi asked her friends how many stickers they each have in their collection. Here are her results.

|    |     |    |    |    |    |
|----|-----|----|----|----|----|
| 77 | 86  | 94 | 87 | 71 | 98 |
| 74 | 103 | 71 | 85 | 82 | 84 |
| 97 | 91  | 88 | 89 | 75 |    |

(a) Show this information in a stem and leaf diagram.



Key:

(3)

(b) Find the median number of stickers.

(2)

(Total for Question 15 is 5 marks)



6 Ben sells houses.

The pictogram shows information about the number of houses Ben sold in each of the first three months of last year.

|          |                                              |
|----------|----------------------------------------------|
| January  | <div><div></div><div></div><div></div></div> |
| February | <div><div></div><div></div><div></div></div> |
| March    | <div><div></div><div></div><div></div></div> |
| April    |                                              |
| May      |                                              |

Key:  represents 4 houses

(a) Write down the number of houses Ben sold in January.

.....

(1)

In April, Ben sold 11 houses.

(b) Show this information on the pictogram.

(1)

Ben sold a total of 60 houses in the first five months of last year.

(c) Work out the number of houses Ben sold in May.

.....

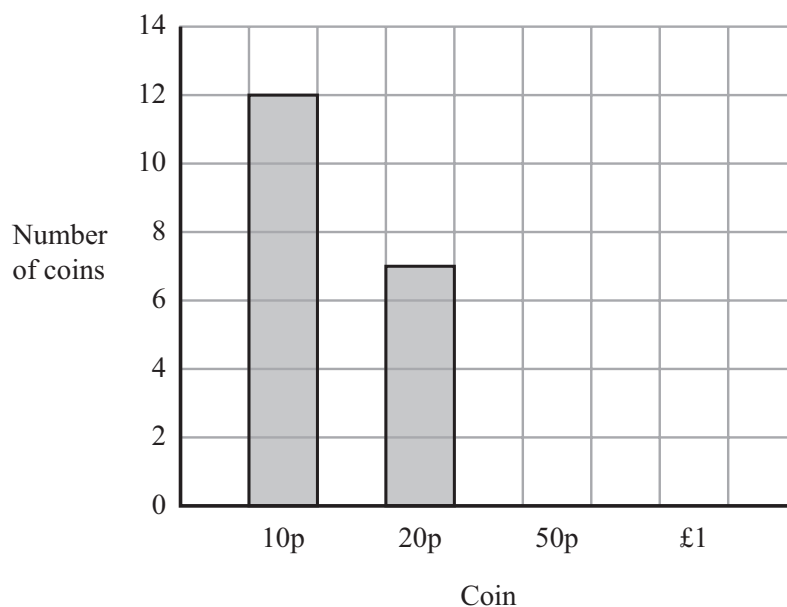
(3)

(Total for Question 6 is 5 marks)



- 7 There are only 10p coins, 20p coins, 50p coins and £1 coins in a bag.

The bar chart shows information about the number of 10p coins and the number of 20p coins in the bag.



There are eight 50p coins in the bag.

There are three £1 coins in the bag.

- (a) Use this information to complete the bar chart.

(2)

- (b) Show that the total amount of money in the bag is less than £10

(3)

(Total for Question 7 is 5 marks)



- 5 60 students were asked how they get to school.

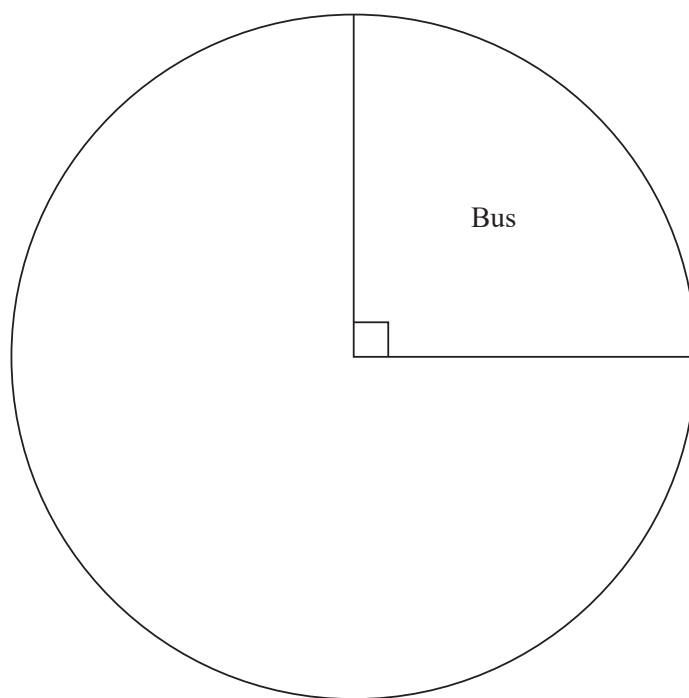
The table shows the results.

|                    | Bus | Walk | Car | Bicycle |
|--------------------|-----|------|-----|---------|
| Number of students | 15  | 27   | 12  | 6       |

- (a) What fraction of the 60 students did **not** walk to school?

.....  
(2)

- (b) Complete the pie chart for the information in the table.

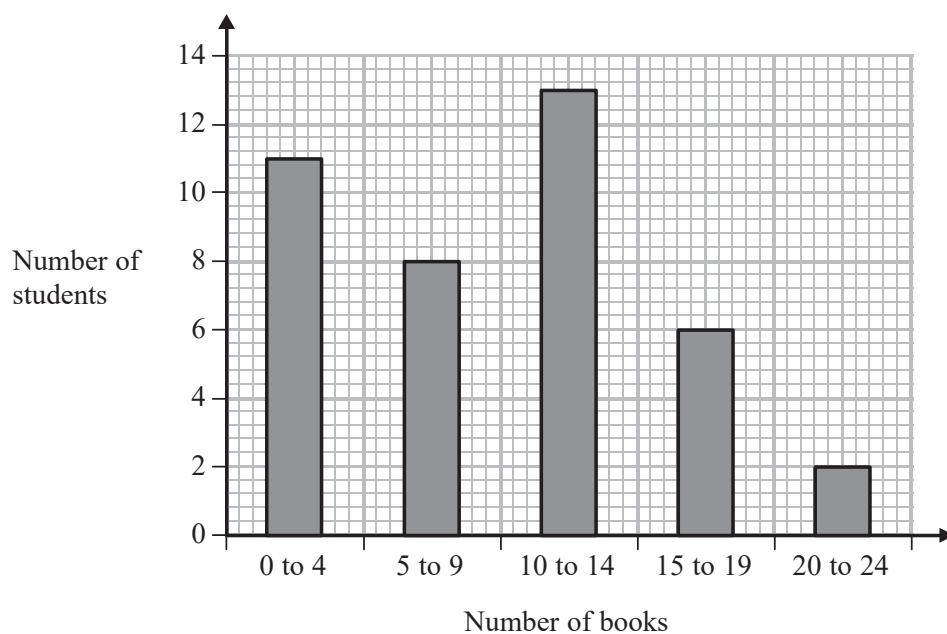


(4)

(Total for Question 5 is 6 marks)

**23** Fran asks each of 40 students how many books they bought last year.

The chart below shows information about the number of books bought by each of the 40 students.



(a) Work out the percentage of these students who bought 20 or more books.

..... %  
(2)

- (b) Show that an estimate for the mean number of books bought is 9.5  
You must show all your working.

(4)

(Total for Question 23 is 6 marks)



9 Mrs Brown asked each child in her class which pet they liked best.

Here are her results.

dog

cat

dog

rabbit

dog

dog

cat

dog

hamster

cat

dog

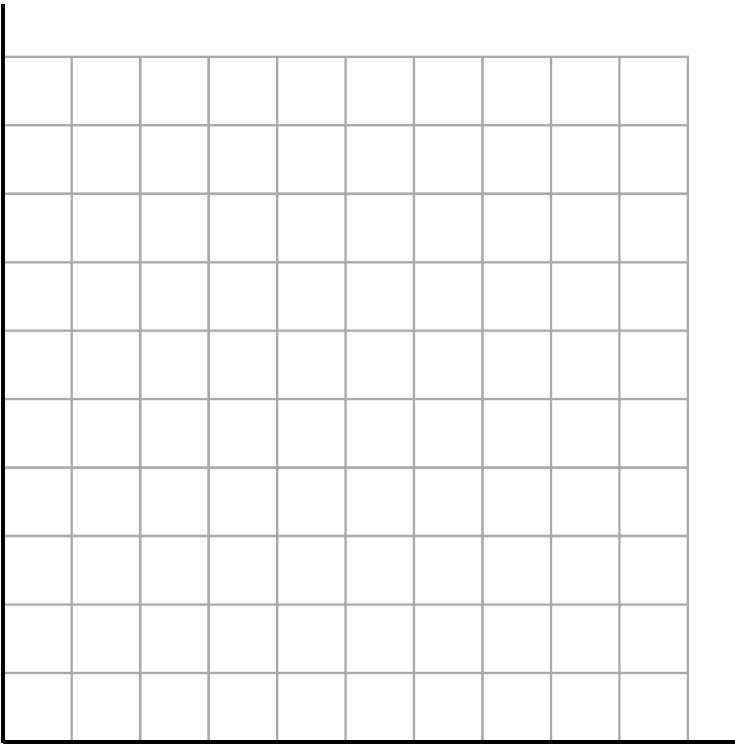
cat

(a) Complete the frequency table for this information.

| Pet     | Tally | Frequency |
|---------|-------|-----------|
| dog     |       |           |
| rabbit  |       |           |
| cat     |       |           |
| hamster |       |           |

(2)

(b) On the grid below, draw a bar chart for this information.



(3)

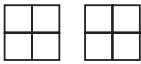
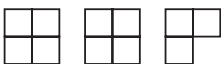
(c) Write down the most popular pet.

.....  
(1)

(Total for Question 9 is 6 marks)



- 11 The pictogram shows information about the number of video games sold in a shop on Monday, on Tuesday and on Wednesday.

|           |                                                                                   |
|-----------|-----------------------------------------------------------------------------------|
| Monday    |  |
| Tuesday   |  |
| Wednesday |  |
| Thursday  |                                                                                   |
| Friday    |                                                                                   |

**Key:**

 represents 8 video games

- (a) How many video games were sold on Monday?

.....  
(1)

More video games were sold on Tuesday than on Wednesday.

- (b) How many more?

.....  
(2)

On Thursday and Friday, a total of 32 video games were sold in the shop.

$\frac{1}{4}$  of these 32 video games were sold in the shop on Thursday.

- (c) Complete the pictogram for Thursday and Friday.

.....  
(3)

(Total for Question 11 is 6 marks)



8 Miss Bailey asked 24 students where they each wanted to go on a school trip.

Here are the results.

museum

farm

castle

castle

museum

museum

castle

castle

farm

farm

farm

museum

castle

farm

castle

castle

castle

castle

farm

farm

castle

museum

museum

castle

(a) Complete the frequency table.

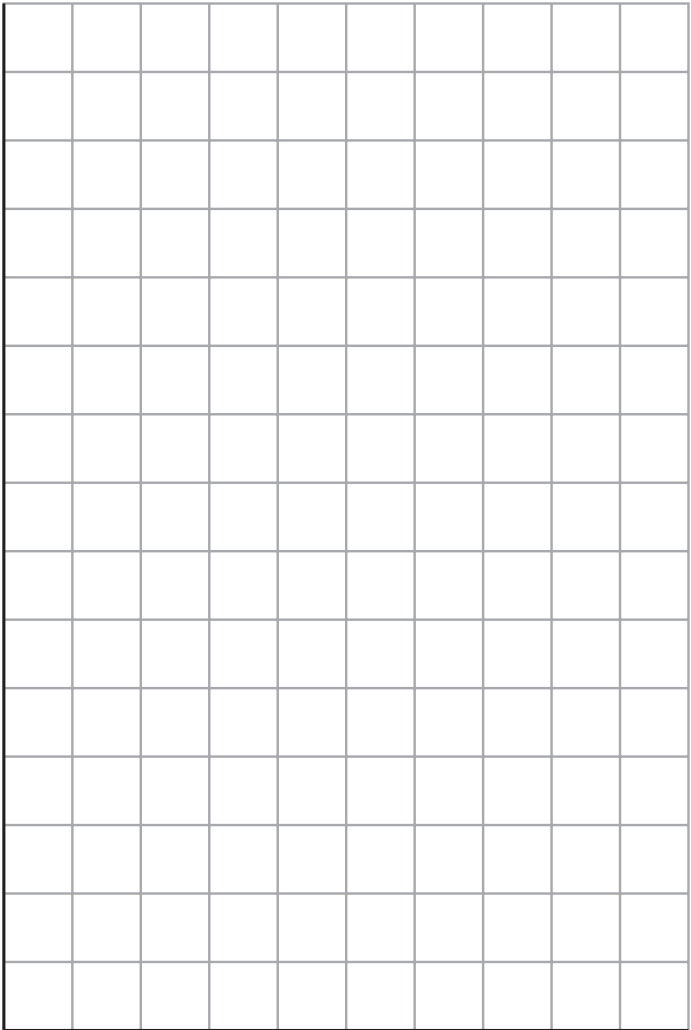
| Place  | Tally | Frequency |
|--------|-------|-----------|
| castle |       |           |
| farm   |       |           |
| museum |       |           |

(2)

(b) Write down the place that is the mode.

.....  
(1)

(c) Draw a bar chart to show the results.



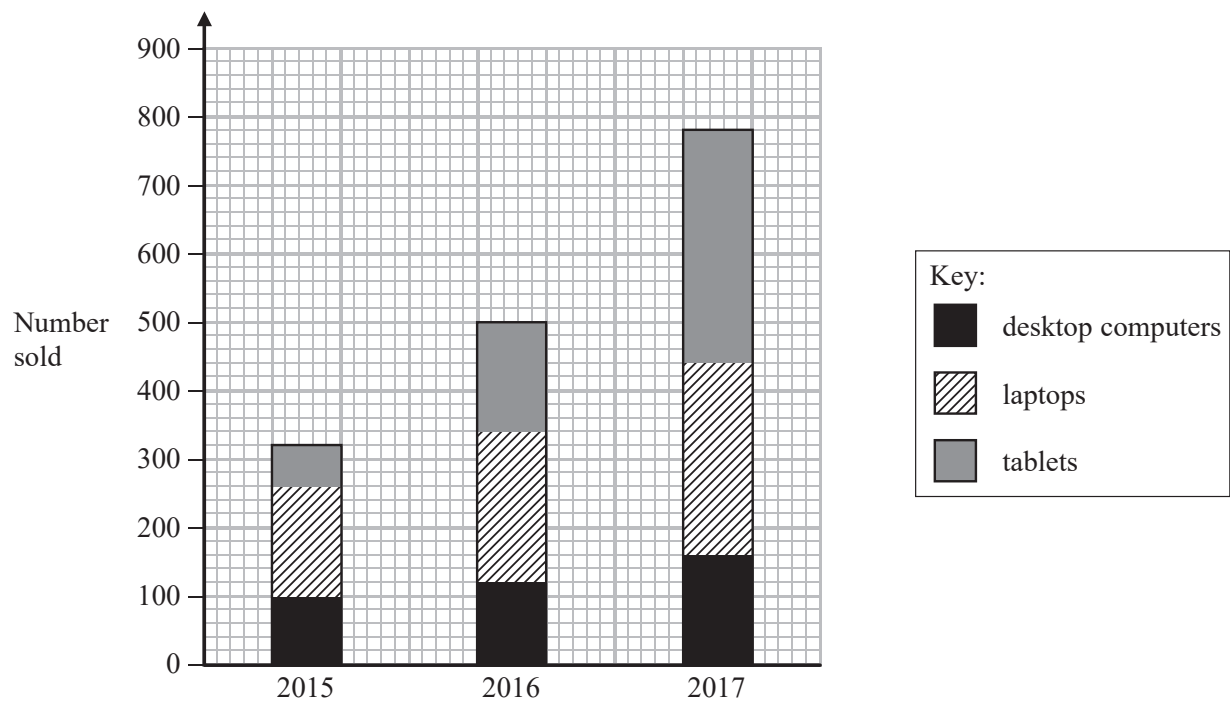
(3)

(Total for Question 8 is 6 marks)



12 A shop sells desktop computers, laptops and tablets.

The composite bar chart shows information about sales over the last three years.



(a) Write down the number of desktop computers sold in 2015

.....  
(1)

(b) Work out the total number of laptops sold in the 3 years.

.....  
(3)

(c) State the item that had the greatest increase in sales over the 3 years.  
Give a reason for your answer.

.....  
.....  
.....  
(2)

Alex says,

“In 2017, more tablets were sold than desktop computers. This means the shop makes more profit from the sale of tablets than from the sale of desktop computers.”

(d) Is Alex correct?

You must justify your answer.

(1)

(Total for Question 12 is 7 marks)

**13** A piece of wire is 240 cm long.

Peter cuts two 45 cm lengths off the wire.

He then cuts the rest of the wire into as many 40 cm lengths as possible.

Work out how many 40 cm lengths of wire Peter cuts.

(Total for Question 13 is 3 marks)



SUB-TOPIC S1d

# SCATTER GRAPHS & CORRELATION

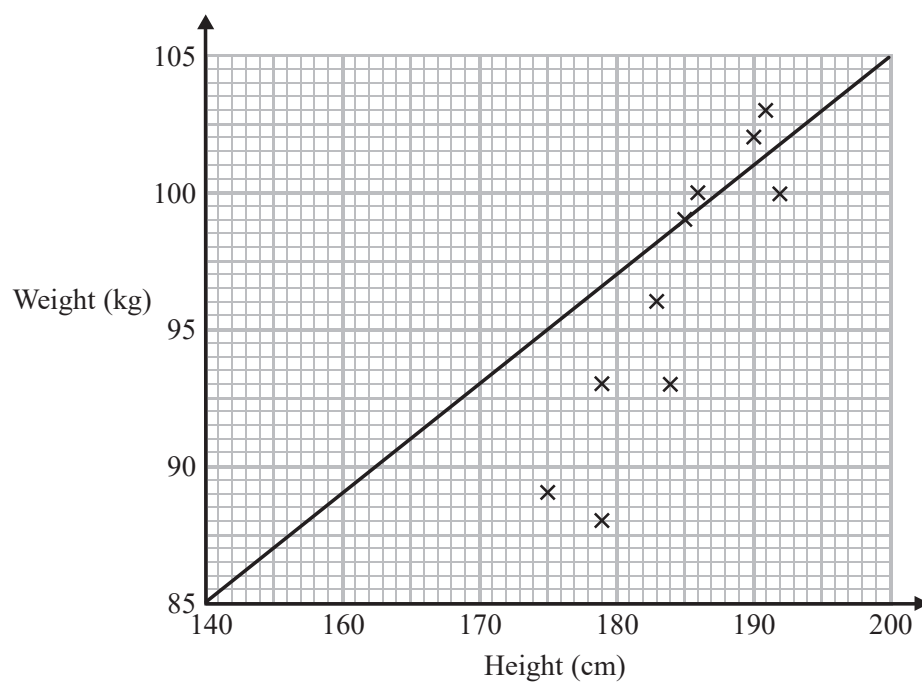
Sub-topic S1d · 8 questions · 26 marks · lowest tariff first



21 Sean has information about the height, in cm, and the weight, in kg, of each of ten rugby players.

He is asked to draw a scatter graph and a line of best fit for this information.

Here is his answer.



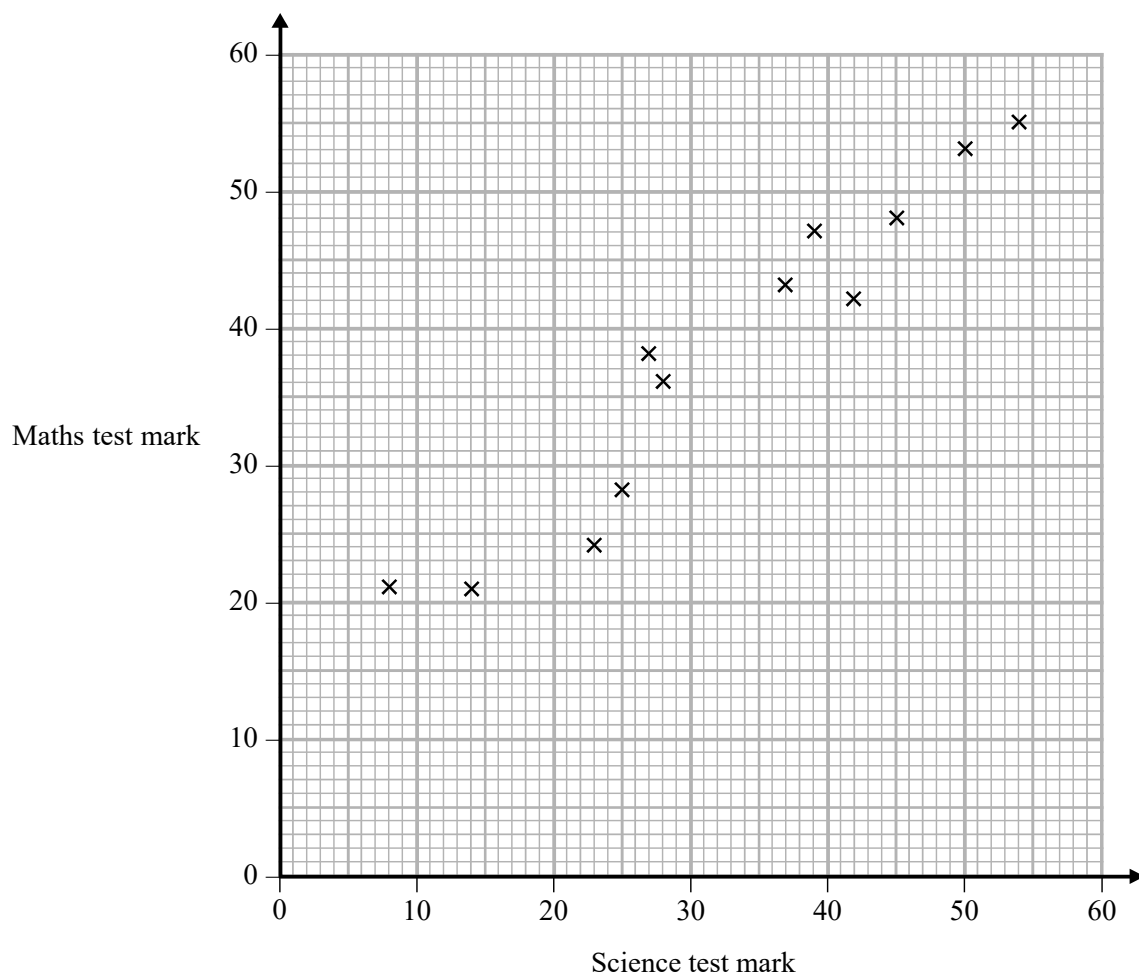
Sean has plotted the points accurately.

Write down two things that are wrong with his answer.

- 1 .....
- 2 .....

(Total for Question 21 is 2 marks)

- 24 The scatter graph shows information about the marks a group of students got in a Science test and in a Maths test.



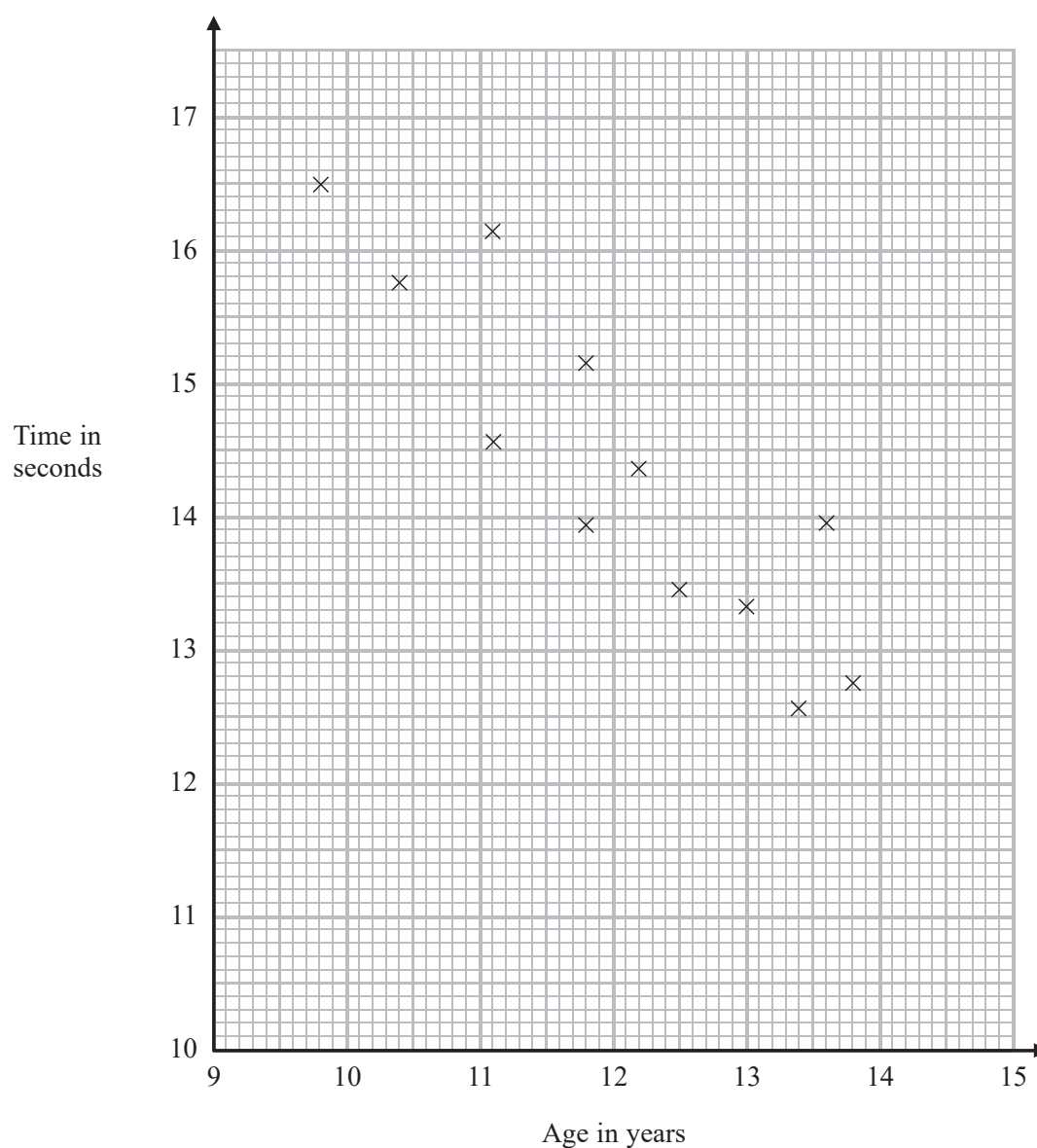
Jamie got a mark of 34 in the Science test.

Using the scatter graph, find an estimate for Jamie's mark in the Maths test.

(Total for Question 24 is 2 marks)

19 The scatter diagram shows information about 12 girls.

It shows the age of each girl and the best time she takes to run 100 metres.



(a) Write down the type of correlation.

(1)

Kristina is 11 years old.  
Her best time to run 100 metres is 12 seconds.

The point representing this information would be an outlier on the scatter diagram.

(b) Explain why.

(1)

Debbie is 15 years old.

Debbie says,

“The scatter diagram shows I should take less than 12 seconds to run 100 metres.”

(c) Comment on what Debbie says.

(1)

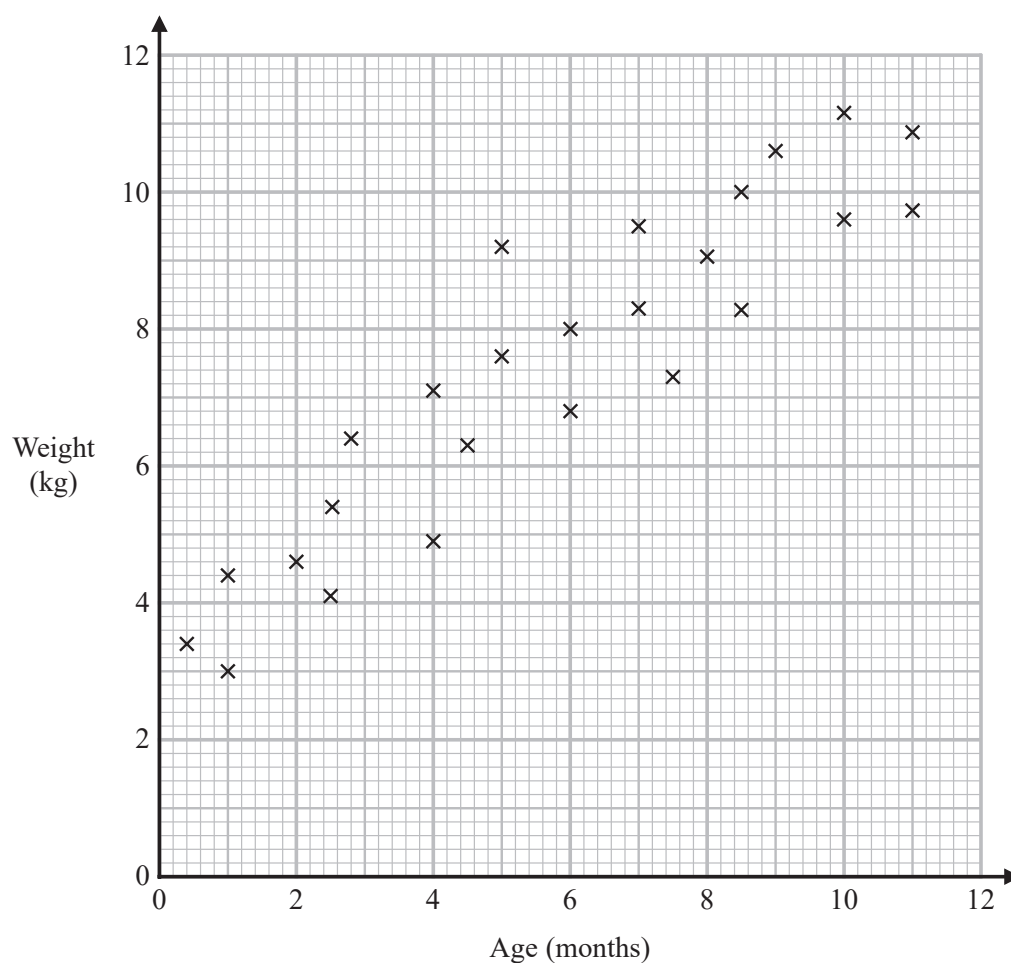
(Total for Question 19 is 3 marks)

20 Expand and simplify  $5(p + 3) - 2(1 - 2p)$

(Total for Question 20 is 2 marks)



25 The scatter graph shows information about the ages and weights of some babies.



(a) Describe the relationship between the age and the weight of the babies.

.....

.....

.....

(1)

Another baby has a weight of 5.8 kg

(b) Using the scatter graph, find an estimate for the age of this baby.

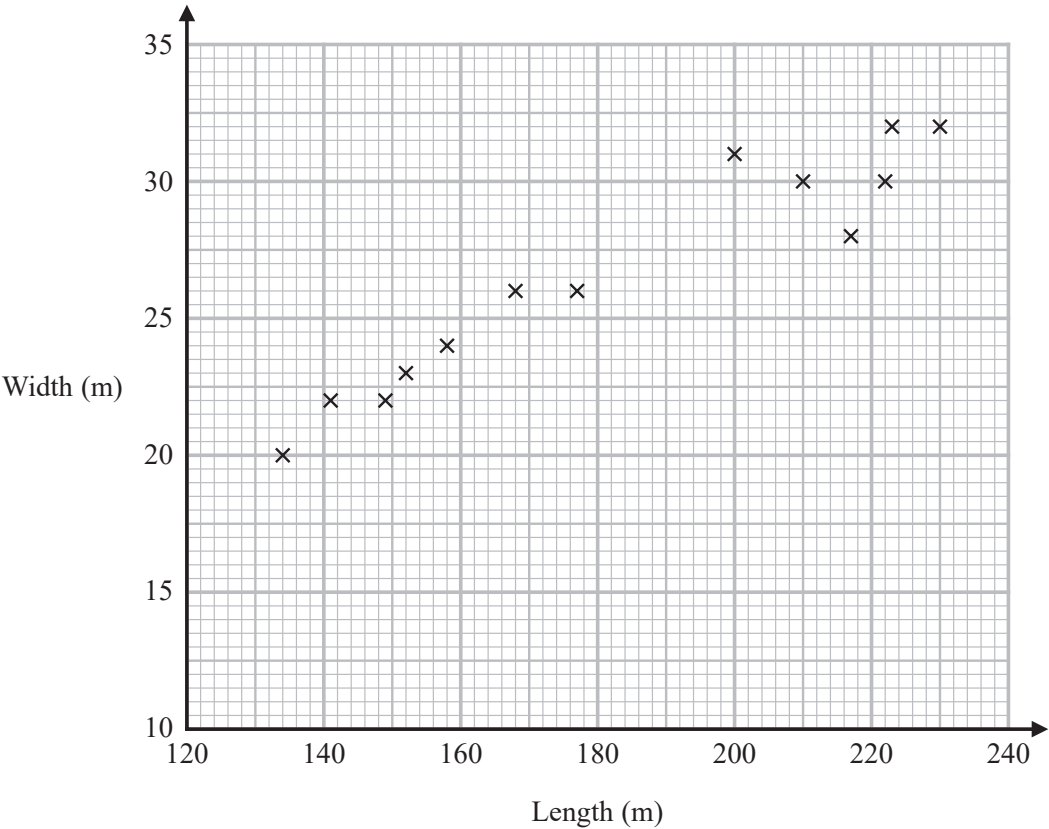
..... months

(2)

(Total for Question 25 is 3 marks)



21 The scatter graph shows information about some ships.  
It shows the length and the width of each ship.



(a) What type of correlation does this scatter graph show?

.....  
(1)

(b) Draw a line of best fit on the scatter graph.

(1)

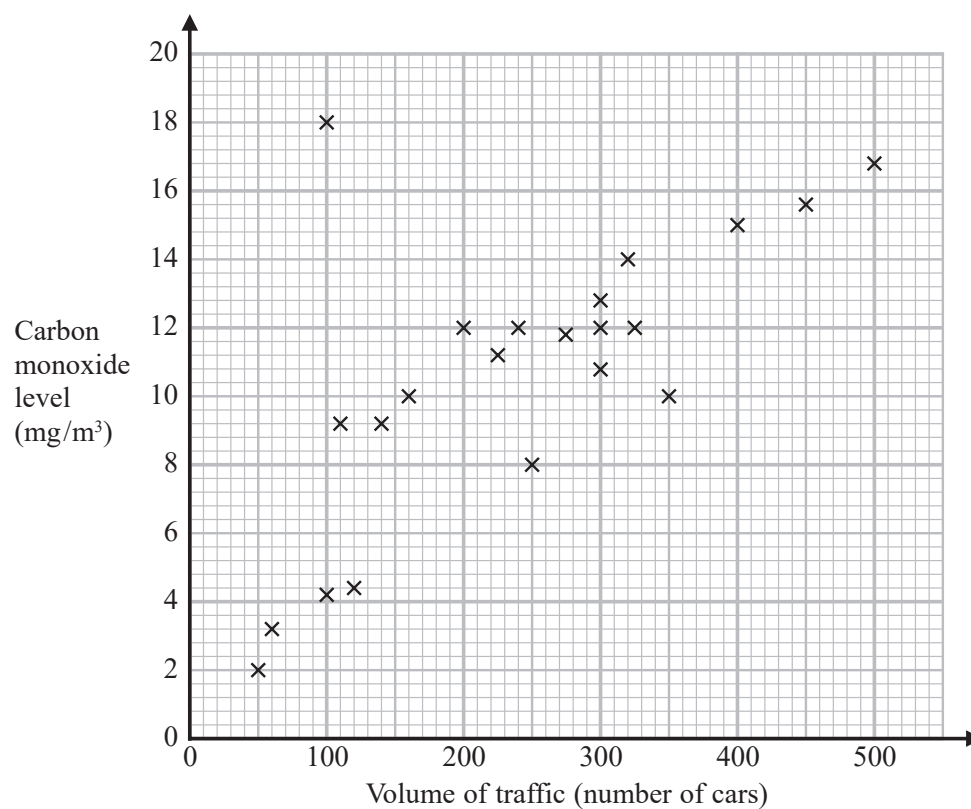
A different ship has a length of 194 metres.

(c) Use your line of best fit to find an estimate for the width of this ship.

..... metres  
(1)

(Total for Question 21 is 3 marks)

- 21 The scatter graph shows information about the volume of traffic and the carbon monoxide level at a point on a road each day for 22 days.



One point is an outlier.

- (a) Write down the coordinates of this point.

(....., .....)  
(1)

For another day, 370 cars pass the point on the road.

- (b) Estimate the carbon monoxide level for this day.

..... mg/m³  
(2)

Alfie says,  
“Because there is an outlier, there is no correlation.”

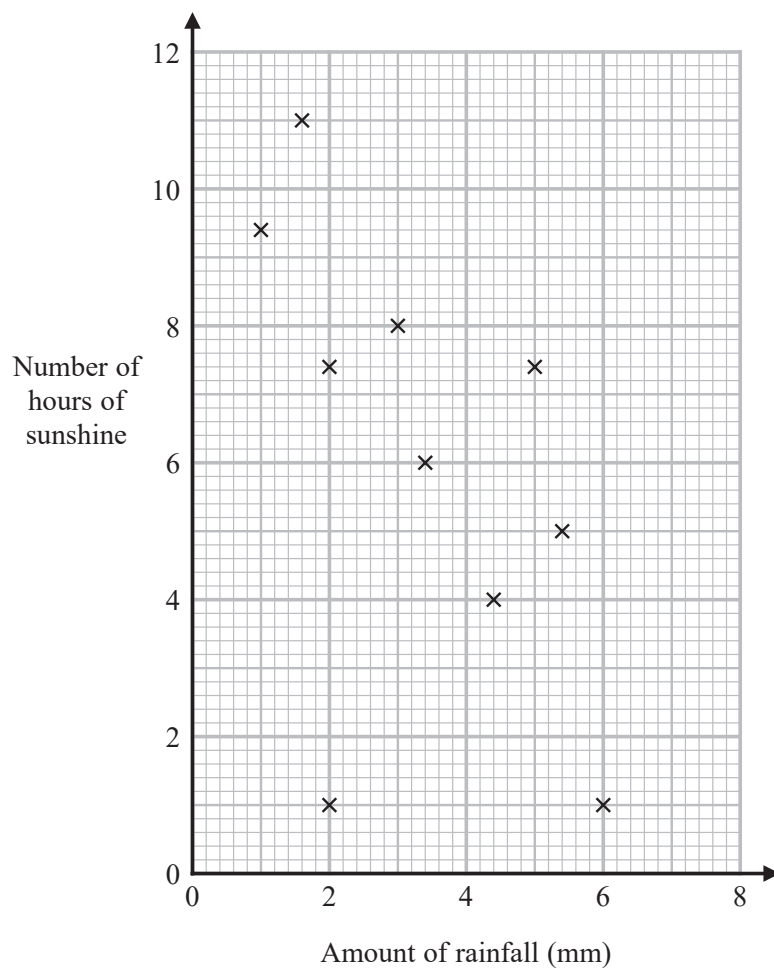
- (c) Is Alfie correct?  
You must give a reason for your answer.

(1)

(Total for Question 21 is 4 marks)



- 18 The scatter graph shows information about the amount of rainfall, in mm, and the number of hours of sunshine for each of ten English towns on the same day.



One of the points is an outlier.

- (a) Write down the coordinates of this point.

( ..... , ..... )  
(1)

- (b) Ignoring the outlier, describe the relationship between the amount of rainfall and the number of hours of sunshine.

.....

.....

.....

(1)

On the same day in another English town there were 7 hours of sunshine.

- (c) Using the scatter graph, estimate the amount of rainfall in this town on this day.

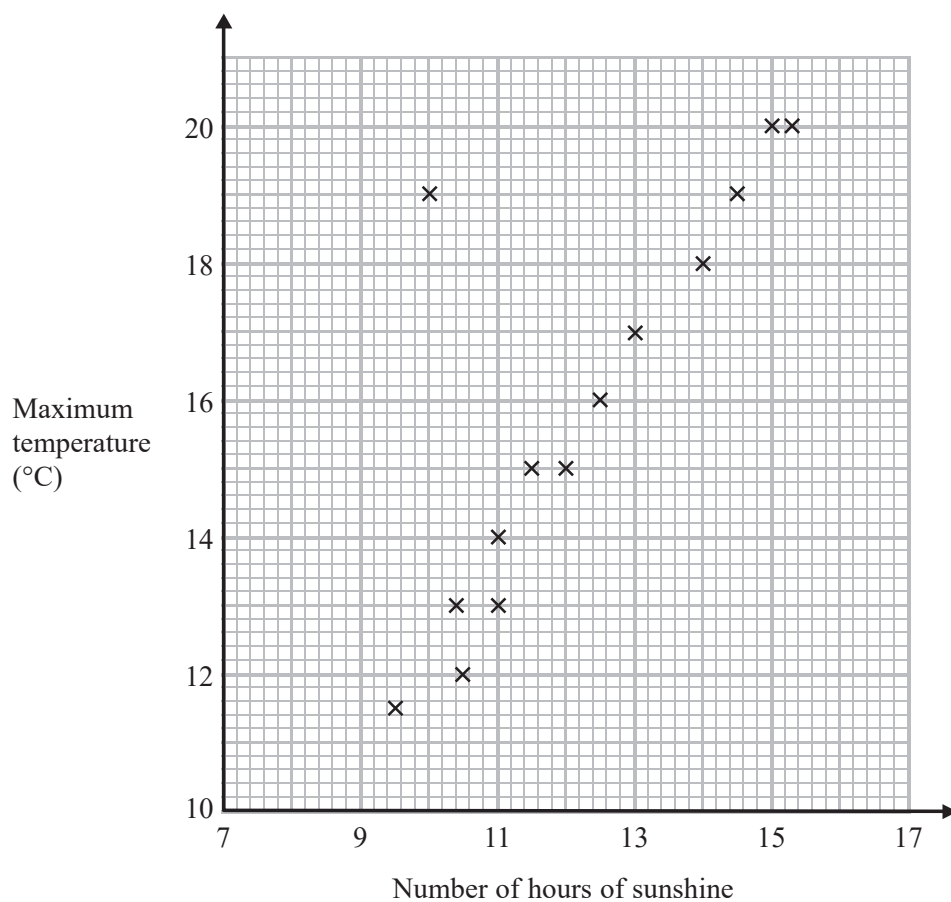
..... mm

(2)

(Total for Question 18 is 4 marks)



- 21 The scatter graph shows the maximum temperature and the number of hours of sunshine in fourteen British towns on one day.



One of the points is an outlier.

- (a) Write down the coordinates of this point.

( ..... , ..... )  
(1)

- (b) For all the other points write down the type of correlation.

.....  
(1)

On the same day, in another British town, the maximum temperature was  $16.4^{\circ}\text{C}$ .

(c) Estimate the number of hours of sunshine in this town on this day.

..... hours  
(2)

A weatherman says,

“Temperatures are higher on days when there is more sunshine.”

(d) Does the scatter graph support what the weatherman says?  
Give a reason for your answer.

.....  
.....  
(1)

(Total for Question 21 is 5 marks)

22 Express 56 as the product of its prime factors.

.....  
(Total for Question 22 is 2 marks)



# MARK SCHEMES

official mark schemes, in the same order as the questions



| Paper: 1MA1/2F |        |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                 |
|----------------|--------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Question       | Answer | Mark      | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Additional guidance                             |
| 22             | (i)    | 65        | M1<br>for working with proportion eg. $10 \div 30 \times 195 (= 65)$                                                                                                                                                                                                                                                                                                                                                                                                          | Condone use of 200 for 195                      |
|                |        | A1<br>cao |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                 |
|                | (ii)   | statement | C1<br>for statement                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                 |
|                |        |           | <p><b>Acceptable examples</b><br/> sample is representative (otherwise answer wrong)<br/> random sample (otherwise answer will be different)<br/> the 30 students are from the 195 (otherwise not accurate)<br/> 10 out of every 30 want to go to the Theme Park (otherwise answer will be different/wrong)<br/> there is no bias</p> <p><b>Not acceptable examples</b><br/> There would be more than 10 people who want to go to the Theme Park<br/> I rounded my answer</p> |                                                 |
| 23             |        | 8         | P1<br>for working with volume of the cuboid, eg $30 \times 6 \times 19 (= 3420)$<br><b>OR</b> for using $\frac{2}{3}$ with one dimension, eg. $30 \times 2 \div 3 (= 20)$                                                                                                                                                                                                                                                                                                     | For P marks, ignore attempts at unit conversion |
|                |        |           | P1<br>for “3420” $\times 2 \div 3 (= 2280)$ or “3420” $\div 3 (= 1140)$<br><b>OR</b> “20” $\times 6 \times 19 (= 2280)$<br><b>OR</b> “3420” $\div 275 (= 12.4..... = 12 \text{ cups})$                                                                                                                                                                                                                                                                                        |                                                 |
|                |        |           | P1<br>(dep on P2) for “2280” $\div 275 (= 8.29..)$ <b>or</b> “1140” $\div 275 (= 4.14..)$<br><b>OR</b> “12” $\times 2 \div 3$<br><b>OR</b> for $275 \times 8 (= 2200)$ <b>or</b> $275 \times 9 (= 2475)$                                                                                                                                                                                                                                                                      |                                                 |
|                |        | A1<br>cao |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                 |

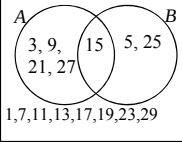


| Paper: 1MA1/2F |           |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                  |
|----------------|-----------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Question       | Answer    | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Additional guidance              |
| 23             | 18        | P1   | for $240 \div 10$ (= 24) <b>or</b> $240 \div 8$ (= 30)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Accept 3 + 7 for 10, 3 + 5 for 8 |
|                |           | P1   | for $3 \times "24"$ (= 72) <b>or</b> $7 \times "24"$ (= 168) <b>or</b> $3 \times "30"$ (= 90) <b>or</b> $5 \times "30"$ (= 150)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                  |
|                |           | P1   | for $3 \times "24"$ (= 72) <b>and</b> $3 \times "30"$ (= 90) <b>or</b> $7 \times "24"$ (= 168) <b>and</b> $5 \times "30"$ (= 150)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                  |
|                |           | A1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                  |
| 24 (i)         | 238       | P1   | for working with proportion eg $\frac{17}{50} \times 700$ oe                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                  |
|                |           | A1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                  |
| (ii)           | statement | C1   | for statement<br><b>Acceptable</b><br>Sample is representative (otherwise answer wrong)<br>Random sample (otherwise answer will be different)<br>The 50 people are from the 700 (otherwise not accurate)<br>17 out of <b>every</b> 50 want a sports bag (otherwise answer will be different / wrong)<br>There is no bias<br>That the other 650 will want the same gifts as the 50<br><br><b>Not acceptable</b><br>There would be more than 17 people who want the sports bag<br>I rounded my answer<br>17 out of 50 want a sports bag<br>A repeat of the calculation done in (i)<br>Most of the people would want a sports bag<br>References as what might change in the future (eg a change in membership)<br>That all 700 people wanted a type of gift rather than no gift (otherwise would have changed my answer) |                                  |



| Paper: 1MA1/2F |                                       |           |                                                                                                                                         |                                      |
|----------------|---------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Question       | Answer                                | Mark      | Mark scheme                                                                                                                             | Additional guidance                  |
| 1              | 1480                                  | B1        | cao                                                                                                                                     |                                      |
| 2              | $\frac{7}{10}$                        | B1        | oe fraction                                                                                                                             |                                      |
| 3              | 3                                     | B1        | cao                                                                                                                                     |                                      |
| 4              | Suitable number<br>eg 725             | B1        | for a suitable 3 digit number ending in 0 or 5                                                                                          |                                      |
| 5              | 40                                    | B1        | cao                                                                                                                                     |                                      |
| 6              | -11, -7, -2, 3, 8,<br>10              | B1        | for -11, -7, -2, 3, 8, 10                                                                                                               | Accept reverse order                 |
| 7              | (a) Hexagon                           | B1        | accept irregular hexagon                                                                                                                | Accept unambiguous misspellings      |
|                | (b) $AF$                              | B1        | cao Accept $FA$                                                                                                                         |                                      |
|                | (c) $AB$ or $EF$                      | B1        | $AB$ or $EF$ . Accept $BA$ or $FE$ or both                                                                                              |                                      |
| 8              | (a) 3, 2                              | B1        | cao                                                                                                                                     | Allow reasonable hand-drawn attempts |
|                | (b) Point at $(-4, 3)$                | B1        | cao                                                                                                                                     |                                      |
|                | (c) Circle drawn,<br>centre $(1, -1)$ | B2<br>(B1 | fully correct diagram<br><br>circle drawn with radius 4 cm (any centre) <b>or</b> circle drawn using<br>centre $(1, -1)$ $r \neq 4$ cm) |                                      |

| Paper: 1MA1/1F |             |                        |                                                                                                                                                                                                                     |                                                                                                                                                                          |
|----------------|-------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer      | Mark                   | Mark scheme                                                                                                                                                                                                         | Additional guidance                                                                                                                                                      |
| 1              | 6           | B1                     | cao                                                                                                                                                                                                                 |                                                                                                                                                                          |
| 2              | 31          | B1                     | cao                                                                                                                                                                                                                 |                                                                                                                                                                          |
| 3              | 12 <i>a</i> | B1                     |                                                                                                                                                                                                                     |                                                                                                                                                                          |
| 4              | 40          | B1                     | accept answer in the range 38 to 42                                                                                                                                                                                 |                                                                                                                                                                          |
| 5              | 60          | B1                     | cao                                                                                                                                                                                                                 |                                                                                                                                                                          |
| 6              | 2300        | P1<br><br>P1<br><br>A1 | for converting to millilitres or litres<br>eg $3 \times 1000 (= 3000)$ <b>or</b> $700 \div 1000 (= 0.7)$<br><br>for finding the difference eg $[3000] - 700$ <b>or</b> $3 - [0.7] (= 2.3)$<br><br>accept 2.3 litres | Process marks may be awarded in either order<br><br>[3000] comes from $3 \times 1000$ or can be 30 or 300 or 30000<br>[0.7] comes from $700 \div 1000$ or can be 7 or 70 |
| 7 (a)          | 15          | B1                     | cao                                                                                                                                                                                                                 |                                                                                                                                                                          |
| (b)            | 4           | B1                     | cao                                                                                                                                                                                                                 |                                                                                                                                                                          |

| Paper: 1MA1/3F |                                                                                    |                                |                      |                                                                                                                                                                                                                                                                                                                                  |
|----------------|------------------------------------------------------------------------------------|--------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working                                                                            | Answer                         | Mark                 | Notes                                                                                                                                                                                                                                                                                                                            |
| 15 (a)         |  | Venn Diagram                   | B1<br>M1<br>M1<br>C1 | for labels on diagram<br>for just 15 in the intersection<br>for just 5 and 25 in only set B or just 3, 9, 21 and 27 in only set A or just 1, 7, 11, 13, 17, 19, 23, 29 in $(A \cup B)'$<br>for all numbers correctly placed in the Venn Diagram<br><br>Ignore all entries except the region you are marking for each method mark |
| (b)            |                                                                                    | $\frac{7}{15}$                 | P1<br>A1             | ft for $\frac{7}{a}$ where $a \geq 7$ or $\frac{b}{15}$ where $b \leq 15$<br>oe                                                                                                                                                                                                                                                  |
| 16             |                                                                                    | $x = -\frac{2}{3}$<br>$y = -2$ | M1<br>M1<br>A1       | for a method to eliminate one variable (condone one arithmetic error)<br>(dep) for substituting found value in one of the equations or appropriate method after starting again (condone one arithmetic error)<br>$x = -\frac{2}{3}$ oe and $y = -2$                                                                              |
| 17 (a)         |                                                                                    | 12                             | B1                   | cao                                                                                                                                                                                                                                                                                                                              |
| (b)            |                                                                                    | Explanation                    | C1                   | No with statement about not being mutually exclusive events eg a person could be in both categories                                                                                                                                                                                                                              |

| Paper 1MA1: 1F |                                |                              |                    |                                                                                                                                                                                           |
|----------------|--------------------------------|------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working                        | Answer                       | Mark               | Notes                                                                                                                                                                                     |
| 8              |                                | $4 \times 8$ rectangle drawn | M1<br>A1           | Draws a rectangle with side lengths in the ratio 2:1 <b>or</b> lists possible dimensions in the ratio 2:1 <b>or</b> gives two numbers which multiply to 32<br>for correct diagram on grid |
| 9              |                                | Identifies error in method   | C1                 | Explanation of error eg she should have multiplied 348 by 2 not divided                                                                                                                   |
| 10 (a)         |                                | Jake with reason             | C1                 | Explanation referring to spread eg range <b>or</b> Jakes figures are closer together <b>or</b> highest and lowest values for both.                                                        |
| (b)            |                                | Reason                       | C1                 | Reason eg stem not used or it should be 26                                                                                                                                                |
| 11 (a)         | $30 \div 8$                    | 4                            | P1<br>A1           | for $30 \div 8$ <b>or</b> 3.75 <b>or</b> 3 <b>or</b> counting up 8s towards 30 to at least 3 lots of 8 <b>or</b> $4 \times 8 (=32)$ oe<br>cao                                             |
| (b)            |                                | No with reason               | C1                 | No with $32 \div 8$ <b>or</b> ft from (a)                                                                                                                                                 |
| 12 (a)         | 12 7 19<br>18 8 26<br>30 15 45 | Correct table                | B3<br>(B2)<br>(B1) | Fully correct table<br>for 5, 6, 7 or 8 figures correct<br>for given values entered correctly in the table <b>or</b> for a correct row <b>or</b> column)                                  |
| (b)            |                                | $\frac{8}{45}$               | B1                 | for $\frac{8}{45}$ <b>or</b> ft from values in table eg $\frac{8}{45}$                                                                                                                    |

| Paper: 1MA1/1F |             |      |                                                                                                                                                                                                                                                                                                                                                           |                                                                                            |
|----------------|-------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Question       | Answer      | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                               | Additional guidance                                                                        |
| 16 (a)         | Explanation | C1   | for explanation<br><br><b>Acceptable examples</b><br>the number of points only goes up to 4<br>because the median is 2<br>no-one scored 5 points (implies number of points scored was less than 5)<br><br><b>Not acceptable examples</b><br>she was right since 5 is the middle number<br>she has used the wrong column (insufficient)<br>the median is 3 | Explanations must relate to median number of points and not median of the frequency values |
| (b)            | Explanation | C1   | for explanation identifying the error in the working<br><br><b>Acceptable examples</b><br>$0 \times 1 = 0$ or $0 \times 1$ is not 1<br>Anything times zero is zero<br><br><b>Not acceptable examples</b><br>the correct answer is 37                                                                                                                      |                                                                                            |

| Paper: 1MA1/1F |        |      |                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                 |
|----------------|--------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| Question       | Answer | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                              | Additional guidance             |
| 11 (a)         | 248    | P1   | for 700 – 452                                                                                                                                                                                                                                                                                                                                                                                                                            |                                 |
|                |        | A1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                 |
|                | 11000  | P1   | for evidence of rounding values to 1 significant figure,<br>eg 300 <b>or</b> 400 <b>or</b> 10 <b>or</b> 9 <b>or</b> 20                                                                                                                                                                                                                                                                                                                   |                                 |
|                |        | P1   | (dep on P1) for beginning a process to work with ticket sales,<br>eg. $300 \times 10 (= 3000)$ or $290 \times 10 (= 2900)$ or $297 \times 10 (= 2970)$<br>or $300 \times 9 (= 2700)$ or $300 \times 9.5 (= 2850)$<br>or $290 \times 9 (= 2610)$ or $297 \times 9 (= 2673)$<br><b>OR</b><br>$400 \times 20 (= 8000)$ or $390 \times 20 (= 7800)$ or $399 \times 20 (= 7980)$<br>or $400 \times 19.5 (= 7800)$ or $400 \times 19 (= 7600)$ |                                 |
|                |        | A1   | for using <b>correct</b> values giving an answer in the range 10 200 to 11 000 from calculations using their rounded values                                                                                                                                                                                                                                                                                                              |                                 |
|                |        | C1   | (dep on P2 in (b)) for overestimate and reason, eg (ft from (b)) true total amount of money paid will be less as all values were rounded up                                                                                                                                                                                                                                                                                              |                                 |
| 12             | 7      | M1   | for $(13 + 4 + 5 + 9 + 3 + 8) \div 6$ or “42” $\div 6$                                                                                                                                                                                                                                                                                                                                                                                   | Condone missing brackets for M1 |
|                |        | A1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                 |



| Paper: 1MA1/3F |                                       |      |                                                                                     |                                                                                                                    |
|----------------|---------------------------------------|------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                | Mark | Mark scheme                                                                         | Additional guidance                                                                                                |
| 1              | $\frac{23}{100}$                      | B1   | oe                                                                                  |                                                                                                                    |
| 2              | 8                                     | B1   | cao                                                                                 |                                                                                                                    |
| 3              | tens or 30                            | B1   | for (3) tens <b>or</b> 30 <b>or</b> thirty                                          | Condone incorrect spelling provided the intention is clear                                                         |
| 4              | 3a                                    | B1   | for 3a                                                                              | Allow a3                                                                                                           |
| 5              | $\frac{1}{4} \frac{1}{2} \frac{2}{3}$ | B1   | for correct order                                                                   | Accept any form<br>Accept 0.6 or 0.66 or 0.67 or 0.7<br>or 60% or 66% or 67% or 70%<br>or better for $\frac{2}{3}$ |
| 6 (a)          | 32                                    | P1   | for process to find length, eg $8 \times 4$                                         | Must include correct units                                                                                         |
|                |                                       | A1   | cao                                                                                 |                                                                                                                    |
| (b)            | 2.5 cm                                | P1   | for process to find length, eg $10 \div 4 (= 2.5)$ oe eg $1 + 1 + 1 \div 2 (= 2.5)$ |                                                                                                                    |
|                |                                       | A1   | for 2.5 cm oe eg 25 mm, 0.025 m                                                     |                                                                                                                    |
| 7 (a)          | Bus                                   | B1   | cao                                                                                 |                                                                                                                    |
| (b)            | 5                                     | B1   | cao                                                                                 |                                                                                                                    |

| Paper: 1MA1/3F |         |                                                                                          |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------|---------|------------------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer                                                                                   | Mark       | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 18 (a)         |         | $3n + 1$                                                                                 | M1         | for a method to deduce the $n$ th term, eg. $3n + k$ , where $k$ is an integer or $k$ is omitted or for $n = 3n + 1$                                                                                                                                                                                                                                                                                                                                                   |
|                |         |                                                                                          | A1         | for $3n + 1$ oe (accept $n$ replaced by another letter)                                                                                                                                                                                                                                                                                                                                                                                                                |
| (b)            |         | No (supported)                                                                           | C1         | for using (their expression in (a)) = 90 or shows that 88 or 91 is in the sequence                                                                                                                                                                                                                                                                                                                                                                                     |
|                |         |                                                                                          | C1         | for an answer of "No" and a convincing argument eg. pattern number 30 has 91 counters or $(90 - 1) \div 3 (= 29.66\dots)$ or shows that the next term after 88 is 91<br>Note: no fit from (a)                                                                                                                                                                                                                                                                          |
| 19 (a)         |         | $160 < h \leq 170$                                                                       | B1         | correct class interval                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| (b)            |         | Line segments joining the points (135, 4), (145, 11), (155, 24), (165, 22) and (175, 19) | C2<br>[C1] | for fully correct frequency polygon for points plotted correctly at midpoints of intervals<br>OR joining points with line segments at the correct heights and consistent within the intervals (including end values)<br>OR correct frequency polygon with one point incorrect<br>OR correct frequency polygon with first and last point joined]<br><br>NB: ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted |

| Paper: 1MA1/2F |        |                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                        |
|----------------|--------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer | Mark                                                   | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Additional guidance                                                                                                                                                                                                                                    |
| 16             | 5      | P1<br><br>P1<br><br>A1                                 | for start to process<br>eg $7 \times 20 (= 140)$ <b>and</b> $3 \times 21 (= 63)$ <b>or</b><br>$(7 \times 20) + (3 \times 21) + 22 (= 225)$<br><br>for a complete process to find the missing frequency<br>eg $(320 - "225") \div 19$ <b>or</b> $320 - "225" = (95)$ <b>and</b> $"95" \div 19$<br><br>cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | May be written near table<br>$7 \times 20 (= 140)$ <b>and</b> $3 \times 21 (= 63)$<br>minimum requirement for P1<br><br>May be seen as two calculations<br><br>Please check the table.<br>Correct answer in the table without<br>working award 3 marks |
| 17             | 90     | P1<br><br><br><br><br><br><br><br><br><br>P1<br><br>A1 | for a process to find the number of batches for at least 2 ingredients,<br>eg $900 \div 225 (= 4)$ <b>or</b> $1000 \div 110 (= 9.09..)$ <b>or</b><br>$1000 \div 275 (= 3.6....)$ <b>or</b> $225 \div 75 (= 3)$<br><b>OR</b> A full method to find the maximum number of biscuits for 1<br>ingredient eg $900 \div 225 \times 30$<br><b>OR</b> Amount required for 1 biscuit for at least 2 ingredients<br>eg $225 \div 30 (= 7.5)$ <b>or</b> $110 \div 30 (= 3.6..)$ <b>or</b> $275 \div 30 (= 9.1..)$ <b>or</b> $75 \div 30$<br>$(= 2.5)$<br><b>OR</b> Amount required for 3 batches for at least 2 ingredients<br>eg $225 \times 3 (= 675)$ <b>or</b> $110 \times 3 (= 330)$ <b>or</b> $275 \times 3 (= 825)$ <b>or</b><br>$75 \times 3 (= 225)$<br><br>P1 (dep P1) for a complete process to find the maximum number of biscuits<br>after considering at least 3 different ingredients<br>eg $"3" \times 30$<br><br>A1 (dep P2) cao from fully correct working | <br><br><br><br><br><br><br><br><br><br>They must use their smallest multiplier<br>after considering at least 3 different<br>ingredients<br><br>90 without working award no marks                                                                      |

| Paper: 1MA1/3F |                     |                        |                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                             |
|----------------|---------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer              | Mark                   | Mark scheme                                                                                                                                                                                                                                                                                                                        | Additional guidance                                                                                                                                                                                                                         |
| 18 (a)         | 2                   | B1                     | cao                                                                                                                                                                                                                                                                                                                                | Check working space or next to the table.<br>Zero points may not be seen so accept without $0 \times 4, 0$                                                                                                                                  |
|                | (b) 81              | M1<br><br>A1           | for working with values from the table eg $(0 \times 4), (1 \times 3), \dots$ with at least 3 products shown correct<br><b>or</b><br>$(0 +), 3, 14, 15, 24, 25$ with at least 3 correct<br><br>cao<br>SC B1 for 85                                                                                                                 |                                                                                                                                                                                                                                             |
| 19             | $x = \frac{y-4}{2}$ | M1<br><br>A1           | for correct first step to rearrange eg $y-4 = 2x+4-4$<br>or $\frac{y}{2} = \frac{2x+4}{2}$ or ambiguously shown eg $x = y-4 \div 2$<br>or answer given as $\frac{y-4}{2}$<br><br>oe                                                                                                                                                | May be seen in different equivalent forms but must be carried out, not just intention seen.<br>Could be shown as a flow diagram but must have correct inverse operations                                                                    |
| 20             | 105                 | M1<br><br>A1           | for evidence of understanding the angle properties of a square or equilateral triangle,<br>eg stating angle $DBC = 60$ or angle $EBD = 45$ or angle $BAE = 90$<br><br>cao                                                                                                                                                          | Accept on the diagram with no contradiction in working, or no contradiction or ambiguity on the diagram; 90 can be shown as a right angle<br><br>Could be shown on the diagram or in working, but do not accept contradiction or ambiguity. |
| 21             | 78                  | P1<br><br>P1<br><br>A1 | for process to find the number of rand, eg $850 \times 18.53 (= 15750.5)$<br><b>OR</b> for process to find number of £, eg $200 \div 18.53 (= 10.79 \dots)$<br><br>(dep P1) for process to find the number of rand notes,<br>eg “ $15750.5 \div 200 (= 78.7\dots)$ ”<br><b>OR</b> $850 \div “10.79\dots” (= 78.7\dots)$<br><br>cao |                                                                                                                                                                                                                                             |

| Paper: 1MA1/3F |                                                                                       |                      |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                        |
|----------------|---------------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                                                                | Mark                 | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                       | Additional guidance                                                                                                                                                                                                    |
| 26 (a)         | $40 < h \leq 50$                                                                      | B1                   | accept 40 – 50 oe                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                        |
| (b)            | <p>polygon drawn</p> <p>(15,7), (25,13)<br/>(35,14), (45,12)<br/>(55,16), (65,18)</p> | <p>B2</p> <p>(B1</p> | <p>for fully correct polygon with points plotted at the midpoints</p> <p>for points plotted correctly but not joined by straight lines<br/> <b>or</b> joining points at correct heights consistently within intervals including plotting at end values<br/> <b>or</b> correct frequency polygon with one point incorrect<br/> <b>or</b> correct frequency polygon with first and last points joined directly)</p> | <p>Joining must be with line segments</p> <p>for example, at 10, 20, 30,...or at 20, 30, 40,...</p> <p>Ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted</p> |

| Paper: 1MA1/1F |                   |      |                                                                                                                                                                                                                         |                                                                                                                                                                                                                                    |
|----------------|-------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer            | Mark | Mark scheme                                                                                                                                                                                                             | Additional guidance                                                                                                                                                                                                                |
| 24             | 93                | M1   | for method to find angle $ACB$ , eg $180 - 75 - 51 (= 54)$                                                                                                                                                              | Angles may be shown on diagram but must not be ambiguous<br>eg. M0 for angle of $54^\circ$ shown in the wrong place                                                                                                                |
|                |                   | M1   | (dep M1) for method to use the ratio, eg $"54" \div (2 + 1) (= 18)$                                                                                                                                                     |                                                                                                                                                                                                                                    |
|                |                   | M1   | for complete method, eg $180 - 51 - "18" \times 2$ or $75 + "18"$ oe                                                                                                                                                    |                                                                                                                                                                                                                                    |
|                |                   | A1   | cao                                                                                                                                                                                                                     |                                                                                                                                                                                                                                    |
| 25             | No<br>(supported) | P1   | for process to find total weight of the 4 red bricks, eg. $5 \times 4 (= 20)$<br><b>or</b><br>for process to find total weight of the 5 blue bricks, eg. $9 \times 5 (= 45)$                                            | May be seen next to statements<br>20 must be clearly referenced to the red bricks.<br>$5 + 9 + 6 = 20$ scores no marks<br><br>Candidates working in grams will need to give<br>7100 and 7000 for example as comparable<br>figures. |
|                |                   | P1   | for process to find total weight of all 10 bricks,<br>eg. $"20" + "45" + 6 (= 71)$                                                                                                                                      |                                                                                                                                                                                                                                    |
|                |                   | C1   | No with correct supporting evidence<br><b>Acceptable examples</b><br>No, it is 7.1<br>She is wrong, it is 0.1 more<br>No, (the total weight is) 71 not 70<br><b>Not acceptable examples</b><br>Yes ....<br>No, it is 71 |                                                                                                                                                                                                                                    |



| Paper: 1MA1/3F |                                                                                                                                                                                                                                                                                         |                                                                                                       |                                                                                                                                                                                                                              |                                                                                                                                                                                                                             |                |                |   |    |    |    |     |     |     |     |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|---|----|----|----|-----|-----|-----|-----|
| Question       | Answer                                                                                                                                                                                                                                                                                  | Mark                                                                                                  | Mark scheme                                                                                                                                                                                                                  | Additional guidance                                                                                                                                                                                                         |                |                |   |    |    |    |     |     |     |     |
| 25             | 18.6                                                                                                                                                                                                                                                                                    | M1                                                                                                    | for finding 4 products within intervals (including end points)                                                                                                                                                               | <table><tr><td>Min <math>\bar{fx}</math></td><td>Max <math>\bar{fx}</math></td></tr><tr><td>5</td><td>10</td></tr><tr><td>20</td><td>30</td></tr><tr><td>105</td><td>140</td></tr><tr><td>160</td><td>200</td></tr></table> | Min $\bar{fx}$ | Max $\bar{fx}$ | 5 | 10 | 20 | 30 | 105 | 140 | 160 | 200 |
|                |                                                                                                                                                                                                                                                                                         | Min $\bar{fx}$                                                                                        | Max $\bar{fx}$                                                                                                                                                                                                               |                                                                                                                                                                                                                             |                |                |   |    |    |    |     |     |     |     |
|                |                                                                                                                                                                                                                                                                                         | 5                                                                                                     | 10                                                                                                                                                                                                                           |                                                                                                                                                                                                                             |                |                |   |    |    |    |     |     |     |     |
| 20             | 30                                                                                                                                                                                                                                                                                      |                                                                                                       |                                                                                                                                                                                                                              |                                                                                                                                                                                                                             |                |                |   |    |    |    |     |     |     |     |
| 105            | 140                                                                                                                                                                                                                                                                                     |                                                                                                       |                                                                                                                                                                                                                              |                                                                                                                                                                                                                             |                |                |   |    |    |    |     |     |     |     |
| 160            | 200                                                                                                                                                                                                                                                                                     |                                                                                                       |                                                                                                                                                                                                                              |                                                                                                                                                                                                                             |                |                |   |    |    |    |     |     |     |     |
| M1             | for $\Sigma \bar{fx} \div (1 + 2 + 7 + 8)$<br><b>or</b> $(7.5 \times 1 + 12.5 \times 2 + 17.5 \times 7 + 22.5 \times 8) \div (1 + 2 + 7 + 8)$<br><b>or</b> $(\text{"7.5"} + \text{"25"} + \text{"122.5"} + \text{"180"}) \div \text{"18"}$<br><b>or</b> $\text{"335"} \div \text{"18"}$ | $\Sigma \bar{fx}$ <b>must</b> come from 4 products $\bar{fx}$ within intervals (including end points) |                                                                                                                                                                                                                              |                                                                                                                                                                                                                             |                |                |   |    |    |    |     |     |     |     |
| A1             | for 18.6(111...)                                                                                                                                                                                                                                                                        |                                                                                                       |                                                                                                                                                                                                                              |                                                                                                                                                                                                                             |                |                |   |    |    |    |     |     |     |     |
| 26             | 37 000                                                                                                                                                                                                                                                                                  | B1                                                                                                    | cao                                                                                                                                                                                                                          |                                                                                                                                                                                                                             |                |                |   |    |    |    |     |     |     |     |
| 27             | 50                                                                                                                                                                                                                                                                                      | B1                                                                                                    | for finding the time difference, eg, 1hr 18 mins or 78 mins oe                                                                                                                                                               | Allow 1.18 for this mark<br>118 scores B0                                                                                                                                                                                   |                |                |   |    |    |    |     |     |     |     |
|                |                                                                                                                                                                                                                                                                                         | P1                                                                                                    | for correct process to convert minutes to hours,<br>eg $18 \div 60 (=0.3)$ <b>or</b> $78 \div 60 (=1.3)$<br><b>or</b> for a correct process to convert speed in miles per minute to mph<br>eg $\text{"0.833..." } \times 60$ | For a conversion of time or speed                                                                                                                                                                                           |                |                |   |    |    |    |     |     |     |     |
|                |                                                                                                                                                                                                                                                                                         | P1                                                                                                    | for using speed = distance $\div$ time eg, $65 \div [\text{time}]$<br><b>or</b> $65 \div 78 (=0.833...)$                                                                                                                     | [time] is what the candidate clearly indicates as time difference                                                                                                                                                           |                |                |   |    |    |    |     |     |     |     |
|                |                                                                                                                                                                                                                                                                                         | A1                                                                                                    | cao<br><br>SCB2 for 83(.333...) seen as the answer                                                                                                                                                                           |                                                                                                                                                                                                                             |                |                |   |    |    |    |     |     |     |     |

| Paper: 1MA1/2F |                              |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                  |
|----------------|------------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                       | Mark                                       | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Additional guidance                                                                                                                                                                                                                                                              |
| 17             | 7<br>22 15<br><br>38 29<br>9 | C1<br><br>M1<br><br>M1<br><br>M1<br><br>A1 | for correctly placing one of the given values in the diagram eg 38 women or 15 men email<br><br>for 60 – 38 (=22) <b>or</b> 22 (men) correctly placed in the diagram <b>or</b> 60 – 38 – 15 (=7) <b>or</b> 7 (men texting) correctly placed in the diagram<br><br>for a method to find 60% of 60, eg. $60 \times 0.6$ (= 36)<br><br>for calculating with 60% of 60 eg “36” – (“22” – 15) (= 29) <b>or</b> “36” – “7” (=29) <b>or</b> (60 – “36”) – 15 (= 9)<br><br>for a fully correct frequency diagram | May be implied by the total number of texts in the frequency diagram being 36<br>9 or 29 on the diagram (women branch) gets the two M marks for finding and calculating with 60% of 60<br>If probabilities used instead of frequencies then maximum of C1M1M1M1A0 can be awarded |
| 18             | 13                           | P1<br><br>P1<br><br>A1                     | for at least two of $3 \times 5$ (=15) or $2.5 \times 8$ (=20) or $1.5 \times 14$ (=21) or $1 \times 10$ (=10) <b>or</b> for $3 \times 5 + 2.5 \times 8 + 1.5 \times 14 + 1 \times 10$ (=66)<br><br>for process to find length of all 2m planks, eg. $92 - (3 \times 5 + 2.5 \times 8 + 1.5 \times 14 + 1 \times 10)$ (= 26) or $92 - “15” - “20” - “21” - “10”$ (= 26)<br><br>cao                                                                                                                       | Note 66 on its own will score this mark<br><br>If no calculations are seen for products allow one error in “15”, “20”, “21”, “10”<br><br>13 in the correct place in the table should be accepted as the final answer                                                             |
| 19             | No (supported)               | P1<br><br>P1<br><br>P1<br><br>C1           | for a process to find Rachel’s share, eg. $600 \div 5 \times 2$ (= 240)<br><br>for process to find Samina’s share eg. $(600 - “240”) \div 4$ (= 90)<br><br>for a process to find either of Tom’s share, eg. $600 - “240” - “90”$ (= 270) <b>or</b> $3 \times “90”$ (=270) <b>or</b> $600 \div 3$ (= 200) for comparison purposes<br><br>for “No” and accurate figures eg. 270 and 200 <b>or</b> 270 and 70 (difference)                                                                                  | Note This mark, if awarded for 200, may be the only mark awarded<br><br>“No” may be implied by a statement<br>Answer only with no working, no marks                                                                                                                              |



| Paper: 1MA1/2F |        |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                            |
|----------------|--------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer | Mark                                       | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Additional guidance                                                                                                                                        |
| 18             | 13.2   | P1<br><br>P1<br><br>A1                     | <p>process to convert decimal time, eg <math>25.3 \times 60 (= 1518)</math> or <math>0.3 \times 60 (= 18)</math></p> <p><b>OR</b></p> <p>process to work with mean, eg <math>[\text{time}] \div 115 (= 0.22)</math> or <math>1 \div (115 \div [\text{time}]) (= 0.22)</math></p> <p>full process to work out mean time allocated for appointment, eg “1518” <math>\div 115</math> or “0.22” <math>\times 60</math></p> <p>cao</p>                                                                                                                                                                                                                                                                                                                                                                                                       | [time] could be 25.3 or any other time that has been incorrectly changed from 25.3 hours                                                                   |
| 19             | 1.19   | P1<br><br>P1<br><br>P1<br><br>P1<br><br>A1 | <p>process to find number of small bags that can be filled, eg <math>[3\text{kg}] \div 150 (= 20)</math> oe</p> <p>for starting a process to work with percentage for cost of box, eg <math>17.60 \times \frac{35}{100} (= 6.16)</math> <b>or</b> <math>100 + 35 (= 135)</math></p> <p>for full process to work with percentage increase, eg <math>17.60 \times \frac{135}{100} (= 23.76)</math></p> <p>full process to find selling price for small bag, eg “23.76” <math>\div</math> “20” (= 1.188)</p> <p>cao</p> <p>works with starting cost per small bag, <math>17.60 \div</math> “20”</p> <p>begins process to work with percentage for a small bag, eg “0.88” <math>\times \frac{35}{100} (= 0.308)</math></p> <p>full process to find selling price for small bag, “0.88” <math>\times \frac{135}{100} (= 1.188)</math> oe</p> | <p>[3kg] must be 3 and zeros only eg 300</p> <p>Build up methods are allowed to imply process</p> <p>Cost per small bag given as £0.88 will imply P1P1</p> |

| Paper: 1MA1/2F |             |                            |                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                              |          |          |      |      |      |      |      |      |      |      |     |     |
|----------------|-------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|------|------|------|------|------|------|------|------|-----|-----|
| Question       | Answer      | Mark                       | Mark scheme                                                                                                                                                                                                                                                                                                                                                                | Additional guidance                                                                                                                                                                                                                                                                                                                                          |          |          |      |      |      |      |      |      |      |      |     |     |
| 16             | 2           | P1<br><br>P1<br><br>A1     | for a calculation from within the list $4 \times 12 \div 4 \div 6$ eg $4 \times 12 (= 48)$ or $12 \div 4 (= 3)$ or $6 \div 4 (= 1.5)$ or $4 \div 6 (= 0.66\ldots)$<br><br>for a complete process, eg $(“48” \div 6) \div 4$ <b>or</b> for $“0.6” \times 12 \div 4$<br><br>cao                                                                                              | Accept $12 \div 6$ as a full process                                                                                                                                                                                                                                                                                                                         |          |          |      |      |      |      |      |      |      |      |     |     |
| 17             | 176         | M1<br><br><br>M1<br><br>A1 | for a method to find 5 products within intervals (including end points)<br><br><br>for $\Sigma “fx” \div (8 + 14 + 24 + 30 + 4)$<br><b>or</b> $(155 \times 8 + 165 \times 14 + 175 \times 24 + 185 \times 30 + 195 \times 4) \div (8 + 14 + 24 + 30 + 4)$<br><b>or</b> $(“1240” + “2310” + “4200” + “5550” + “780”) \div “80”$<br><b>or</b> $“14080” \div “80”$<br><br>cao | <table><tr><th>Min <math>fx</math></th><th>Max <math>fx</math></th></tr><tr><td>1200</td><td>1280</td></tr><tr><td>2240</td><td>2380</td></tr><tr><td>4080</td><td>4320</td></tr><tr><td>5400</td><td>5700</td></tr><tr><td>760</td><td>800</td></tr></table><br>$\Sigma “fx”$ <b>must</b> come from 5 products $fx$ within intervals (including end points) | Min $fx$ | Max $fx$ | 1200 | 1280 | 2240 | 2380 | 4080 | 4320 | 5400 | 5700 | 760 | 800 |
| Min $fx$       | Max $fx$    |                            |                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                              |          |          |      |      |      |      |      |      |      |      |     |     |
| 1200           | 1280        |                            |                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                              |          |          |      |      |      |      |      |      |      |      |     |     |
| 2240           | 2380        |                            |                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                              |          |          |      |      |      |      |      |      |      |      |     |     |
| 4080           | 4320        |                            |                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                              |          |          |      |      |      |      |      |      |      |      |     |     |
| 5400           | 5700        |                            |                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                              |          |          |      |      |      |      |      |      |      |      |     |     |
| 760            | 800         |                            |                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                              |          |          |      |      |      |      |      |      |      |      |     |     |
| 18 (a)         | (2, 1)      | B1                         | cao                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                              |          |          |      |      |      |      |      |      |      |      |     |     |
| (b)            | Description | C1                         | correct description, eg as the amount of rainfall decreases the number of hours of sunshine increases                                                                                                                                                                                                                                                                      | Accept negative correlation<br>Ignore any comment about strength<br>Any numbers used in the description must be within tolerance                                                                                                                                                                                                                             |          |          |      |      |      |      |      |      |      |      |     |     |
| (c)            | 3 to 4      | M1<br><br>A1               | for a suitable line of best fit drawn, <b>or</b> for a point marked at $(x, 7)$ , <b>or</b> a horizontal line drawn from 7 across to $(x, 7)$ where $x$ is in the range 2.5 to 4<br><br>answer in the range 3 to 4                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                              |          |          |      |      |      |      |      |      |      |      |     |     |



| Paper: 1MA1/3F |            |      |                                                                                                                                                                                                                                                                                                               |                                                              |
|----------------|------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Question       | Answer     | Mark | Mark scheme                                                                                                                                                                                                                                                                                                   | Additional guidance                                          |
| 26 (a)         | 0.7        | B1   | for 0.7 on the first branch                                                                                                                                                                                                                                                                                   | Accept equivalent fractions or percentages for probabilities |
|                | 0.65, 0.65 | B1   | for 0.65, 0.65 on the second branches                                                                                                                                                                                                                                                                         |                                                              |
|                | (b) 0.105  | M1   | for $0.3 \times 0.35$                                                                                                                                                                                                                                                                                         |                                                              |
|                |            | A1   | oe                                                                                                                                                                                                                                                                                                            |                                                              |
| 27 (a)         | 0.008      | B1   | for 0.008 or $8 \times 10^{-3}$                                                                                                                                                                                                                                                                               | May be awarded at any stage                                  |
|                | (b) 50     | M1   | for conversion from km to m eg $180 \times 1000 (= 180\,000)$<br>or<br>for conversion from hours to seconds eg $180 \div (60 \times 60) (= 0.05)$<br>or<br>for conversion from km per hour to metres per second,<br>eg $1000 \div (60 \times 60) (= 0.277\dots)$ (Accept $(60 \times 60) \div 1000 (= 3.6)$ ) |                                                              |
|                |            | M1   | for a complete process eg $180 \times 1000 \div 3600$                                                                                                                                                                                                                                                         |                                                              |
|                |            | A1   | cao                                                                                                                                                                                                                                                                                                           |                                                              |
| 28             | 158        | P1   | for a first step in the process<br>eg $50 \times 167.6 (=8380)$ or $20 \times 182 (=3640)$                                                                                                                                                                                                                    |                                                              |
|                |            | P1   | for a complete process eg $(50 \times 167.6 - 20 \times 182) \div 30$ or $\frac{8380 - 3640}{30}$<br>or $4740 \div 30$                                                                                                                                                                                        |                                                              |
|                |            | A1   | cao                                                                                                                                                                                                                                                                                                           |                                                              |



| Paper: 1MA1/2F |        |      |                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                   |
|----------------|--------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer | Mark | Mark scheme                                                                                                                                                                                                                                                                                                 | Additional guidance                                                                                                                                                                               |
| 9 (a)          | 28     | B1   | cao                                                                                                                                                                                                                                                                                                         | Accept 4 : 9 in the form 1 : n,<br>eg 1 : 2.25                                                                                                                                                    |
| 9 (b)          | 4 : 9  | M1   | for 8 : 18 or for any ratio equivalent to 4 : 9<br>or 9 : 4 or 2.25 : 1                                                                                                                                                                                                                                     |                                                                                                                                                                                                   |
|                |        | A1   | for 4 : 9                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                   |
| 10 (a)         | 6      | B1   | cao                                                                                                                                                                                                                                                                                                         | May be seen on graph<br><br>8, 9, 10, 11, 12, 1 is enough to show<br>a clear intention to add<br>For method marks condone use of<br>incorrect time notation<br><br>Correct time notation required |
| (b)            | 14 00  | M1   | for use of graph to find the maximum time paid for, eg £9.00 = 6 hours                                                                                                                                                                                                                                      |                                                                                                                                                                                                   |
|                |        | M1   | for intention to add times, eg 08 00 + “6” hrs                                                                                                                                                                                                                                                              |                                                                                                                                                                                                   |
|                |        | A1   | for 14 00 or 2 pm                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                   |
| 11             | Shown  | M1   | for at least three of $40 \times 1 (= 40)$ , $50 \times 2 (= 100)$ , $60 \times 4 (= 240)$ ,<br>$70 \times 5 (= 350)$ , $80 \times 3 (= 240)$ , $90 \times 1 (= 90)$ oe                                                                                                                                     | Intention to multiply is enough for<br>award of M1<br>May be seen as repeated addition<br><br><br>Condone incorrect difference if<br>1060 is clearly seen                                         |
|                |        | M1   | (dep M1) for a complete method to find comparable figures (allow up to<br>2 errors in their products),<br>eg $40 \times 1 + 50 \times 2 + 60 \times 4 + 70 \times 5 + 80 \times 3 + 90 \times 1$ oe<br>or for $1200 - 40 \times 1 - 50 \times 2 - 60 \times 4 - 70 \times 5 - 80 \times 3 - 90 \times 1$ oe |                                                                                                                                                                                                   |
|                |        | A1   | for accurate comparable figures, eg 1060 or 140                                                                                                                                                                                                                                                             |                                                                                                                                                                                                   |



| Paper: 1MA1/2F |                 |                        |                                                                                                                                         |                                                                                                                                                                                                                                               |
|----------------|-----------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer          | Mark                   | Mark scheme                                                                                                                             | Additional guidance                                                                                                                                                                                                                           |
| 1              | 21              | B1                     | cao                                                                                                                                     |                                                                                                                                                                                                                                               |
| 2              | $6n$            | B1                     |                                                                                                                                         | Allow $n6$ but not $6 \times n$ or $6.n$                                                                                                                                                                                                      |
| 3              | 70              | B1                     | cao                                                                                                                                     |                                                                                                                                                                                                                                               |
| 4              | -6, -3, 2, 5, 7 | B1                     | for -6, -3, 2, 5, 7                                                                                                                     | Accept in correct reverse order                                                                                                                                                                                                               |
| 5 (i)          | metres          | C1                     | for metres or kilometres                                                                                                                | Allow any unambiguous abbreviation                                                                                                                                                                                                            |
| (ii)           | grams           | C1                     | for grams or milligrams or newtons                                                                                                      | Allow any unambiguous abbreviation                                                                                                                                                                                                            |
| 6              | 21              | P1<br><br>P1<br><br>A1 | for a beginning process, eg $76 - 13 (= 63)$<br>or $3x + 13 = 76$ oe<br><br>for "63" $\div 3$<br>or $(76 - 13) \div 3 (= x)$<br><br>cao | May be implied by $a + b + c = 63$<br>or $a + b + c + 13 = 76$<br>$a, b$ and $c$ may be seen in a list<br><br>$13 + 21 + 21 + 21 = 76, 76, 63$ or 13 on answer line scores P1P1A0<br><br>21, 21, 21 (13) on the answer line will score P1P1A1 |
| 7              | 6               | M1<br><br>A1           | for $330 \div 55$<br><br>cao                                                                                                            | Build up methods are allowed<br>Condone one error in build up method<br>$55 \times 6 = 330, 330$ or 55 on answer line scores M1A0<br>ignore use of £ eg £6                                                                                    |
| 8 (a)          | 6               | B1                     | cao                                                                                                                                     |                                                                                                                                                                                                                                               |



| Paper: 1MA1/2F |        |      |                                                                                                                      |                                                                                                                                                                                          |
|----------------|--------|------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer | Mark | Mark scheme                                                                                                          | Additional guidance                                                                                                                                                                      |
| 8 (b)          | 9      | M1   | for beginning to work with range,<br>eg $14 - 5$ or $5 - 14$ or $5$ to $14$<br><b>or</b> an answer of $-9$           | Condone eg $5, 14$ but not $5 + 14$                                                                                                                                                      |
|                |        | A1   | cao                                                                                                                  |                                                                                                                                                                                          |
| 9 (i)          | 65     | M1   | for a complete method<br>eg $180 - 85 - 30$ <b>or</b> $360 - 180 - 85 - 30$                                          | May be seen on the diagram<br>$85 + 30 + 65 = 180$ scores M1A0<br>unless 65 clearly identified                                                                                           |
| (ii)           | Reason | A1   | cao                                                                                                                  |                                                                                                                                                                                          |
|                |        | C1   | for <u>Angles</u> on a straight <u>line</u> add up to 180<br><b>or</b> <u>Angles</u> at a <u>point</u> add up to 360 | Reason must be for their chosen method<br>If M0 awarded in (i) answer must be in the range 35 to 95 to award C1<br>Underlined words must be seen<br>Condone use of $\angle$ s for angles |
| 10             | 1 : 4  | M1   | for $20 : 80$ oe ratio<br><b>or</b> $4 : 1$                                                                          | eg $10 : 40, 5 : 20, 2 : 8, 20\% : 80\%$<br>or $0.2 : 0.8$ oe                                                                                                                            |
|                |        | A1   | 1 : 4                                                                                                                | Condone $1\% : 4\%$<br>but not $0.01 : 0.04$<br>Accept $0.25 : 1$ or $\frac{1}{4} : 1$                                                                                                   |



| Paper 1MA1: 1F |         |                |      |                                                                                                                                                                                                              |
|----------------|---------|----------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer         | Mark | Notes                                                                                                                                                                                                        |
| 26             |         | Daisy is wrong | P1   | for process to find area of any relevant circle ie $\pi \times 4^2 (=16\pi)$ , $\pi \times 7^2 (=49\pi)$ , $\pi \times 10^2 (=100\pi)$ <b>or</b> $7^2$ and $4^2$                                             |
|                |         | (supported)    | P1   | for completed method to find shaded area eg “ $\pi \times 7^2$ ” – “ $\pi \times 4^2$ ” (=33 $\pi$ ) <b>or</b> use of radii eg $7^2 - 4^2 (=33)$                                                             |
|                |         |                | A1   | for 2 comparable figures, eg 33 $\pi$ and 100 $\pi$ <b>or</b> 33 and 100 <b>or</b> 103 to 103.7 and 314 to 314.2 <b>or</b> 103 to 103.7 and 104.6 to 104.8                                                   |
|                |         |                | C1   | statement eg No because it should be $\frac{33}{100}$ and their accurate figures<br>Allow use of $\pi = 3$ or better                                                                                         |
| 27 (a)         |         | 365            | M1   | $fx$ with $x$ consistent within intervals eg $200 \times 1$ , $300 \times 11$ , $400 \times 5$ , $500 \times 0$ , $600 \times 3$ , if 200, 3300, 2000, 0, 1800 are seen without working then condone 1 error |
|                |         |                | M1   | (dep) $\Sigma fx \div \Sigma f$ eg “7300” $\div 20$                                                                                                                                                          |
|                |         |                | A1   | Cao                                                                                                                                                                                                          |
|                | (b)     | Comment        | C1   | for comment about outliers affecting mean                                                                                                                                                                    |

| Paper: 1MA1/3F |                                                                                     |      |                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                       |
|----------------|-------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                                                              | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                                           | Additional guidance                                                                                                   |
| 20             | 4                                                                                   | P1   | for start to process, eg $65 + 100 + 3 \times 5 + 1 \times 20 (= 200)$<br><b>or</b> $3 \times 80 (= 240)$                                                                                                                                                                                                                                                                             | May be part of an algebraic statement<br>eg $65 + 100 + 35 + 10x$<br><br>NB $80 - 35 (=45)$ leading to 4 gets 0 marks |
|                |                                                                                     | P1   | for $65 + 100 + 3 \times 5 + 1 \times 20 (= 200)$ <b>and</b> $3 \times 80 (= 240)$<br><b>or</b> $"240" - 100 - 65 (=75)$                                                                                                                                                                                                                                                              |                                                                                                                       |
|                |                                                                                     | P1   | for process to find value of £10 notes in Carl's wallet,<br>eg $"240" - "200" (= 40)$<br><b>or</b> for $"75" - 3 \times 5 - 1 \times 20 (=40)$                                                                                                                                                                                                                                        |                                                                                                                       |
|                |                                                                                     | A1   | cao                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                       |
| 21 (a)         | 25                                                                                  | B1   | cao                                                                                                                                                                                                                                                                                                                                                                                   | If figures are given as part of the answer they must be correct                                                       |
| (b)            | Simon with reason                                                                   | C1   | for Simon with reason<br><b>Acceptable examples</b><br>Simon; he uses more trials<br>Simon; he does 10 times more<br>Simon, since $100 > 10$<br>Simon because he threw it more frequently / often<br>Simon since he has a larger range of results<br><b>Not acceptable examples</b><br>Paula ....<br>Simon (unsupported)<br>Simon because he threw it 100 times<br>He gets more tails |                                                                                                                       |
| 22             |  | M1   | for square, side 6 cm or complete plan with incorrect scale                                                                                                                                                                                                                                                                                                                           | Do not award if the 6 cm square is included with a triangle attached externally (eg elevation)                        |
|                |                                                                                     | A1   | cao                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                       |

| Paper: 1MA1/2F |                                             |                    |                                                                                                                                                                                                                                                                   |                                                                                                                                     |
|----------------|---------------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                      | Mark               | Mark scheme                                                                                                                                                                                                                                                       | Additional guidance                                                                                                                 |
| 12 (a)         | 9                                           | B1                 | cao                                                                                                                                                                                                                                                               | ÷11 and -8 could be seen in a flow diagram<br>Evidence could be provided by algebraic statement, numerical statements or by diagram |
| (b)            | 6                                           | M1                 | starts to find input using inverse operations eg $154 \div 11 (= 14)$<br><b>or</b> indicates $\div 11$ <b>and</b> $- 8$<br><b>or</b> derivation of equation eg $(8 + n) \times 11 = 154$<br><b>or</b> starting to solve for unknown eg $154 - 8 \times 11 (= 66)$ |                                                                                                                                     |
|                |                                             | A1                 | cao                                                                                                                                                                                                                                                               |                                                                                                                                     |
| 13             | 53 19 67 139<br>17 26 16 59<br>70 45 83 198 | B3<br>(B2)<br>(B1) | for a fully correct table<br>for at least 7 figures correctly placed<br>for the 4, 5 or 6 values correctly placed                                                                                                                                                 |                                                                                                                                     |
| 14 (i)         | >                                           | B1                 | cao                                                                                                                                                                                                                                                               |                                                                                                                                     |
| (ii)           | =                                           | B1                 | cao                                                                                                                                                                                                                                                               |                                                                                                                                     |
| 15 (a)         | 774                                         | M1                 | for at least three of $0 \times 3 (= 0)$ or $1 \times 57 (= 57)$ or $2 \times 84 (= 168)$ or $3 \times 75 (= 225)$ or $4 \times 81 (= 324)$<br><b>or</b> for $0 \times 3 + 1 \times 57 + 2 \times 84 + 3 \times 75 + 4 \times 81$                                 | Note if 2 non zero products are seen award M1<br>Use of the figure 777 is enough for M1                                             |
| (b)            | 3                                           | A1<br>M1<br>A1     | cao<br>for method to begin to work with the median, eg $300 \div 2 (= 150)$<br>cao                                                                                                                                                                                | Accept 301 in place of 300<br>NB mean = 2.58                                                                                        |

| Paper: 1MA1/3F |                 |            |                                                                                                                                                                                                                                                                                            |                                                                                                                |
|----------------|-----------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Question       | Answer          | Mark       | Mark scheme                                                                                                                                                                                                                                                                                | Additional guidance                                                                                            |
| 14             | (a) 7           | B1         | cao                                                                                                                                                                                                                                                                                        | Simply quoting values for median, range is insufficient; they must be compared.                                |
|                | (b) 5           | B1         | cao                                                                                                                                                                                                                                                                                        |                                                                                                                |
|                | (c)             | C2<br>(C1) | ft for correct comparison of both medians and ranges, eg. median of boys shoe sizes is greater than the median of the girls shoe sizes and the range of the boys shoe sizes is greater than the range of the girls shoe sizes.<br>ft for a correct comparison of either medians or ranges) |                                                                                                                |
| 15             | 5               | M1         | for 40.15 or 8.03 seen in working                                                                                                                                                                                                                                                          |                                                                                                                |
|                |                 | A1         | cao                                                                                                                                                                                                                                                                                        |                                                                                                                |
| 16             | Triangle drawn  | B2<br>(B1) | for an isosceles triangle drawn with the product of the base and perpendicular height being 24, eg. $6 \times 4$ or $4 \times 6$ or $8 \times 3$ or $3 \times 8$<br>for any isosceles triangle drawn or for any triangle with 24 as the product of the base and the perpendicular height)  | Accept triangle drawn in any orientation or drawn freehand.                                                    |
| 17             | (a) $12 - 6x$   | B1         | for $12 - 6x$ (accept $-6x + 12$ )                                                                                                                                                                                                                                                         | Do not accept ambiguous algebraic expressions<br><br>Do not accept equivalent expressions not fully factorised |
|                | (b) 16          | M1<br>A1   | for a correct first step, eg. $3y = 12 \times 4 (= 48)$ or $\frac{y}{4} = \frac{12}{3}$<br>cao                                                                                                                                                                                             |                                                                                                                |
|                | (c) $2(2p + 3)$ | B1         | cao                                                                                                                                                                                                                                                                                        |                                                                                                                |
| 18             | (a) 2500        | B1         | cao                                                                                                                                                                                                                                                                                        |                                                                                                                |
|                | (b) 0.09        | B1         | cao                                                                                                                                                                                                                                                                                        |                                                                                                                |

| Paper: 1MA1/2F |        |      |                                                                                                                                                                                                                                                                                                                                                 |                                                                                        |
|----------------|--------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Question       | Answer | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                     | Additional guidance                                                                    |
| 17             | 540    | P1   | for start of process, eg $350 + 250 (= 600)$ <b>or</b> $3 \times 380 (= 1140)$<br><b>or</b> $380 - 350 (= 30)$ <b>or</b> $380 - 250 (= 130)$                                                                                                                                                                                                    | 350 + 250 + another number scores<br>no marks eg 350 + 250 + 150 or<br>350 + 250 + 380 |
|                |        | P1   | for process to work with mean and number of seats in at least one<br>cinema, eg $350 + 250 (= 600)$ <b>and</b> $3 \times 380 (= 1140)$<br><b>or</b> " $1140$ " – 350 (= 790) <b>or</b> " $1140$ " – 250 (= 890)<br><b>or</b> for an equation in $x$ , eg $350 + 250 + x = 3 \times 380$<br><b>or</b> $380 - 350 (= 30)$ and $380 - 250 (= 130)$ |                                                                                        |
|                |        | P1   | for process to find number of seats in cinema C,<br>eg " $1140$ " – " $600$ " <b>or</b> for $(x =)$ " $1140$ " – 350 – 250<br>380 + " $30$ " + " $130$ "                                                                                                                                                                                        |                                                                                        |
|                |        | A1   | cao                                                                                                                                                                                                                                                                                                                                             |                                                                                        |
| 18 (a)         | 45     | P1   | for a valid start to the process, eg $180 \div 12 (= 15)$ <b>or</b> $3(.00) \div 12 (= 0.25)$                                                                                                                                                                                                                                                   | Calculations can be in £ or p or a<br>combination for both process marks               |
|                |        | P1   | for complete process, eg " $15$ " $\times$ 3(.00) <b>or</b> $180 \times$ " $0.25$ "                                                                                                                                                                                                                                                             |                                                                                        |
|                |        | A1   | for 45(.00)                                                                                                                                                                                                                                                                                                                                     |                                                                                        |



| Paper: 1MA1/1F |                   |                        |                                                                                                                                                                                                                                                                                            |                                                                                    |
|----------------|-------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Question       | Answer            | Mark                   | Mark scheme                                                                                                                                                                                                                                                                                | Additional guidance                                                                |
| 21 (a)         | 3.5               | P1<br><br>P1<br><br>A1 | for a process to find the total length of the 5 sticks, eg $4.2 \times 5 (= 21)$<br><b>or</b> for forming an equation, eg $\frac{7+4x}{5} = 4.2$<br><br>for complete process to find the mean eg $(“21” - 7) \div 4$<br><br>oe                                                             |                                                                                    |
| (b)            | Explanation       | C1                     | for explanation<br><b>Acceptable examples</b><br>it reduced the mean<br>my answer will be less<br>the answer will be 1<br>it will be 2.5 less<br><br><b>Not acceptable examples</b><br>the mean will be more<br>my answer will change<br>it would decrease the lengths of the other sticks | If figures are given as part of the answer they must be correct, but can allow ft. |
| 22             | Angle constructed | C2<br><br>(C1)         | for fully correct construction with all arcs drawn<br><br>for line drawn within guidelines with no (or incorrect) construction arcs or correct arcs drawn and no line seen                                                                                                                 | Full marks cannot be awarded if no construction lines are seen                     |

| Paper: 1MA1/3F |                                                                                                           |                                                                                        |                                                                                                                                                                                                          |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |
|----------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Question       | Answer                                                                                                    | Mark                                                                                   | Mark scheme                                                                                                                                                                                              | Additional guidance                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |
| 19             | 7 cm by 8 cm rectangle drawn                                                                              | M1                                                                                     | for interpreting the front elevation, eg length = 8 or height = 4                                                                                                                                        | May be seen on diagram or in part of a calculation                                                                                                                                                                                        |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |
|                |                                                                                                           | M1                                                                                     | For beginning to draw plan,<br>eg. rectangle drawn with one side length of 8 cm or one of 7cm<br><br>or for interpreting front elevation to find missing dimension<br>eg $(224 \div "8") \div "4" (= 7)$ |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |
|                |                                                                                                           | C1                                                                                     | for correct plan drawn                                                                                                                                                                                   | May be drawn in any orientation                                                                                                                                                                                                           |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |
| 20             | (a)                                                                                                       | 4.68 × 10 <sup>5</sup>                                                                 | B1                                                                                                                                                                                                       | cao                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |
|                | (b)                                                                                                       | 0.000 503 7                                                                            | B1                                                                                                                                                                                                       | cao                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |
| 21             |                                                                                                           | 80                                                                                     | M1                                                                                                                                                                                                       | for complete method, eg 200 × 0.4<br>or for $\frac{80}{200}$ for the answer                                                                                                                                                               |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |
|                |                                                                                                           |                                                                                        | A1                                                                                                                                                                                                       | cao                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |
| 22             | (a)                                                                                                       | 24.6                                                                                   | M1                                                                                                                                                                                                       | for finding 5 products within intervals (including end points) with not more than one error, may be seen near table.<br>eg 2 × 12.5 (= 25), 8 × 17.5 (= 140), 13 × 22.5 (=292.5),<br>21 × 27.5 (= 577.5), 6 × 32.5 (= 195)<br>or for 1230 | <table><tr><td>Min <math>fx</math></td><td>Max <math>fx</math></td></tr><tr><td>20</td><td>30</td></tr><tr><td>120</td><td>160</td></tr><tr><td>260</td><td>325</td></tr><tr><td>525</td><td>630</td></tr><tr><td>180</td><td>210</td></tr></table> | Min $fx$ | Max $fx$ | 20 | 30 | 120 | 160 | 260 | 325 | 525 | 630 | 180 | 210 |
|                |                                                                                                           |                                                                                        | Min $fx$                                                                                                                                                                                                 | Max $fx$                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |
|                |                                                                                                           |                                                                                        | 20                                                                                                                                                                                                       | 30                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |
| 120            | 160                                                                                                       |                                                                                        |                                                                                                                                                                                                          |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |
| 260            | 325                                                                                                       |                                                                                        |                                                                                                                                                                                                          |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |
| 525            | 630                                                                                                       |                                                                                        |                                                                                                                                                                                                          |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |
| 180            | 210                                                                                                       |                                                                                        |                                                                                                                                                                                                          |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |
| M1             | for $\Sigma fx \div \Sigma f$<br>eg ("25" + "140" + "292.5" + "577.5" + "195") ÷ "50"<br>or "1230" ÷ "50" | $\Sigma fx$ must come from 5 products,<br>$fx$ within intervals (including end points) |                                                                                                                                                                                                          |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |
|                |                                                                                                           |                                                                                        | A1                                                                                                                                                                                                       | for 24.6 oe                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                     |          |          |    |    |     |     |     |     |     |     |     |     |

| Paper: 1MA1/3F |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                           |
|----------------|-----------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Question       | Answer          | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Additional guidance                                                                                       |
| 22 (b)         | No, with reason | C1   | <p>for No <b>and</b> reason</p> <p><b>Acceptable</b><br/>           No, the median is in the interval <math>25 &lt; T \leq 30</math><br/>           No, the median is in the group containing the 25(.5)th temperature<br/>           No, she did not take into account frequency<br/>           No, the frequencies are not the same for each group.</p> <p><b>Not acceptable</b><br/>           No, the median is 27.5<br/>           No, the median is higher than 22.5<br/> <math>25 &lt; T \leq 30</math><br/>           Yes, ...</p>                                                                                                                                                                       | Any incorrect statement as part of a correct response can be ignored unless it contradicts the statement, |
| 23 (a)         | Explanations    | C2   | <p>for two different correct explanations</p> <p><b>Acceptable examples</b><br/>           She should have a solid/full/shaded/coloured circle at 4<br/>           It does not show that <math>x</math> could be equal to 4<br/>           She should have marked/drawn a (clear/empty) circle at <math>-3</math><br/>           The line should be drawn to <math>-3</math><br/>           Jenna started from <math>-2</math> not <math>-3</math></p> <p><b>Not acceptable examples</b><br/>           Both circles should be black<br/>           One circle should be filled in (needs to say which circle)<br/>           She shouldn't have to reach number 4<br/>           Jenna has made no mistakes</p> | Any incorrect statement as part of a correct response can be ignored unless it contradicts the statement, |
|                |                 | (C1) | for one correct mistake described)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                           |

| Paper: 1MA1/2F |                                    |                                                            |                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                 |        |        |      |      |      |      |      |      |      |      |      |      |       |       |
|----------------|------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------|------|------|------|------|------|------|------|------|------|------|-------|-------|
| Question       | Answer                             | Mark                                                       | Mark scheme                                                                                                                                                                                                                          | Additional guidance                                                                                                                                                                                                                                                                                                                                             |        |        |      |      |      |      |      |      |      |      |      |      |       |       |
| 28 (a)         | 100 < w ≤ 150                      | B1                                                         | cao                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                 |        |        |      |      |      |      |      |      |      |      |      |      |       |       |
|                |                                    | M1                                                         | for finding 5 products within the interval (including end points) with not more than one error, may be seen near table, eg 75 × 34 (= 2550), 125 × 29 (= 3625), 175 × 27 (= 4725), 225 × 19 (= 4275), 275 × 11 (= 3025) or for 18200 | do not award this mark if the final answer comes from an alternative incorrect method, eg 120 ÷ 5 (= 24) or $\Sigma mp \div \Sigma f (875 \div 120 (= 7.29\dots))$ or $\Sigma mp \div 5 (875 \div 5 (= 175))$                                                                                                                                                   |        |        |      |      |      |      |      |      |      |      |      |      |       |       |
|                |                                    | M1                                                         | for $\Sigma fx \div \Sigma f$<br>eg ("2550" + "3625" + "4725" + "4275" + "3025") ÷ 120 or "18200" ÷ 120                                                                                                                              | <table><tr><th>Min fx</th><th>Max fx</th></tr><tr><td>1700</td><td>3400</td></tr><tr><td>2900</td><td>4350</td></tr><tr><td>4050</td><td>5400</td></tr><tr><td>3800</td><td>4750</td></tr><tr><td>2750</td><td>3300</td></tr><tr><td>15200</td><td>21200</td></tr></table><br>$\Sigma fx$ must come from 5 products, fx within intervals (including end points) | Min fx | Max fx | 1700 | 3400 | 2900 | 4350 | 4050 | 5400 | 3800 | 4750 | 2750 | 3300 | 15200 | 21200 |
|                |                                    | Min fx                                                     | Max fx                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                 |        |        |      |      |      |      |      |      |      |      |      |      |       |       |
| 1700           | 3400                               |                                                            |                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                 |        |        |      |      |      |      |      |      |      |      |      |      |       |       |
| 2900           | 4350                               |                                                            |                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                 |        |        |      |      |      |      |      |      |      |      |      |      |       |       |
| 4050           | 5400                               |                                                            |                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                 |        |        |      |      |      |      |      |      |      |      |      |      |       |       |
| 3800           | 4750                               |                                                            |                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                 |        |        |      |      |      |      |      |      |      |      |      |      |       |       |
| 2750           | 3300                               |                                                            |                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                 |        |        |      |      |      |      |      |      |      |      |      |      |       |       |
| 15200          | 21200                              |                                                            |                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                 |        |        |      |      |      |      |      |      |      |      |      |      |       |       |
| A1             | for answer in the range 151 to 152 | Correct midpoints must be used for the award of the A mark |                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                 |        |        |      |      |      |      |      |      |      |      |      |      |       |       |

| Paper: 1MA1/3F |                      |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                              |
|----------------|----------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Question       | Answer               | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Additional guidance                                                                          |
| 15 (a)         | 9.9                  | M1   | for starting process by multiplying ages by frequencies, with at least 3 correct, eg $8 \times 6$ , $9 \times 7$ , $10 \times 15$ , $11 \times 11$ , $12 \times 2$<br><b>or</b> at least 3 of 48, 63, 150, 121, 24                                                                                                                                                                                                                                                                                                              | May be seen next to table.<br>406 implies this mark                                          |
|                |                      | M1   | (dep on M1) for $\sum fx \div \sum f$ ,<br>eg $406 \div 41$ <b>or</b> $406 \div (6 + 7 + 15 + 11 + 2)$<br><b>or</b> $(8 \times 6 + 9 \times 7 + 10 \times 15 + 11 \times 11 + 12 \times 2) \div 41$                                                                                                                                                                                                                                                                                                                             | $\sum fx$ must come from 5 products                                                          |
|                |                      | A1   | Answer in the range 9.9 to 9.91                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | If an answer is given in the range in working and then rounded incorrectly award full marks. |
| (b)            | No, with explanation | C1   | No, with explanation,<br><br><b>Acceptable examples</b><br>No as the mode/modal age is 10<br>No it should be 10 (not 15)<br>No because 15 is the number of children that are age 10 (not age 15)<br>No because there are no 15 year olds<br>No because the frequency tells us the number of children for that age<br>No he needs to give the age of the highest frequency<br><br><b>Not acceptable examples</b><br>No he is not, the modal is the one that occurs the most<br>Yes / Rohan is correct ....<br>No, the mode is 11 |                                                                                              |

| Paper: 1MA1/3F |                |      |                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                       |
|----------------|----------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer         | Mark | Mark scheme                                                                                                                                                                                          | Additional guidance                                                                                                                                                                                                                                                                   |
| 19 (a)         | 2              | B1   | cao                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                       |
|                | 2.36           | M1   | for starting method by multiplying ages by frequencies, with at least 3 correct, eg $1 \times 16, 2 \times 15, 3 \times 7, 4 \times 9, 5 \times 3$<br><b>or</b> at least three of 16, 30, 21, 36, 15 | Do not award this mark if the final answer comes from an alternative incorrect method, eg $50 \div 5$<br>May be seen next to table 118 implies this mark<br><br>$\sum fx$ must come from 5 products<br><br>If a correct answer is shown and then incorrectly rounded award full marks |
|                |                | M1   | (dep on M1) for $\sum fx \div \sum f$ ,<br>eg $118 \div 50$ <b>or</b> $118 \div (16 + 15 + 7 + 9 + 3)$<br><b>or</b> $(1 \times 16 + 2 \times 15 + 3 \times 7 + 4 \times 9 + 5 \times 3) \div 50$     |                                                                                                                                                                                                                                                                                       |
|                |                | A1   | accept 2.4 from correct working                                                                                                                                                                      |                                                                                                                                                                                                                                                                                       |
| 20 (a)         | 0.265(0780261) | M1   | for 12.57 <b>or</b> 47.42 <b>or</b> 0.2 <b>or</b> 0.26 <b>or</b> 0.27 <b>or</b> 0.3 <b>or</b> $\frac{1257}{4742}$ oe                                                                                 | Answer must be given to at least 3 decimal places rounded or truncated<br>Check first 3 decimal places only                                                                                                                                                                           |
|                |                | A1   | for 0.265(0780261)                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                       |
|                | (b) 0.27       | B1   | for 0.27 or ft from part (a) provided answer to (a) has at least 3 sf                                                                                                                                |                                                                                                                                                                                                                                                                                       |



| Paper: 1MA1/3F |         |                                         |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------|---------|-----------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer                                  | Mark                   | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 6 (a)          |         | Reason                                  | C1                     | reason, eg must order numbers first                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| (b)            |         | 10                                      | M1<br>A1               | for $22 - 12$ or $12 - 22$ or 12 to 22<br>cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| (c)            |         | 16                                      | M1<br>A1               | for adding the numbers and dividing by 7<br>cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 7              |         | SP, SR, SB, FP,<br>FR, FB MP, MR,<br>MB | B2<br>(B1)             | all 9 combinations given with no extras or repeats<br>at least 6 correct combinations given, condone repeats and incorrect combinations                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 8              |         | 84                                      | M1<br>A1               | for $(372 - 36) \div 4$<br>cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 9              |         | No<br>(supported)                       | P1<br><br>P1<br><br>C1 | for finding a time difference e.g. length of day ( $=7$ h or 420 min) or adding at least two of the five times on to 9 am or adding all the room times given ( $= 5$ h 55 min or 355 min) or adding all five times given ( $=7$ h 10 min or 430 min)<br>for a complete process to inform final decision eg finds length of day ( $= 7$ h) and total of all five times ( $=7$ h 10 min) <b>or</b> starts at 9am and adds on all five times to find finishing time ( $= 4.10$ pm)<br>NO supported by correct values eg 4.10 pm <b>or</b> 7 h and 7 h 10 min <b>or</b> 420 min and 430 min |



| Paper: 1MA1/2F |                        |                        |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                    |
|----------------|------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                 | Mark                   | Mark scheme                                                                                                                                                                                                                                                                      | Additional guidance                                                                                                                                                                                |
| 1              | $\frac{17}{100}$       | B1                     | for $\frac{17}{100}$ or any other equivalent fraction                                                                                                                                                                                                                            |                                                                                                                                                                                                    |
| 2              | 2 hours 20 minutes     | B1                     | cao                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                    |
| 3              | 0.05, 0.5, 0.507, 0.57 | B1                     | for 0.05, 0.5, 0.507, 0.57                                                                                                                                                                                                                                                       | Accept reverse order                                                                                                                                                                               |
| 4              | hexagon                | B1                     | cao                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                    |
| 5              | 3                      | B1                     | cao                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                    |
| 6              | 10                     | P1<br><br>P1<br><br>A1 | for process to find greatest number of bracelets for one colour, eg $52 \div 5 (= 10(.4))$ <b>or</b> $80 \div 7 (= 11(.4..))$<br><br>for process to find greatest number of bracelets for both colours, eg $52 \div 5 (= 10(.4))$ <b>and</b> $80 \div 7 (= 11(.4..))$<br><br>cao | May be seen as a repeated addition or subtraction but must be complete for one colour, eg 50 or 70<br>May be implied by eg 50:70 or 50:77<br><br>Must see working with both colours for this mark. |
| 7 (a)          | 12                     | M1<br><br>A1           | for method to find mean, eg $(14 + 10 + 10 + 13 + 15 + 9 + 15 + 10) \div 8$ <b>or</b> $96 \div 8$<br><br>cao                                                                                                                                                                     | Allow one error or omission but must divide by 8                                                                                                                                                   |
| (b)            | 6                      | M1<br><br>A1           | for $15 - 9$ <b>or</b> $9 - 15$ <b>or</b> 9 to 15<br><br>cao                                                                                                                                                                                                                     | Condone eg 9, 15 but not $9 + 15$                                                                                                                                                                  |
| (c)            | cross at $\frac{1}{4}$ | B1                     | for cross (or mark) at $\frac{1}{4}$                                                                                                                                                                                                                                             | Accept any mark near to $\frac{1}{4}$ if the intention is clear; do not accept if additional marks are shown                                                                                       |

| Paper: 1MA1/2F |        |      |                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                       |
|----------------|--------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Question       | Answer | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                         | Additional guidance                                                                                                   |
| 25             | 370    | P1   | for finding the mean of list A, eg $(276 + 400 + 157 + 139) \div 4 (= 243)$<br><b>OR</b><br>for an expression for the mean of list B,<br>eg $(530 + 500 + 270 + x + 440 + 320) \div 6 \left( = \frac{2060 + x}{6} \right)$ oe                                                                                                                                                                       | [A] is what they believe to be the mean for A<br>[B] must be clearly their mean of B and be an expression including x |
|                |        | P1   | for beginning to work with ratio,<br>eg "243" $\div 3 (= 81)$ or $[A] \div 3$<br><b>or</b> "243" $\times 5 (= 1215)$ or $[A] \times 5$<br><b>OR</b> " $\left( \frac{2060 + x}{6} \right) \times 3$ <b>or</b> $[B] \times 3$ <b>or</b> " $\left( \frac{2060 + x}{6} \right) \div 5$ <b>or</b> $[B] \div 5$                                                                                           |                                                                                                                       |
|                |        | P1   | for completing the work with ratio,<br>eg "81" $\times 5 (= 405)$ <b>or</b> $[A] \div 3 \times 5$ <b>or</b> $[B] \times 3 \div 5$<br><b>or</b> " $\left( \frac{2060 + x}{6} \right) \times \frac{3}{5}$ "<br><b>OR</b><br>forms a suitable equation,<br>eg "243" $\times 5 = 3 \times$ " $\left( \frac{2060 + x}{6} \right)$ " or $[A] \times 5 = 3 \times$ " $\left( \frac{2060 + x}{6} \right)$ " |                                                                                                                       |
|                |        | P1   | for working with mean of list B,<br>eg "405" $\times 6 (= 2430)$ or $[A] \div 3 \times 5 \times 6$<br><b>OR</b><br>for process to remove brackets and denominator,<br>eg "243" $\times 5 \times 2 = 2060 + x$ or $[A] \times 5 \times 2 = 2060 + x$<br>or $2060 + x =$ "405" $\times 6$                                                                                                             |                                                                                                                       |
|                |        | A1   | cao                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                       |

| Paper: 1MA1/2F |               |      |                                                                                                                                                                                    |                                                                                                                                                                                                             |
|----------------|---------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer        | Mark | Mark scheme                                                                                                                                                                        | Additional guidance                                                                                                                                                                                         |
| 9 (a)          | 5             | M1   | for listing numbers in order, eg 3 4 4 6 8 9<br><br><b>or</b> answer of 4, 6<br><br><b>or</b> answer of 8.5                                                                        | Condone one error or additional number                                                                                                                                                                      |
|                |               | A1   | cao                                                                                                                                                                                |                                                                                                                                                                                                             |
|                | $\frac{2}{6}$ | M1   | for $\frac{2}{x}$ with $x > 2$ <b>or</b> for $\frac{y}{6}$ with $y < 6$                                                                                                            | Incorrect notation can imply a correct method.<br>Award M1 for eg 2 out of 6 <b>or</b> 2 in 6 <b>or</b> 2 : 6<br><br>Accept any equivalent fraction, decimal form 0.33(33..) or percentage form 33(.33..) % |
|                |               | A1   | for $\frac{2}{6}$ oe                                                                                                                                                               |                                                                                                                                                                                                             |
|                | 3, 6          | P1   | for at least one 3 <b>or</b> $5 \times 5$ (= 25)                                                                                                                                   | Numbers may be seen on the cards (but the answer line takes precedence)                                                                                                                                     |
|                |               | A1   | for 3, 6 or 6, 3                                                                                                                                                                   |                                                                                                                                                                                                             |
| 10             | 1635          | P1   | for process to find length of time in car park<br>eg $8.40 \div 0.024$ (= 350)<br><b>or</b> $0.024 \times 60$ (= 1.44) <b>and</b> $8.40 \div "1.44"$ (= 5.833...)                  | Do not accept incorrect interpretation of time, eg 5.83 = 5 hours 83 minutes<br><br>Accept 1635 pm                                                                                                          |
|                |               | P1   | for process to add "350" minutes to 10 45<br>eg $10\ 45 + 60 + 60 + 60 + 60 + 60 + 60 + 50$<br><b>or</b> $10\ 45 + "5\ \text{hours}\ 50\ \text{minutes}"$<br><br><b>OR</b> for 435 |                                                                                                                                                                                                             |
|                |               | A1   | for 1635 <b>or</b> 435 pm                                                                                                                                                          |                                                                                                                                                                                                             |

| Paper: 1MA1/3F |                 |      |                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------|-----------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer          | Mark | Mark scheme                                                                                                                                                                                                        | Additional guidance                                                                                                                                                                                                                                                                                                                                                                           |
| 9 (a)          | 6               | M1   | for ordering the numbers or showing a complete method of $(5+7) \div 2$                                                                                                                                            | Accept key in place of labels<br>Accept unambiguous abbreviations eg<br>Frequency or Number, X,M,K,T<br>Condone bars of varying widths<br>Condone no gaps or inconsistent gaps                                                                                                                                                                                                                |
|                |                 | A1   | cao                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                               |
|                | 8               | B1   | cao                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                               |
|                |                 | B1   | for correct person labels or a linear scale                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                               |
|                | Bar chart       | M1   | for correct bars showing information for at least 2 people                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                               |
|                |                 | A1   | for a fully correct bar chart with linear scale of numbers on the vertical axis and a set of person labels on the horizontal axis                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                               |
| 10             | Yes (supported) | P1   | for starting a process of working with time<br>eg for undertaking some time conversion<br>eg 85 mins is 1 hr 25 mins, 1 hr 45 min is 105 mins<br><b>or</b> for recognition that 1 h = 60 min (eg $85 = 60 + 25$ )  | Time conversion may be implied by a correct addition over the hour<br>eg $8.30 + 1\text{h } 45\text{m} = 10.15$ , $10.30 + 85 = 11.55$<br>Can be shown at any stage.<br><br>A correct duration can be shown using their times for any of the stages.<br>Subtraction of any of the time durations<br><br>Accept their figures for 1 hr 45 min, 85 etc as long as it is clear they are related. |
|                |                 | P1   | for a correct addition of at least two times eg $15 + 85 = 100$<br><b>or</b> a correct duration eg $8.30 + 1\text{h } 45\text{m} = 10.15$<br><b>or</b> a correct subtraction eg $12 (\text{noon}) - 15 = 11.45$    |                                                                                                                                                                                                                                                                                                                                                                                               |
|                |                 | P1   | for a complete process to justify the decision<br>eg $8.30 + 1\text{h } 45\text{min} + 85 + 15 (= 11.55)$<br><b>or</b> $105 + 15 + 85 (=205 \text{ min})$ <b>and</b> $12 (\text{noon}) - 8.30 (= 210 \text{ min})$ |                                                                                                                                                                                                                                                                                                                                                                                               |
|                |                 | C1   | Yes <b>and</b> accurate figures eg 11.55 <b>or</b> 205 <b>and</b> 210                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                               |
|                |                 |      |                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                               |



| Paper: 1MA1/1F |                      |          |                                                                                                                                                                                                                                                                                             |                                                                                                                |
|----------------|----------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Question       | Answer               | Mark     | Mark scheme                                                                                                                                                                                                                                                                                 | Additional guidance                                                                                            |
| 1              | 30                   | B1       | cao                                                                                                                                                                                                                                                                                         |                                                                                                                |
| 2              | -10, -7, -2, 0, 1, 8 | B1       | Accept the reverse order, eg 8, 1, 0, -2, -7, -10                                                                                                                                                                                                                                           |                                                                                                                |
| 3              | 0.09                 | B1       | cao                                                                                                                                                                                                                                                                                         | Accept an answer of .09                                                                                        |
| 4              | 330                  | B1       | cao                                                                                                                                                                                                                                                                                         |                                                                                                                |
| 5              | 49                   | B1       | cao                                                                                                                                                                                                                                                                                         |                                                                                                                |
| 6 (a)          | Trapezium            | B1       | for trapezium                                                                                                                                                                                                                                                                               | Accept incorrect spelling provided intention is clear<br>Accept incorrect spelling provided intention is clear |
| (b)            | Cylinder             | B1       | for cylinder                                                                                                                                                                                                                                                                                |                                                                                                                |
| 7              | 14                   | M1<br>A1 | for $42 \div 3$<br>cao                                                                                                                                                                                                                                                                      |                                                                                                                |
| 8              | Error identified     | C1       | error correctly identified<br><br><b>Acceptable examples</b><br>bar for brown is too high<br>16 should be 15<br>brown needs to be one less<br>brown is wrong<br>the graph does not match the table<br><br><b>Not acceptable examples</b><br>no title<br>the gaps between the bars are wrong |                                                                                                                |

| Paper: 1MA1/1F |                           |                        |                                                                                                                                                                     |                                                                                                 |
|----------------|---------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Question       | Answer                    | Mark                   | Mark scheme                                                                                                                                                         | Additional guidance                                                                             |
| 1              | 400                       | B1                     | cao                                                                                                                                                                 |                                                                                                 |
| 2              | $4e$                      | B1                     | for $4e$ oe                                                                                                                                                         | $e^4$ gets no marks, where the 4 is clearly a power                                             |
| 3              | Reflection shown          | B1                     | cao                                                                                                                                                                 |                                                                                                 |
| 4              | 6000                      | B1                     | for 6000 oe                                                                                                                                                         | Accept six (6) thousand(s) or just thousand(s)                                                  |
| 5              | 45%, $\frac{1}{2}$ , 0.55 | B1                     | Accept equivalent notation<br>eg $\frac{45}{100}$ , $\frac{50}{100}$ , $\frac{55}{100}$ or 45%, 50%, 55% or 0.45, 0.5, 0.55<br>or a combination of notation         | Do NOT accept reverse order                                                                     |
| 6              | 8                         | B1                     | cao                                                                                                                                                                 |                                                                                                 |
| 7              | 7                         | P1<br><br>P1<br><br>A1 | for $20 - 6 (= 14)$<br><b>or</b> $20 \div 2 (=10)$ <b>and</b> $6 \div 2 (=3)$<br><br>for " $14$ " $\div 2 (= 7)$<br><b>or</b> " $10$ " - " $3$ " $(= 7)$<br><br>cao | May be seen as a build-up method or by a method of repeated subtraction, listing multiples of 2 |

| Paper 1MA1: 2F |         |              |      |                                                                                                                                                    |
|----------------|---------|--------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer       | Mark | Notes                                                                                                                                              |
| 5 (a)          |         | Monday wrong | C1   | for seeing difference in tally marks and frequency for Monday                                                                                      |
| (b)            |         | Comment      | C1   | for suitable comment, eg extra picture for Tuesday needed or explains that 0.5 of a CD is not possible                                             |
| 6              |         | 268.20       | P1   | for a process to work out the value of the £1 coins, eg. $495 \div 3 (= 165)$ or $495 \times 0.33...$ or of the 50p coins, eg. $124 \div 2 (= 62)$ |
|                |         |              | P1   | for process to find the number of 20p coins, eg. $(495 - 124 - ("165")) (= 206)$                                                                   |
|                |         |              | P1   | for complete process to find total value using consistent units., eg. $(("165") + (124 \div 2) + ("206" \times 0.2))$ or $165 + 62 + 41.2$         |
|                |         |              | A1   | cao (accept 268.2)                                                                                                                                 |
| 7              |         | 0.985        | B1   | oe                                                                                                                                                 |
| 8 (a)          |         | 25           | B1   | for 25 (accept 5 <sup>2</sup> )                                                                                                                    |
| (b)            |         | 24           | B1   | cao                                                                                                                                                |
| (c)            |         | 23, 29       | B1   | for 23 and 29 and no extras                                                                                                                        |
| 9              |         | 54           | M1   | for method to form equation, eg $90 + 2x + 3x = 360$ or for $360 - 90 (= 270)$                                                                     |
|                |         |              | M1   | for $5x = 360 - 90$ or for $2x + 3x = 360 - 90$ or for $2x = 108$ or for $3x = 162$ or for $270 \div 5$                                            |
|                |         |              | A1   | cao                                                                                                                                                |



| Paper: 1MA1/2F |         |                       |              |                                                                                                                                                                                                                                                               |
|----------------|---------|-----------------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer                | Mark         | Notes                                                                                                                                                                                                                                                         |
| 7              |         | No<br><br>(supported) | B1<br><br>C1 | for showing 11 or 13 or 17 or 19 with no non-prime numbers between 10 and 20, or for showing 23 or 29 with no non-prime numbers between 20 and 30. Ignore any numbers shown below 11.<br>“No” supported by listing 11, 13, 17, 19 and 23, 29 and no non-prime |
| 8 (a)          |         | Statement             | C1           | States one thing wrong eg vertical scale is not linear oe                                                                                                                                                                                                     |
| (b)            |         | Trend described       | C1           | eg the trend is upwards, positive (trend) oe                                                                                                                                                                                                                  |
| 9 (a)          |         | 2.75                  | M1<br><br>A1 | for accurately measuring the distance between Backley and Cremford as 5.3 cm – 5.7 cm oe or their measurement $\times 0.5$ oe<br><br>for answer in the range 2.65 to 2.85                                                                                     |
| (b)            |         | 130                   | B1           | for answer in the range 128 to 132                                                                                                                                                                                                                            |
| 10 (a)         |         | 12 cm <sup>2</sup>    | B1<br>B1     | for numerical answer of 12<br>for units shown as cm <sup>2</sup>                                                                                                                                                                                              |
| (b)            |         | kite                  | B1           | cao                                                                                                                                                                                                                                                           |



| Paper: 1MA1/3F |           |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                        |
|----------------|-----------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| Question       | Answer    | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Additional guidance                                    |
| 27             | statement | B2   | <p>Two different statements</p> <p><b>Acceptable</b></p> <p>eg should be joined with straight lines (not curve)/should use a ruler</p> <p>1<sup>st</sup> (quarter) not shown/plotted/labelled/not all quarters labelled</p> <p>does not show all 4 seasons</p> <p>9.5 missing from vertical axes/not linear</p> <p>vertical (number) axis does not start at 0/the y axis starts at 6</p> <p>the graph does not begin at 0, it starts at 6</p> <p>it is not clear what 2, 3, 4 on the x-axis mean</p> <p>the scale of years doesn't make sense</p> <p>there is lack of clarity about what the numbers on the x axis represent</p> <p>graph is curved line</p> <p><b>Not acceptable</b></p> <p>eg no value plotted for 2 in 2016</p> <p>it does not start at 0 (no reference to vertical axis)/missing 0</p> <p>they should not have connected the dots like that</p> <p>the numbers on the x axis are repeated</p> <p>the numbers along the x axis 2, 3, 4</p> <p>the years on the x axis have not been written properly</p> <p>does not follow a sequence</p> <p>it needs a discontinuity wiggle on the axis</p> <p>no title</p> | Ignore additional statements provided no contradiction |
|                | statement | (B1  | One statement eg from those above.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                        |



| Paper: 1MA1/2F |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                        |
|----------------|-----------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| Question       | Answer          | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Additional guidance                                    |
| 21             | Two statements  | C2   | <p>Two different statements</p> <p><b>Acceptable</b></p> <p>There is no 'frequency' label / y-axis is not labelled / no title for the y-axis</p> <p>The polygon should not be closed / have a line at the bottom / have first and last points connected</p> <p>(15, 6) has been plotted incorrectly / at (15, 8) / (The first point is at) 8 rather than 6 / First point is on an incorrect frequency</p> <p><b>Not acceptable</b></p> <p>There is no title / Points should be joined with a curve</p> <p>x-axis doesn't start at 0</p> <p>There is no label</p> <p>The axes have not been labelled (x and y)</p> <p>The points haven't (all) been plotted correctly</p> <p><math>10 &lt; w \leq 20</math> and <math>30 &lt; w \leq 40</math> have been plotted wrong</p> <p>The first point is plotted incorrectly, its at (15, 7) not (15, 6)</p> <p>The points have been joined up wrong / Points should not be joined in the shape of a triangle / They've connected all the points</p> <p>Done the midpoints rather than the numbers on the right side / The points are in the middle</p> | Ignore additional statements provided no contradiction |
|                |                 | (C1  | for one statement eg from those above)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                        |
| 22             | 127.5 and 128.5 | B1   | for 127.5 in the correct position                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                        |
|                |                 | B1   | for 128.5 in the correct position                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Accept 128.49 or 128.499...                            |



| Paper: 1MA1/3F |                    |        |                                                                                                                                                          |                                                                                                                                        |  |
|----------------|--------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--|
| Question       | Answer             | Mark   | Mark scheme                                                                                                                                              | Additional guidance                                                                                                                    |  |
| 10             | (a) Diameter drawn | B1     | diameter drawn                                                                                                                                           | Accept hand drawn, intention through centre and from edge to edge. Ruler not required but intention clear.                             |  |
|                | (b) Segment shaded | B1     | segment drawn unambiguously                                                                                                                              | Line must go edge to edge (condone extending outside the circle). Freehand acceptable. Can also draw a diameter here (as semi-circle). |  |
| 11             | (a)                | 2.5(0) | P1                                                                                                                                                       | for $13 \times 7.5(0)$ (=97.5(0)) <b>or</b> $5 \times 20$ (=100)                                                                       |  |
|                |                    |        | P1                                                                                                                                                       | for “100” – “97.5(0)”                                                                                                                  |  |
|                |                    |        | A1                                                                                                                                                       | cao                                                                                                                                    |  |
|                | (b)                | 96     | M1                                                                                                                                                       | for $\frac{1}{5} \times 120$ (= 24) oe <b>or</b> $\frac{4}{5} \times 120$ oe                                                           |  |
|                |                    | A1     | cao                                                                                                                                                      |                                                                                                                                        |  |
| 12             | 6                  | P1     | process to find the weight of small boxes eg $3 \times 450$ (=1350)                                                                                      |                                                                                                                                        |  |
|                |                    | P1     | complete process to find the number of large boxes, eg $(5850 - “1350”) \div 750$<br><b>or</b> $5850 - “1350”$ (=4500) <b>and</b> $6 \times 750$ (=4500) |                                                                                                                                        |  |
|                |                    | A1     | cao                                                                                                                                                      |                                                                                                                                        |  |
| 13             | 43                 | M1     | for identifying 74 and 31 as the key numbers                                                                                                             | It is insufficient to identify these on the diagram (eg as 1, 4)<br>–43 as an answer implies M1                                        |  |
|                |                    | A1     | cao                                                                                                                                                      |                                                                                                                                        |  |



| Paper: 1MA1/2F |             |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                |
|----------------|-------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer      | Mark           | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Additional guidance                                                                                                                                            |
| 7              | Two reasons | C2<br><br>(C1) | <p>for two correct reasons</p> <p>for one correct reason)</p> <p><b>Acceptable examples</b></p> <p>No label for mark</p> <p>The vertical axis jumps from 0 to 71</p> <p>The bars are not all the same width</p> <p>Toms bar is twice as wide as the others</p> <p>No axes</p> <p>Toms bar should not take up 4 squares</p> <p>Toms bar shaded 2 not 1 block</p> <p>Tom has 2 bars shaded but the others only have one bar shaded</p> <p>It is not labelled</p> <p>Tom has gone over 2 squares</p> <p>Toms bar is bigger than the others</p> <p>Toms bar is not correct</p> <p>The numbering is not correct</p> <p><b>Not acceptable examples</b></p> <p>There is no title</p> <p>Different sized gaps between the bars</p> <p>The bars are not symmetrical</p> <p>The bars are not the same size</p> | <p>Allow if one reason is fully correct and the other reason is not.</p> <p>For column accept strip, bar, block, line, cubes in an unambiguous explanation</p> |

| Paper: 1MA1/3F |                        |                        |                                                                                                                                                                                                                  |                                             |
|----------------|------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Question       | Answer                 | Mark                   | Mark scheme                                                                                                                                                                                                      | Additional guidance                         |
| 1              | 3                      | B1                     | cao                                                                                                                                                                                                              |                                             |
| 2              | 8                      | B1                     | cao                                                                                                                                                                                                              |                                             |
| 3              | $\frac{40}{100}$       | B1                     | for $\frac{40}{100}$ or any equivalent fraction                                                                                                                                                                  |                                             |
| 4              | 6.25                   | B1                     | for 6.25 oe                                                                                                                                                                                                      |                                             |
| 5              | -6, -4, -3, 0, 1, 2, 7 | B1                     | for -6, -4, -3, 0, 1, 2, 7                                                                                                                                                                                       | accept reverse order                        |
| 6 (a)          | 5                      | B1                     | cao                                                                                                                                                                                                              |                                             |
| 6 (b)          | 5, 6                   | B1                     | cao                                                                                                                                                                                                              |                                             |
| 7              | $\frac{3}{4}$          | M1<br><br>A1           | for method to find fraction shaded, eg 12 out of 16 squares shaded<br>or unsimplified answer eg $\frac{12}{16}$<br><br>or for $1 - \frac{1}{4}$ oe or for an answer of $\frac{1}{4}$<br><br>cao                  | May be expressed in a wide variety of ways. |
| 8              | 78                     | P1<br><br>P1<br><br>A1 | for process to find the number of boxes, eg $200 \div 25 (=8)$<br>or to find the cost of each tile, eg $9.75 \div 25 (=0.39)$<br><br>for complete process, eg "8" $\times 9.75$ , "0.39" $\times 200$<br><br>cao | Could work in £ or in pence for P marks     |



| Paper: 1MA1/3F |                                                                |                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                        |
|----------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| Question       | Answer                                                         | Mark                                                                                                                             | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Additional guidance                                    |
| 26             | 40 missing from frequency scale<br><br>Incorrect point (50, 5) | C2<br><br><br><br><br><br><br><br><br><br>(C1)                                                                                   | Two different statements<br><b>Acceptable</b><br>eg (50, 5) / the last point is incorrect<br>the last point should be at (45,5)<br>the last point plotted was placed incorrectly<br>for his last point he has plotted by the end of the data and for the rest he has plotted by the middle<br>he did not use the midpoint, he used 50 instead of 45<br>40 missing (from vertical axis)<br>vertical scale is not linear<br>the frequency doesn't increase in the same intervals<br>the vertical axis is not right<br><b>Not acceptable</b><br>eg the last point should be at (40, 5)<br>bottom of the polygon should be connected<br>he didn't start the graph at the origin<br>he did not draw a polygon<br>he has plotted the first 4 points at midpoint | Ignore additional statements provided no contradiction |
| 27             | 10                                                             | P1<br><br><br><br><br><br><br><br><br><br>P1<br><br><br><br><br><br><br><br><br><br>P1<br><br><br><br><br><br><br><br><br><br>A1 | for a process to use distance = speed × time for either of the parts of Jessica's journey,<br>eg. $6 \times \frac{15}{60}$ (= 1.5) or $9 \times \frac{40}{60}$ (= 6) or $6 \times 15$ (= 90) or $9 \times 40$ (= 360)<br><br>for a process to add the 2 distances for Jessica,<br>eg $6 \times \frac{15}{60} + 9 \times \frac{40}{60}$ (= 7.5) or $6 \times 15 + 9 \times 40$ (= 450)<br><br>for complete process to find Amy's average speed,<br>eg. "7.5" ÷ "0.75" oe or "450" ÷ 45<br><br>cao                                                                                                                                                                                                                                                          | Must be consistent units at this stage.                |



| Paper: 1MA1/3F |                        |                        |                                                                                                                                                                                                                                                                                                                                                   |                                                                               |
|----------------|------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Question       | Answer                 | Mark                   | Mark scheme                                                                                                                                                                                                                                                                                                                                       | Additional guidance                                                           |
| 1              | 0.408, 0.41, 0.46, 0.5 | B1                     | for 0.408, 0.41, 0.46, 0.5                                                                                                                                                                                                                                                                                                                        | Accept written in reverse order                                               |
| 2              | 2000                   | B1                     | cao                                                                                                                                                                                                                                                                                                                                               | Accept two (2) thousand(s) or just thousand(s)                                |
| 3              | 0.8                    | B1                     | cao                                                                                                                                                                                                                                                                                                                                               |                                                                               |
| 4              | 19                     | B1                     | cao                                                                                                                                                                                                                                                                                                                                               |                                                                               |
| 5              | 18                     | B1                     | cao                                                                                                                                                                                                                                                                                                                                               |                                                                               |
| 6 (a)          | 6                      | B1                     | cao                                                                                                                                                                                                                                                                                                                                               |                                                                               |
| (b)            | May, October           | B1                     | cao                                                                                                                                                                                                                                                                                                                                               |                                                                               |
| 7              | 145.60                 | P1<br><br>P1<br><br>A1 | for a process to work out the value of the large bars<br>eg $208 \div 4 (=52 \text{ or } 5200)$<br><br>for a process to work out the value of the small bars<br>eg $(208 - "52") \times 60$ or $(1 - \frac{1}{4}) \times 208 \times 60 (=9360 \text{ or } 93.6(0))$<br><b>or</b> for 145.6<br><br>for 145.60 cao (must be correct money notation) | units may be ignored for the process marks<br><br>work could be in pence or £ |
| 8 (a)          | 102                    | B1                     | cao                                                                                                                                                                                                                                                                                                                                               |                                                                               |
| (b)            | 82                     | M1<br><br>A1           | for a method of extracting the correct 4 numbers from the table, adding all 4 numbers and then dividing by 4<br>eg $(143+121+45+19) \div 4$ or "328" $\div 4$<br><br>cao                                                                                                                                                                          |                                                                               |



| Paper: 1MA1/3F |                |      |                                                                                                                                                                                                                                                                                                                                                                                                                                              |                     |
|----------------|----------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Question       | Answer         | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                  | Additional guidance |
| 16             | Comments       | C1   | <p>makes some comment about the labels</p> <p><b>Acceptable examples</b></p> <p>states what labels should be (not angles)</p> <p>labels are missing</p> <p>The label in the table does not match the label with the pie chart</p> <p><b>Not acceptable examples</b></p> <p>angles not marked on the pie chart</p>                                                                                                                            |                     |
|                |                | C1   | <p>comments about the inaccuracy of the angles in the pie chart</p> <p><b>Acceptable examples</b></p> <p>pie chart is not accurate / should be 108, 126, 126</p> <p>angles drawn inaccurately</p> <p>They haven't converted the number of potatoes to angles</p> <p>Need to scale the numbers in the table</p> <p><b>Not acceptable examples</b></p> <p>pie chart is wrong/ sectors are the wrong size (the angles) do not add up to 360</p> |                     |
| 17             | (a)            | B1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                          |                     |
|                | (b)            | M1   | for 33.81 or 2.5 or $\frac{3381}{250}$ or digits 13524                                                                                                                                                                                                                                                                                                                                                                                       |                     |
|                |                | A1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                          |                     |
| 18             | Rotation drawn | B2   | correct shape drawn at (2,-1), (2,-4), (4,-2), (4,-1)                                                                                                                                                                                                                                                                                                                                                                                        |                     |
|                |                | (B1  | <p>for a correct shape drawn clockwise 90° about (0,0)</p> <p>or a shape drawn in the correct quadrant with the correct orientation</p> <p>or a shape with at least 3 vertices correct</p>                                                                                                                                                                                                                                                   |                     |



| Paper: 1MA1/1F |                                                              |      |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                         |
|----------------|--------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                                       | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                               | Additional guidance                                                                                                                                                                                     |
| 23             | Frequency polygon drawn                                      | B2   | for fully correct frequency polygon with points plotted at the midpoints                                                                                                                                                                                                                                                                                  | Joining must be with line segments<br>Accept points plotted within half a small square<br>Ignore any histogram drawn and any part of a frequency polygon outside range of first and last points plotted |
|                | (2.5, 8), (7.5, 24)<br>(12.5, 13)<br>(17.5, 11)<br>(22.5, 4) | (B1) | for all points plotted correctly but not joined with line segments<br><b>or</b> points plotted at correct heights not at midpoints but consistently within each interval and joined with line segments<br><b>or</b> correct frequency polygon with one point incorrect<br><b>or</b> correct frequency polygon with first and last points joined directly) | for example, at 0, 5, 10,...or at 5, 10, 15,...                                                                                                                                                         |
| 24 (a)         | Venn diagram                                                 | B3   | for a fully correct Venn diagram                                                                                                                                                                                                                                                                                                                          | Ignore all entries except the region you are marking for each method mark                                                                                                                               |
|                |                                                              | (B2) | for two or three of the four regions correct)                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                         |
|                |                                                              | (B1) | for just one of the four regions correct)                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                         |
| (b)            | $\frac{7}{10}$                                               | M1   | (ft diagram)<br>for $\frac{a}{10}$ where $0 < a < 10$ and $a$ is an integer or $\frac{7}{b}$ where $b > 7$ and $b$ is an integer<br><b>or</b> $1 - \frac{3}{10}$ <b>or</b> $7 : 10$                                                                                                                                                                       | Repeated digits in the diagram should be counted as 2 elements                                                                                                                                          |
|                |                                                              | A1   | (ft diagram) for $\frac{7}{10}$ or                                                                                                                                                                                                                                                                                                                        | Accept any equivalent fraction, or 0.7 or 70%                                                                                                                                                           |



| Paper: 1MA1/3F |                                                                                                                 |      |                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                         |
|----------------|-----------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                                                                                          | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                 | Additional guidance                                                                                                                                                     |
| 16 (a)         | $2 \times 3^2 \times 7$                                                                                         | M1   | for a complete factor tree with no more than one arithmetic error<br><b>or</b> 2, 3, 3, 7                                                                                                                                                                                                                                                                   | Condone the inclusion of 1 for this mark                                                                                                                                |
|                |                                                                                                                 | A1   | accept $2 \times 3 \times 3 \times 7$                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                         |
|                |                                                                                                                 | M1   | for a complete factor tree for 210 (or 126 if not credited in part (a)) with no more than one arithmetic error                                                                                                                                                                                                                                              | Condone the inclusion of 1 for this mark                                                                                                                                |
|                |                                                                                                                 | A1   | <b>or</b> for listing factors of 126 or 210, at least 4 correct for either (with no more than 1 incorrect in either list), could be in factor pairs<br><br><b>or</b> for the prime factors of 210 (2, 3, 5, 7) (or 126 if not credited in part (a))<br><br>accept $2 \times 3 \times 7$<br><br>SCB1 for answer of 2 or 3 or 6 or 7 or 14 or 21 if M0 scored | 1, 2, 3, 6, 7, 9, 14, 18, 21, 42, 63, 126<br>1, 2, 3, 5, 6, 7, 10, 14, 15, 21, 30, 35, 42, 70, 105, 210<br><br>Prime factors may be seen in a diagram eg a Venn diagram |
| 17             | Points plotted at (130, 12)<br>(150, 28)<br>(170, 30)<br>(190, 22)<br>(210, 8)<br>and joined with line segments | B2   | for correct plotting of 5 points and joining with line segments                                                                                                                                                                                                                                                                                             | Ignore any histogram drawn<br>Ignore any part of the frequency polygon outside of the range of the first and last point plotted.                                        |
|                |                                                                                                                 | (B1  | for points plotted correctly at midpoints<br><br><b>or</b> for a frequency polygon with one point incorrect<br><br><b>or</b> for a frequency polygon with first and last point joined directly<br><br><b>or</b> for joining the points with line segments at the correct heights consistent within intervals (including end points))                        | for example,<br>at 120, 140, 160, 180, 200<br>or<br>at 140, 160, 180, 200, 220                                                                                          |

| Paper: 1MA1/3F |                                                                                                          |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                           |
|----------------|----------------------------------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                                                                                   | Mark           | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Additional guidance                                                                                                                                                                                       |
| 21 (a)         | $y^8$                                                                                                    | B1             | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                           |
|                | (b) $e^6$                                                                                                | B1             | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                           |
|                | (c) $3x^3 + 5x$                                                                                          | B1             | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                           |
|                | (d) $n^2 + 3n - 10$                                                                                      | M1             | for 3 out of no more than 4 terms correct with correct signs or 4 correct terms ignoring signs                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                           |
|                |                                                                                                          | A1             | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | $n^2 - 2n + 5n - 10$<br>NB: $n^2 + 3n$ or $3n - 10$ implies 3 correct terms                                                                                                                               |
| 22             | Points plotted at (5, 12)<br>(15, 25)<br>(25, 10)<br>(35, 8)<br>(45, 5)<br>and joined with line segments | B2<br><br>(B1) | for correct plotting of all 5 points at midpoints <b>and</b> joining with line segments<br><br>for correct plotting of all 5 points at midpoints joined with a curve or missing / no line segments<br><br><b>or</b> for a frequency polygon with one point incorrect<br><br><b>or</b> for a frequency polygon with first and last point joined directly<br><br><b>or</b> for plotting of all 5 points at the correct heights consistent within intervals (including end points) <b>and</b> joining with line segments | Ignore any histogram drawn<br>Ignore any part of the frequency polygon outside of the range of the first and last point plotted.<br><br><br>for example, at 0, 10, 20, 30, 40<br>or at 10, 20, 30, 40, 50 |

| Paper: 1MA1/3F |         |                            |                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------|---------|----------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer                     | Mark                                                   | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 6              |         | Correct pictogram with key | C3<br>[C2<br><br>[C1]                                  | for a fully correct pictogram, including key<br>for 2 circles drawn for Friday or $3\frac{3}{4}$ circles (or equivalent) drawn for Saturday]<br>for deducing that one circle represents 4 cycles (or $20 \div 5$ )<br>or $\frac{1}{2}$ circle represents 2 cycles or $\frac{1}{4}$ circle represents 1 cycle]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 7              |         | shown                      | M1<br>M1<br>C2<br><br>[C1<br><br>OR<br>M1<br>M1<br>C2] | for (angle $BCA$ ) = $180 - 117$ (= 63)<br>for (angle $CAB$ ) = $180 - "63" - 54$ (= 63) or (angle $CAB$ ) = $117 - 54$ (= 63)<br>for statement, eg. isosceles since angle $BCA$ = angle $CAB$ = 63 with fully correct reasons,<br>from: <u>angles</u> on a <u>straight line</u> add up to $180^\circ$<br><u>angles</u> in a <u>triangle</u> add up to $180^\circ$<br><u>exterior angle</u> of a <u>triangle</u> is equal to sum of interior opposite angles<br>for angle $BCA$ = 63 and angle $CAB$ = 63 and one of the above reasons]<br>OR<br>for $\frac{(180-54)}{2}$ (= 63)<br>for identification of <b>two</b> angles in triangle $ABC$ being "63"<br>for statement, eg. isosceles since angle $BCA$ = angle $CAB$ = 63 <b>and</b> <u>angles</u> on a <u>straight line</u> add up to $180^\circ$ <b>and</b> fully correct reasons:<br>base angles of an <u>isosceles triangle</u> are equal<br>and <u>angles</u> in a <u>triangle</u> add up to $180^\circ$ |



| Paper: 1MA1/2F |                   |                           |                        |                                                                                                                                                                                                                                                                                                                                 |
|----------------|-------------------|---------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer            | Mark                      | Mark scheme            | Additional guidance                                                                                                                                                                                                                                                                                                             |
| 10             | (a)<br><br>(b)    | 23, 29<br><br>Explanation | B2<br>(B1)<br>C1       | for 23 <b>and</b> 29 <b>and</b> no extras<br>for one correct <b>and</b> no more than one incorrect)<br>for decision <b>and</b> explanation<br>eg yes and because all other even numbers have 2 as a factor                                                                                                                      |
|                |                   |                           |                        | 2 correct and 1 incorrect award B1<br><br>Decision is required may be yes or implied by she is ... oe.<br>Do not accept statements that are ambiguous, or contradictory                                                                                                                                                         |
| 11             | (a)<br>(b)<br>(c) | 17<br>12<br>5.5           | B1<br>B1<br>B1         | cao<br>cao<br>Accept $\frac{11}{2}$ , $5\frac{1}{2}$ oe                                                                                                                                                                                                                                                                         |
| 12             |                   | Correct pie chart         | M1<br><br>A1<br><br>A1 | for method to find at least one angle<br>eg B: $360 \div "36" \times 11 (= 110)$ <b>or</b> P: $360 \div "36" \times 17 (= 170)$ <b>or</b><br>HD: $360 \div "36" \times 8 (= 80)$<br><br>for at all 3 angles correctly calculated<br><b>OR</b> at least one accurately drawn angle<br><br>for a fully correct labelled pie chart |
|                |                   |                           |                        | Accept numbers if present in Number of fan column eg 0 added to a number is acceptable for this mark.<br><br><br>Labels as "snacks" from table not just angle size.                                                                                                                                                             |

| Paper: 1MA1/1F |                    |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                             |
|----------------|--------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer             | Mark                   | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Additional guidance                                                                                                                                                                                                                                                                                                                                                         |
| 6              | Yes<br>(supported) | P1<br><br>P1<br><br>C1 | <p>starts process to find the number of tins or meals needed,<br/>eg <math>2 \times \frac{1}{4} (= \frac{2}{4} = \frac{1}{2})</math> or <math>14 \times \frac{1}{4} (= \frac{14}{4} \text{ oe})</math> or <math>2 \times 14 (= 28)</math> or <math>8 \div 2</math><br/> <b>or</b><br/> to find the number of meals from 8 tins, eg <math>8 \div \frac{1}{4} (= 32)</math></p> <p>a complete process to find the number of tins needed,<br/>eg <math>14 \times \frac{2}{4} (= 7)</math><br/> <b>or</b> <math>8 \div 2</math> and “<math>\frac{14}{4}</math>”<br/> <b>OR</b><br/> to find the numbers of meals <math>8 \div \frac{1}{4} (= 32)</math> and <math>2 \times 14 (= 28)</math><br/> <b>or</b> <math>8 \div \frac{2}{4} (= 16)</math></p> <p>‘Yes’ from a comparison of correct values,<br/>eg 7 (and 8) <b>or</b> 32 and 28 <b>or</b> 16 (and 14) <b>or</b> <math>\frac{14}{4}</math> and 4</p> | <p>Numbers may be expressed in decimal form</p> <p>Correct working needs to be accompanied by a statement confirming enough food has been bought.</p>                                                                                                                                                                                                                       |
| 7              |                    | M1<br><br>M1<br><br>C1 | <p>for use of scaling, eg at least one of 12, 5, and 6 <b>or</b> 23<br/> <b>OR</b><br/> for using the representation, eg <math>\frac{30}{4} (= 7.5)</math> or 5.75</p> <p>for subtracting their total number of trees from 30, eg <math>30 - “23” (= 7)</math><br/> <b>OR</b><br/> for subtracting the total number of squares from 7.5,<br/>eg <math>7.5 - “5.75” (= 1.75)</math></p> <p>oe</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>May be seen on diagram.</p> <p>“23” must be from addition of 12, 5 and 6<br/> Award 2 marks for 7 seen provided unambiguous<br/> “5.75” must be from addition of correct decimals/fractions</p> <p>May be alternative representations, eg one square + half square + quarter square<br/> or squares may be divided into 4 sections.<br/> Any orientation acceptable.</p> |

| Paper: 1MA1/3F |                   |      |                                                                                                                                                           |                                                                                  |
|----------------|-------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Question       | Answer            | Mark | Mark scheme                                                                                                                                               | Additional guidance                                                              |
| 12             | Correct pie chart | M1   | for method to find at least one angle<br>eg P: $360 \div 60 \times 24 (=144)$ or C: $360 \div 60 \times 16 (=96)$<br>or M: $360 \div 60 \times 20 (=120)$ | Use the overlay<br>Working may be seen in or by the table                        |
|                |                   | A1   | for all 3 angles correctly calculated<br><b>OR</b> at least one accurately drawn angle                                                                    | If three equal sectors of $120^\circ$ with no working<br>award 0 marks           |
|                |                   | A1   | fully a correct labelled pie chart                                                                                                                        | Labels as “vegetables” from table not just angle<br>size. Accept P, C, M         |
| 13             | 50                | P1   | for $45 \times 1.2 (=54)$ or $34 \times 1.5 (=51)$                                                                                                        |                                                                                  |
|                |                   | P1   | for $150 - “54” - “51” (=45)$                                                                                                                             |                                                                                  |
|                |                   | P1   | for $“45” \div 0.9 (=50)$                                                                                                                                 |                                                                                  |
|                |                   | A1   | cao                                                                                                                                                       |                                                                                  |
| 14 (a)         | 0.3               | B1   | for 0.3 oe                                                                                                                                                | Acceptable equivalents are 3/10 or 30%<br>Answer on answer line takes precedence |
| (b)            | 4                 | B1   | 4 or ft their (a)                                                                                                                                         | Do not accept a statement of probability (eg 0.1)                                |
| (c)            | 12                | M1   | for $0.2 \times 60$ oe                                                                                                                                    | Do not accept the use of any other probability                                   |
|                |                   | A1   | cao                                                                                                                                                       |                                                                                  |

| Paper: 1MA1/1F |                                                                    |          |                                                                                                                                                                                                |                                                                                                                                                   |                                                                                                                   |
|----------------|--------------------------------------------------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                                             | Mark     | Mark scheme                                                                                                                                                                                    | Additional guidance                                                                                                                               |                                                                                                                   |
| 7              | (a)                                                                | 7        | P1                                                                                                                                                                                             | for process to find the number of blue flowers, eg $30 - 8 - 10 - 5$                                                                              | Allow one error                                                                                                   |
|                |                                                                    | A1       | cao                                                                                                                                                                                            |                                                                                                                                                   |                                                                                                                   |
|                | (b)                                                                | white    | B1                                                                                                                                                                                             | for white or ft from (a)                                                                                                                          | Must be seen clearly for ft                                                                                       |
| 8              | $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}, \frac{7}{12}, \frac{3}{4}$ | M1       | converts fractions to a common equivalent form, at least two conversions correct eg fractions with a denominator of 12, decimals or percentages,<br><b>or</b> any 4 fractions in correct order | 0.25, 0.33(...), 0.5, 0.58(...), 0.75                                                                                                             |                                                                                                                   |
|                |                                                                    | A1       | cao                                                                                                                                                                                            | Accept list in reverse order for this mark<br>Accept expressed in equivalent decimals or percentages or any other appropriate form or mixed forms |                                                                                                                   |
| 9              | (a)                                                                | 6        | M1                                                                                                                                                                                             | for method to find distance,<br>eg $4 \times \text{time difference}$ <b>or</b> 30 mins = 2 miles                                                  | 10.30 am – 9 am may be seen as 1.5(hr) or 1(hr) 30 (min) or 90 (min) or $\frac{3}{2}$ (hr) or $1\frac{1}{2}$ (hr) |
|                |                                                                    | A1       | cao                                                                                                                                                                                            |                                                                                                                                                   |                                                                                                                   |
|                | (b)                                                                | 12 35 pm | M1                                                                                                                                                                                             | for method to add time using consistent units<br>eg 11 20 <b>or</b> 50 + 75 <b>or</b> 2 hours 5 mins                                              |                                                                                                                   |
|                |                                                                    | A1       | 12 35 pm or 12 35 (h)                                                                                                                                                                          | Allow 12 35 but not 12 35 am                                                                                                                      |                                                                                                                   |
| 10             | (a)                                                                | 4        | B1                                                                                                                                                                                             | cao                                                                                                                                               |                                                                                                                   |
|                | (b)                                                                | 8        | B1                                                                                                                                                                                             | cao                                                                                                                                               |                                                                                                                   |
|                | (c)                                                                | 3        | M1                                                                                                                                                                                             | for a correct first step<br>eg subtracting 2 from both sides <b>or</b> dividing all terms by 6                                                    | Division by 6 must be ALL terms                                                                                   |
|                |                                                                    | A1       | cao                                                                                                                                                                                            |                                                                                                                                                   |                                                                                                                   |

| Paper: 1MA1/1F |                                                                               |      |                                                                                                                                                                                                                                                                                                                                                              |                                                                                 |
|----------------|-------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Question       | Answer                                                                        | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                  | Additional guidance                                                             |
| 26             | 20 or 24 or 168                                                               | B1   | for identification of the range of the girls (20)<br><b>or</b> the range (24) <b>or</b> the median (168) of the boys                                                                                                                                                                                                                                         |                                                                                 |
|                | Comparison                                                                    | C2   | for a correct comparison of medians <b>and</b> a correct comparison of ranges supported by correct figures.<br><br>eg the median height for girls (165) is less than the median height for boys (168) and the range for girls (20) is less than the range for boys (24)<br><br>At least one comparison must be in context referring to height or quoting cm. | Simply quoting values for median, range is insufficient; they must be compared. |
|                |                                                                               | (C1  | for a correct comparison of medians <b>or</b> a correct comparison of ranges that could fit their incorrect figure(s))                                                                                                                                                                                                                                       | Context not necessary for C1                                                    |
| 27             | 450                                                                           | M1   | for $18 \div 3 (=6)$                                                                                                                                                                                                                                                                                                                                         | Ignore units                                                                    |
|                |                                                                               | M1   | for substitution eg. $75 = \frac{F}{6}$ or $75 \times "6"$                                                                                                                                                                                                                                                                                                   |                                                                                 |
|                |                                                                               | A1   | cao                                                                                                                                                                                                                                                                                                                                                          |                                                                                 |
| 28             | 0.000672,<br>$67.2 \times 10^{-4}$<br>$6.72 \times 10^5$<br>$672 \times 10^4$ | B2   | cao                                                                                                                                                                                                                                                                                                                                                          | Accept correct numbers in any form                                              |
|                |                                                                               | (B1  | for correct conversions to same format, condoning one error.<br><br><b>or</b> for 3 numbers in the correct order (ignoring one)<br><br><b>or</b> for all 4 numbers listed in reverse order)                                                                                                                                                                  |                                                                                 |

| Paper: 1MA1/2F |                       |                        |                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                         |
|----------------|-----------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                | Mark                   | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                   | Additional guidance                                                                                                                                                                                     |
| 11             | 600 cm <sup>3</sup>   | M1<br><br>A1<br><br>B1 | for a complete method to find the volume eg $4 \times 10 \times 15$<br><br>for 600<br><br>(indep) cm <sup>3</sup>                                                                                                                                                                                                                                                                             | If extra steps are shown do not award this mark<br><br>Ignore incorrect or absent units for this mark<br><br>Ignore incorrect or absent numerical answer for this mark                                  |
| 12             | L23, U23,<br>L29, U29 | B2<br><br>(B1)         | for all 4 outcomes with no extras or repeats<br><br>for at least 2 correct outcomes out of at most 8 different outcomes <b>or</b> for indicating 23 and 29 are the only prime numbers between 20 and 30)                                                                                                                                                                                      | Pairs must be unambiguous and in the correct order of letter number                                                                                                                                     |
| 13             | 19                    | P1<br><br>P1<br><br>A1 | for $4275 \div 28 (= 152.678..)$ <b>or</b> 153<br><b>or</b> a build up to at least $150 \times 28 (=4200)$<br><br>for “152” $\times 28 (= 4256)$ <b>or</b> “153” $\times 28 (=4284)$<br><b>or</b> (“152.678..” – 152) (=0.678..) <b>or</b> $4275 \div$ “152” – 28(= 0.125)<br><b>or</b> $4275 -$ “4200” (=75) oe<br><br>cao                                                                   | Division may be seen as a build up method<br><br>Use of $150 \times 28$ or better for “4200”                                                                                                            |
| 14             | Correct pie chart     | M1<br><br>A1<br><br>A1 | for a method to find at least one angle<br>eg $\frac{50}{(50+45+25)} \times 360 (= 150)$ <b>or</b> $\frac{45}{(50+45+25)} \times 360 (= 135)$<br><b>or</b> $\frac{25}{(50+45+25)} \times 360 (= 75)$ oe<br><br>for at all 3 angles correctly calculated <b>OR</b> at least one correct and accurately drawn angle (from no more than 3 sectors)<br><br>for a fully correct labelled pie chart | Do not award for drawing if the intention is to show more than 3 sectors<br>3 angles correct in table is enough for this mark irrelevant of diagram<br>Labels as “City” from table not just angle size. |



| Paper: 1MA1/3F |                        |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                       |
|----------------|------------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                 | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Additional guidance                                                                                                   |
| 20             | 1 57899                | B2   | for a fully correct ordered diagram                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Can be in reverse vertical order (with matching leaves)<br>eg 3,2,1<br>One number in the wrong position is one error. |
|                | 2 0224558              | (B1) | for a fully correct unordered diagram or for an ordered diagram with one error or omission)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                       |
|                | 3 235                  | B1   | (indep) for correct key (units not required but must be correct if stated)<br>eg 2 5 represents 25 (cm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                       |
| 21 (a)         | (100,18)               | B1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                       |
| (b)            | 12.8 to 14.8           | M1   | for a method to read off eg line of best fit <b>or</b> line up from 370<br><b>or</b> for a point on the grid at (370, y) where y lies between 12.8 and 14.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                       |
|                |                        | A1   | for an answer in the range 12.8 to 14.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                       |
| (c)            | Decision and statement | C1   | for decision and statement<br><b>Acceptable examples</b><br>No, as this point can be disregarded from the general trend<br>No, ignore this point<br>No, the correlation is positive<br>No, because even with an outlier you can still have a negative or positive correlation.<br>No, there is still a correlation.<br>No, as you can use the rest of the data to determine a correlation.<br>No, as outlier does not affect the majority<br>No as a line of best fit can still be drawn<br>No, it is an anomaly<br><b>Not acceptable examples</b><br>Yes, ....<br>Outliers can be ignored [no decision]<br>No, the outlier can be ignored so the correlation is negative<br>No there are other things that can affect the test |                                                                                                                       |

| Paper: 1MA1/1F |                     |            |                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |
|----------------|---------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Question       | Answer              | Mark       | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                              | Additional guidance                                                   |
| 8 (a)          | Completed bar chart | B2<br>(B1) | for a fully correct bar chart<br><br>for one bar correct eg May plotted at 35 <b>or</b> June plotted at 20<br><b>OR</b><br>May plotted at 20 <b>and</b> June plotted at 35)                                                                                                                                                                                                                              | Condone bars of unequal width<br>Condone no gaps or inconsistent gaps |
| (b)            | Explanation         | C1         | <b>Acceptable examples</b><br>Half a square is worth 2.5 (not 0.5)<br>It goes to 17.5<br>Halfway between 15 and 20 is not 15.5<br>It is between 17 and 18<br>It could/would be 17 or 18<br>It goes up in 5s (not 1s)<br><br><b>Not acceptable examples</b><br>The bar is in the middle<br>It could/would be 16 (or 19 or 15.6)<br>You can't have half a cm of rain<br>The answer would be a whole number |                                                                       |
| 9 (a)          | Shape drawn         | B1         | cao                                                                                                                                                                                                                                                                                                                                                                                                      | Ignore any subsequent values                                          |
| (b)            | 9 and 11            | B1         | cao                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                       |
| 10             | 27                  | M1<br>A1   | for $-15 + 42 (=27)$ oe<br>cao                                                                                                                                                                                                                                                                                                                                                                           | SC: B1 for answer of 26 if M0 scored                                  |

| Paper: 1MA1/1F |                                                                                                                                                                                                          |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                          |          |   |     |   |    |                          |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                               |  |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------|---|-----|---|----|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Question       | Answer                                                                                                                                                                                                   | Mark                   | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Additional guidance                                                                                                                      |          |   |     |   |    |                          |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                               |  |
| 20             | $\frac{39}{88}$                                                                                                                                                                                          | M1<br><br>M1<br><br>A1 | for finding the gap (A) $1 - \frac{5}{8} (= \frac{3}{8} = \frac{33}{88})$ <b>or</b> (C) $1 - \frac{9}{11} (= \frac{2}{11} = \frac{16}{88})$<br><b>or</b> $\frac{5}{8} + \frac{9}{11} (= \frac{55}{88} + \frac{72}{88} = \frac{127}{88})$<br><br>for $\frac{9}{11} - \frac{3}{8} (= \frac{72}{88} - \frac{33}{88})$ <b>or</b> $\frac{5}{8} - \frac{2}{11} (= \frac{55}{88} - \frac{16}{88})$<br><b>or</b> $1 - \frac{3}{8} - \frac{2}{11} (= 1 - \frac{33}{88} - \frac{16}{88})$ oe<br><b>or</b> $\frac{5}{8} + \frac{9}{11} - 1 (= \frac{55}{88} + \frac{72}{88} - 1)$<br><br>oe |                                                                                                                                          |          |   |     |   |    |                          |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                               |  |
| 21             | <table border="1"><tr><td>1</td><td>79</td></tr><tr><td>2</td><td>55677789</td></tr><tr><td>3</td><td>377</td></tr><tr><td>4</td><td>57</td></tr></table><br><br>Key: eg 2 5 = 25<br><b>or</b> 20 5 = 25 | 1                      | 79                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2                                                                                                                                        | 55677789 | 3 | 377 | 4 | 57 | B2<br><br>(B1)<br><br>B1 | for a fully correct ordered diagram<br><br>for a complete unordered diagram <b>or</b> for an ordered diagram with at most one error or omission)<br><br>for correct key (units not required but must be correct if stated)<br>eg 2 5 <b>or</b> 20 5 represents 25 (years) | Accept stem of 10, 20, 30, 40<br>Can be in reverse vertical order (with matching leaves) eg 4, 3, 2, 1<br>Errors can be omissions; one number in the wrong position is one error.<br><br>Key must be consistent with the stem |  |
| 1              | 79                                                                                                                                                                                                       |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                          |          |   |     |   |    |                          |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                               |  |
| 2              | 55677789                                                                                                                                                                                                 |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                          |          |   |     |   |    |                          |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                               |  |
| 3              | 377                                                                                                                                                                                                      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                          |          |   |     |   |    |                          |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                               |  |
| 4              | 57                                                                                                                                                                                                       |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                          |          |   |     |   |    |                          |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                               |  |
| 22             | $45\pi$                                                                                                                                                                                                  | P1<br><br>P1<br><br>A1 | for (area of circle =) $\pi \times 3^2$<br><br>for (volume =) [area of circle] $\times 5$<br><br>cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <br><br>[area of circle] $\times 5 = \pi \times 3^2 \times 5$ <b>or</b> $\pi \times 6^2 \times 5$<br><b>or</b> $\pi \times r^2 \times 5$ |          |   |     |   |    |                          |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                               |  |



| Paper: 1MA1/2F |                   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                           |
|----------------|-------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer            | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Additional guidance                                                                                                                                                                                                                                                                                                       |
| 9 (a)          | 23                | B1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 56 : 10 implies this mark only<br>Accept 1 : 5.6                                                                                                                                                                                                                                                                          |
|                |                   | M1   | for 10 or 56 identified                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                           |
|                |                   | A1   | for 10 : 56 or any other equivalent ratio                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                           |
| 10             | 213               | P1   | for beginning to work with costs<br>eg $1428 - 150 (= 1278)$ <b>or</b><br>$1428 \div 6 (= 238)$ <b>and</b> $150 \div 6 (= 25)$                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                           |
|                |                   | P1   | for complete process to find monthly payment<br>eg "1278" $\div 6$ or "238" – "25"                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                           |
|                |                   | A1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                           |
| 11             | 39 with reasoning | M1   | for a method to find angle $ACB$<br>eg $180 - 116 - 25$                                                                                                                                                                                                                                                                                                                                                                                                      | $ACB = 39$ or $x = 39$ or $C = 39$ or just 39 is acceptable for this accuracy mark<br><br>Angle may be shown on diagram if no ambiguity or contradiction<br>The key words underlined must be present.<br>There should be no incorrect reasons given.<br>All reasons given should be used, not just a list of angle facts. |
|                |                   | A1   | for 39                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                           |
|                |                   | C1   | for $x = 39$ with reasoning eg<br><u>Angles</u> in a <u>triangle</u> add up to 180 <b>and</b><br><u>Vertically opposite angles</u> are equal <b>or</b><br><u>Vertically opposite angles</u> are equal <b>or</b><br><u>Angles</u> on a straight <u>line</u> add up to 180<br><b>OR</b><br>The <u>exterior angle</u> of a triangle is equal to the sum of the <u>interior opposite angles</u> <b>and</b> <u>Angles</u> on a straight <u>line</u> add up to 180 |                                                                                                                                                                                                                                                                                                                           |



| Paper: 1MA1/2F |        |      |                                                                                                                                                                                                                                                                                                             |                                                                            |
|----------------|--------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Question       | Answer | Mark | Mark scheme                                                                                                                                                                                                                                                                                                 | Additional guidance                                                        |
| 9              | Chart  | B1   | for correct day labels or a linear scale                                                                                                                                                                                                                                                                    | Accept key in place of labels                                              |
|                |        | M1   | for correct bars showing information for at least 3 days                                                                                                                                                                                                                                                    | Condone bars of varying widths<br>Condone no gaps or inconsistent gaps     |
|                |        | A1   | for a fully correct bar chart                                                                                                                                                                                                                                                                               | Labels of Day and Frequency not essential                                  |
| 10 (a)         | 49     | M1   | for attempt to find the difference between 07 20 and 08 09                                                                                                                                                                                                                                                  | May be seen in stages eg 10+30+9                                           |
|                |        | A1   | cao                                                                                                                                                                                                                                                                                                         |                                                                            |
|                |        | P1   | for a process shown to add a time to a departure time,<br>eg 0800 + 7 or 0800 + 15 or 0800 + 7 + 15<br><b>or</b> process for time at work after Bolton bus stop arrival, eg "0858" + 15<br><b>or</b> find accumulated additional time, eg 7 + 15 (= 22)<br><b>or</b> starts to work backwards, eg 0920 – 15 |                                                                            |
|                |        | P1   | for a process to select correct bus time from Blackrod to Bolton eg 0809 to 0858                                                                                                                                                                                                                            | 8 09 stated as bus start time or 7 40 (from Wigan) is enough for this mark |
|                |        | C1   | for conclusion of "yes" supported by correct comparable figures,<br>eg states 0913 <b>or</b> 0858 and 22 (spare)                                                                                                                                                                                            | NOTE other comparisons may be seen                                         |
| 11             | 130    | P1   | process to find the total number of children, eg 214 – 14 (= 200)                                                                                                                                                                                                                                           |                                                                            |
|                |        | P1   | process to find the number of children wearing a hat,<br>eg "200" × 35 ÷ 100 (= 70)<br><b>or</b> process to find the multiplier for the percentage of children not wearing a hat,<br>eg (100 – 35) ÷ 100 (= 0.65)                                                                                           |                                                                            |
|                |        | P1   | for full process to find the number of children not wearing a hat,<br>eg "200" – "70" <b>or</b> "200" × "0.65" <b>or</b> 214 – "70" – 14                                                                                                                                                                    |                                                                            |
|                |        | A1   | cao                                                                                                                                                                                                                                                                                                         |                                                                            |

| Paper: 1MA1/2F                           |                   |      |                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                         |
|------------------------------------------|-------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question                                 | Answer            | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                  | Additional guidance                                                                                                                                                     |
| 17                                       | 16 0 2 8          | B2   | for a fully correct ordered diagram                                                                                                                                                                                                                                                                                                          | Accept stem of 160, 170, 180, 190                                                                                                                                       |
|                                          | 17 2 2 3 7 8      | (B1) | for a complete unordered diagram <b>or</b> for an ordered diagram with at most one error or omission)                                                                                                                                                                                                                                        | Can be in reverse vertical order (with matching leaves) eg 19, 18, 17, 16                                                                                               |
|                                          | 18 0 0 3 4 6 8    |      |                                                                                                                                                                                                                                                                                                                                              | Errors can be omissions; one number in the wrong position is one error.                                                                                                 |
|                                          | 19 1 7            | B1   | (indep) for correct key, eg 16 0 <b>or</b> 160 0 represents 160                                                                                                                                                                                                                                                                              | Key must be consistent with the stem.                                                                                                                                   |
| Key: 16 0 = 160<br><b>or</b> 160 0 = 160 |                   |      |                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                         |
| 18 (a)                                   | 1.882(0861678...) | B2   | 1.882(0861678...)                                                                                                                                                                                                                                                                                                                            | Condone 1.882(0861668...) for both marks                                                                                                                                |
|                                          |                   | (B1) | for 16.6 <b>or</b> 8.82 <b>or</b> $\frac{830}{441}$ <b>or</b> 1.88)                                                                                                                                                                                                                                                                          |                                                                                                                                                                         |
| (b)                                      | 1.88              | B1   | for 1.88<br><b>or</b> ft their answer to part (a) correctly rounded to 2 dp, providing part (a) has at least 3 dp                                                                                                                                                                                                                            | Condone 1.88<br>Do not accept trailing 0, eg 1.880                                                                                                                      |
| 19                                       | 78                | M1   | for finding one angle within the triangle is $180 \div 3 (= 60)$                                                                                                                                                                                                                                                                             | Angles must be clearly labelled on the diagram or otherwise identified.                                                                                                 |
|                                          |                   | M1   | for method to use parallel lines, eg $BDE = DBC$<br><b>or</b> $BCD + CDE = 180$                                                                                                                                                                                                                                                              | Correct method can be implied from angles on the diagram if no ambiguity or contradiction.                                                                              |
|                                          |                   | C2   | (dep M2) for $(x =) 78$ with a correct reason relating to parallel lines <b>and</b> one other correct reason given, with no unused reasons.                                                                                                                                                                                                  | If $x$ is clearly identified as 78 award M2 (implied)                                                                                                                   |
|                                          |                   | (C1) | (dep M1) for one correct reason given for their chosen method,<br><br>angles in an <u>equilateral triangle</u> are equal<br><u>alternate angles</u> are equal<br><u>angles</u> in a <u>quadrilateral</u> add up to 360<br><u>angles</u> in a <u>triangle</u> add up to 180<br><u>Allied angles</u> / <u>Co-interior angles</u> add up to 180 | Underlined words need to be shown; reasons need to be linked to their method, which can be implied from correctly identified angles (stated or written on the diagram). |



| Paper: 1MA1/1F |                                                                                                                                               |                                |                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                        |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                                                                                                                        | Mark                           | Mark scheme                                                                                                                                                                                                                                                                                                                                                                     | Additional guidance                                                                                                                                                                                                                                                                    |
| 18             | $\begin{array}{r} 13 \overline{) 578} \\ 14 \overline{) 246679} \\ 15 \overline{) 024} \end{array}$ <p>Key: 13l5 = 135<br/>or 130l5 = 135</p> | <p>B2</p> <p>(B1</p> <p>B1</p> | <p>for a fully correct ordered diagram</p> <p>for a complete unordered diagram or for an ordered diagram with at most one error or omission)</p> <p>for a correct key (units not required but must be correct if stated) eg. 13l5 or 130l5 represents 135 (cm)</p>                                                                                                              | <p>Any comment on the other ingredients must be correct.</p> <p>Accept stem of 130, 140, 150<br/>Can be in reverse vertical order (with matching leaves)</p> <p>Errors can be omissions; one number in the wrong position is one error</p> <p>Key must be consistent with the stem</p> |
| 19             | 6                                                                                                                                             | <p>M1</p> <p>A1</p>            | <p>for a complete factor tree for 54 or 120 with no more than one arithmetic error</p> <p>or for listing at least 4 correct factors (with no more than 1 incorrect) of 54 or 120, could be in factor pairs</p> <p>or for the prime factors of 54 (2, 3, 3, 3) or 120 (2, 2, 2, 3, 5)</p> <p>cao</p> <p>SCB1 for an answer of 2 or 3 or <math>2 \times 3</math> if M0 scored</p> | <p>Condone the inclusion of 1 for this mark</p> <p>Factors of 54: 1, 2, 3, 6, 9, 18, 27, 54<br/>Factors of 120: 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60, 120</p> <p>Prime factors may be seen in a diagram eg a Venn diagram</p>                                           |



| Paper: 1MA1/1F |         |                 |      |                                                                                                                                   |
|----------------|---------|-----------------|------|-----------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer          | Mark | Notes                                                                                                                             |
| 14 (a)         |         | 168°, 120°, 72° | M1   | for correct working to find an angle (could be implied by one angle drawn correctly on the pie chart)                             |
|                |         |                 | A1   | for all three angles drawn $\pm 2^\circ$                                                                                          |
|                |         |                 | B1   | (dep on M1) for correct labels (languages)                                                                                        |
| (b)            |         | No and reason   | C1   | NO and reason given e.g. "don't have actual figures for Lowry"                                                                    |
| 15             |         | 13.5            | P1   | process shown to find the area of the triangle e.g. $\frac{1}{2} \times 8 \times 9 (=36)$                                         |
|                |         |                 | P1   | for calculating $6 \times (\text{area}) (=216)$                                                                                   |
|                |         |                 | P1   | for process shown of dividing their area of rectangle by 16 (oe)                                                                  |
|                |         |                 | A1   | oe                                                                                                                                |
| 16             |         | $-\frac{1}{2}$  | M1   | for substitution with operations shown e.g. $1 + -3 \times \frac{1}{2}$ or $1 - \frac{3}{2}$ or $1\frac{1}{2}$ or $-1\frac{1}{2}$ |
|                |         |                 | A1   | oe                                                                                                                                |
| 17             |         | 1110            | M1   | method to find the weight of 1 tin of soup e.g. $1750 \div 5 (=350)$                                                              |
|                |         |                 | M1   | method to find the weight of 3 packets of soup e.g. $1490 - (4 \times "350") (=90)$                                               |
|                |         |                 | M1   | method to find the weight of 3 tins and 2 packets e.g. $3 \times "350" + "90" \div 3 \times 2$                                    |
|                |         |                 | A1   | cao                                                                                                                               |



| Paper: 1MA1/1F |                                                                                     |      |                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                |
|----------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                                                              | Mark | Mark scheme                                                                                                                                                                                                                                     | Additional guidance                                                                                                                                                                                                                                                                                                                                                            |
| 1              | 70 or 7 tens                                                                        | B1   | for 70 (or seventy) or 7 tens (or seven tens)                                                                                                                                                                                                   | Condone any incorrect spelling provided the intention is clear                                                                                                                                                                                                                                                                                                                 |
| 2              | 4.6                                                                                 | B1   | cao                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                |
| 3              | 3170                                                                                | B1   | cao                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                |
| 4              | $\frac{2}{5}$                                                                       | B1   | cao                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                |
| 5              | 0.15                                                                                | B1   | cao                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                |
| 6 (a)          | 24                                                                                  | B1   | cao                                                                                                                                                                                                                                             | Shapes can come from a combination of shapes, but must sum to 12. Any orientation.<br><br>Accept one error in the totals for each month, eg $24 + 28 + 18 + 12$ for the award of this mark. Do not award for omission of figure for April.<br><br>If work in (a) or (b) consistently shows a misinterpretation of the scale the M mark can still be awarded if also consistent |
| (b)            |  | C1   | for showing diagrams that represent 12 pictorially                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                |
| (c)            | 84                                                                                  | M1   | for a complete method to find the total number<br>eg $3 \times 8 + 3.5 \times 8 + 2.5 \times 8 + 12$ or $(3 + 3\frac{1}{2} + 2\frac{1}{2} + 1\frac{1}{2}) \times 8$<br>or $24 + 28 + 20 + 12$<br>or $9 \times 8 + 3 \times 4$<br>NB ft from (b) |                                                                                                                                                                                                                                                                                                                                                                                |
|                |                                                                                     | A1   | cao                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                |
| 7              | 10                                                                                  | M1   | for converting $1\frac{1}{4}$ hours or $\frac{1}{4}$ hour to minutes<br>eg. $1\frac{1}{4}$ hours = $60 + 15$ (= 75) or $\frac{1}{4}$ hour = 15 minutes<br>or for converting 1 hour 25 minutes to minutes eg $60 + 25$ (= 85)                    | Condone absence of units in the working                                                                                                                                                                                                                                                                                                                                        |
|                |                                                                                     | A1   | cao                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                |



| Paper: 1MA1/1F |                               |      |                                                                                                                                                                                                                 |                                                                                                                                           |
|----------------|-------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                        | Mark | Mark scheme                                                                                                                                                                                                     | Additional guidance                                                                                                                       |
| 18             | No with fully correct figures | M1   | for $(360 - 60) \div 2 (= 150)$ or $\frac{60}{360} \times 480 (= 80)$ oe                                                                                                                                        | Angle of $150^\circ$ may be seen on diagram                                                                                               |
|                |                               | M1   | (dep) for method to find required number of students in School A<br>eg $\frac{150}{360} \times 480 (= 200)$ or $(480 - "80") \div 2 (= 200)$                                                                    |                                                                                                                                           |
|                |                               | M1   | for method to find required number of students in School B,<br>eg $\frac{90}{360} \times 760 (= 190)$ or $760 \div 4 (= 190)$                                                                                   | ft the angle of $90$ eg from $360 - 160 - 110$ calculated incorrectly, or measured incorrectly from the diagram within the range 88 to 92 |
|                |                               | C1   | for No with correct figures<br><b>Acceptable examples</b><br>No, 200 and 190<br>He is wrong, School A has 10 more<br><b>Not acceptable examples</b><br>Yes ....<br>No, School A had 20 more [incorrect figures] |                                                                                                                                           |
| 19             | $-3 \leq p < 1$               | C2   | for $-3 \leq p < 1$ or $p \geq -3, p < 1$ oe                                                                                                                                                                    | Accept use of a letter other than $p$ .                                                                                                   |
|                |                               | (C1  | for $-3 \leq p$ or for $p < 1$ or for $-3 < p \leq 1$ oe)                                                                                                                                                       |                                                                                                                                           |

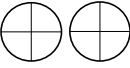


| Paper: 1MA1/1F |                         |      |                                                                                                                       |                                                                                          |
|----------------|-------------------------|------|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Question       | Answer                  | Mark | Mark scheme                                                                                                           | Additional guidance                                                                      |
| 7              | Correct pictogram drawn | C1   | deduces that 1 ellipse represents 12 (eggs) oe                                                                        | eg. $\frac{1}{2}$ ellipse represents 6 (eggs), $\frac{1}{4}$ ellipse represents 3 (eggs) |
|                |                         | C1   | 2 ellipses for Tuesday oe                                                                                             | some interpretation of shapes will be needed                                             |
|                |                         | C1   | $2\frac{1}{4}$ ellipses for Wednesday oe                                                                              |                                                                                          |
|                |                         | C1   | correctly represented key                                                                                             |                                                                                          |
|                |                         |      | <b>Alternative</b> (using 1 ellipse to represent a different number of eggs)                                          |                                                                                          |
|                |                         | C2   | for a correctly shown key, eg. 1 drawn ellipse represents 4 (eggs) oe <b>and</b> one day in agreement with their key. | eg. a correctly represented key plus, $4\frac{1}{2}$ ellipses for Monday oe              |
|                |                         | C1   | for a second day in agreement with their key                                                                          | eg. 6 ellipses for Tuesday oe                                                            |
|                |                         | C1   | for a third day in agreement with their key.                                                                          | eg. $6\frac{3}{4}$ ellipses for Wednesday oe                                             |
| 8              | (a) (2, 3)              | B1   | cao                                                                                                                   |                                                                                          |
|                | (b) (0, -1)             | B1   | cao                                                                                                                   |                                                                                          |
|                | (c) C at (-2,1)         | B1   | cao                                                                                                                   | If more than one point marked accept if labelled, otherwise not, unless clear            |

| Paper: 1MA1/1F |              |      |                                                                                                                                                                           |                                                                                                                             |
|----------------|--------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer       | Mark | Mark scheme                                                                                                                                                               | Additional guidance                                                                                                         |
| 13 (a)         | 60           | B1   | cao                                                                                                                                                                       | May be seen on diagram                                                                                                      |
|                | (b) 50       | B1   | cao                                                                                                                                                                       | May be seen on diagram                                                                                                      |
|                | (c) 80 : 200 | P1   | for process to <b>use</b> the number of children, 80 or the total number of men and women, 200 in a ratio<br><b>or</b> for $\frac{80}{200}$                               |                                                                                                                             |
|                |              | A1   | for 80 : 200 oe                                                                                                                                                           | Award for a correct ratio even if subsequently incorrectly simplified.                                                      |
| 14 (a)         | 81           | M1   | for $54 \times [\text{time}]$ eg $54 \times 1\frac{1}{2}$ oe,<br><b>or</b> $54 \div 54 \div 2$ oe                                                                         | [time] could be $1\frac{1}{2}$ oe or any other time that has been changed from $1\frac{1}{2}$ , eg 90 (mins) or 1.30 or 130 |
|                |              | A1   | cao                                                                                                                                                                       |                                                                                                                             |
|                | 1.5          | P1   | for use of scale eg $6 \times 25\,000$ (= 150 000)<br><b>or</b><br>for $25\,000 \div 100\,000$ (= 0.25)<br>or $25\,000 \div 100$ (= 250)<br>or $25\,000 \div 1000$ (= 25) | [0.25] could be found by dividing 25 000 by 100 (= 250) or dividing 25 000 by 1000 (= 25)                                   |
|                |              | P1   | for “150 000” $\div$ 100 000 (= 1.5)<br>or “150 000” $\div$ 100 (= 1500)<br>or “150 000” $\div$ 1000 (= 150)<br><b>or</b><br>for $[0.25] \times 6$ (= 1.5)                |                                                                                                                             |
|                |              | A1   | for 1.5 oe                                                                                                                                                                |                                                                                                                             |

| Paper: 1MA1/3F |        |      |                                                                                                                                                                                                                                                                                                                                 |                     |
|----------------|--------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Question       | Answer | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                     | Additional guidance |
| 11             | 13     | P1   | for beginning to process problem eg $72 - 7 (= 65)$<br>or writing $5x + 7 = 72$ oe                                                                                                                                                                                                                                              |                     |
|                |        | P1   | for a complete process eg “65” $\div 5$ oe<br>or writes $5x = 65$ oe                                                                                                                                                                                                                                                            |                     |
|                |        | A1   | cao                                                                                                                                                                                                                                                                                                                             |                     |
| 12 (a)         | Merit  | B1   | cao                                                                                                                                                                                                                                                                                                                             |                     |
| (b)            | 24     | M1   | for beginning to work with proportion<br>eg $105 \div 7 (= 15)$ or $7 \div 105 (= 0.07$ or $0.06\dots)$ or $360 \times 7 (= 2520)$<br>or $\frac{360}{105} (= 3.4\dots)$<br>or works out a quantity for one sector<br>eg $\frac{7}{105} \times 30 (= 2)$ , $\frac{7}{105} \times 75 (= 5)$ , $\frac{7}{105} \times 150 (= 10)$ , |                     |
|                |        | M1   | for a complete method eg $\frac{360}{105} \times 7$ oe or “3.4...” $\times 7$<br>or $360 \div “15”$ or $360 \times “0.06\dots”$<br>or “2520” $\div 105$<br>or $7 + “2” + “5” + “10”$                                                                                                                                            |                     |
|                |        | A1   | cao                                                                                                                                                                                                                                                                                                                             |                     |



| Paper: 1MA1/3F |                                                                                     |      |                                                                                                                                                                                                                                        |                                                                                                                                                                               |
|----------------|-------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                                                              | Mark | Mark scheme                                                                                                                                                                                                                            | Additional guidance                                                                                                                                                           |
| 1              | 0.35                                                                                | B1   | cao                                                                                                                                                                                                                                    |                                                                                                                                                                               |
| 2              | 8100                                                                                | B1   | cao                                                                                                                                                                                                                                    |                                                                                                                                                                               |
| 3              | valid number                                                                        | B1   | for a valid number, eg $-6$ , $-7$ , $-7.5$                                                                                                                                                                                            |                                                                                                                                                                               |
| 4              | $\frac{6}{21}$                                                                      | B1   | eg $\frac{2}{7}$ or any equivalent fraction                                                                                                                                                                                            |                                                                                                                                                                               |
| 5              | tenths or $\frac{9}{10}$                                                            | B1   | for (9) tenths or $\frac{9}{10}$ or 0.9                                                                                                                                                                                                | Condone incorrect spellings provided the intention is clear.<br>Accept .9                                                                                                     |
| 6 (a)          |  | C1   | for showing diagrams that represent 24 pictorially                                                                                                                                                                                     | shapes can come from a combination of shapes but must sum to 24                                                                                                               |
| (b)            | Year 8<br>(supported)                                                               | M1   | for beginning to work with the pictogram,<br>eg counting symbols or finding the total for one type of cake                                                                                                                             | Chocolate = 60<br>Vanilla = 39<br>Lemon = 18                                                                                                                                  |
|                |                                                                                     | M1   | for a complete method to find the total number,<br>eg $5 \times 12 + 3\frac{1}{4} \times 12 + 1\frac{1}{2} \times 12 + 24$ or $60 + 39 + 18 + 24 (= 141)$<br><b>or</b> $5 + 3.25 + 1.5 + 2 (= 11.75)$ <b>or</b> $150 \div 12 (= 12.5)$ | For this M mark use 24 for banana or ft from their diagram, but do not award if banana has been omitted.<br>If only totals are shown allow no more than one error in a total. |
|                |                                                                                     | C1   | for selecting Year 8 with correct figures,<br>eg Year 8 and 141 <b>or</b> Year 8 with 9 more<br><b>or</b> Year 8 with $11\frac{3}{4}$ <b>and</b> $12\frac{1}{2}$                                                                       |                                                                                                                                                                               |

| Paper: 1MA1/1F |           |      |                                                                                                                                                 |                                                                                                                                                                                                                                                            |
|----------------|-----------|------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer    | Mark | Mark scheme                                                                                                                                     | Additional guidance                                                                                                                                                                                                                                        |
| 7              | Bar chart |      |                                                                                                                                                 | Accept bar chart, vertical line graph, dual/multiple bar chart, composite bar chart, frequency polygon for all marks.                                                                                                                                      |
|                |           | M1   | for a key, or suitable labels, to identify Lena and Pavel                                                                                       | Accept unambiguous abbreviations for labels eg L, P                                                                                                                                                                                                        |
|                |           | M1   | for 3 or 4 correct labels for days <b>or</b> a linear scale present                                                                             | Allow linear scale not starting at 0<br>Scale must be marked on grid lines.                                                                                                                                                                                |
|                |           | M1   | for a (bar) chart correctly showing data for at least 1 person or 2 days                                                                        | Bars / lines / points must be unambiguously correct for their scale (scale must be present).<br><br>Allow for correctly showing total hours worked for all four days on chart (13, 15, 13, 12)                                                             |
|                |           | C1   | for a fully correct (bar) chart with labels for days of the week, vertical axis correctly scaled and labelled and key/labels for Lena and Pavel | Horizontal axis does not need an overall 'day' label<br>Condone frequency for number of hours.<br>For C mark scale must start at 0 and be linear for the range of values plotted.<br>Condone bars of unequal width<br>Condone no gaps or inconsistent gaps |

| Paper: 1MA1/1F |            |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |
|----------------|------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer     | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Additional guidance                                                                                                                                                                                                                                                              |
| 15 (a)         | 64         | B1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                  |
| (b)            | 36         | M1   | for identifying 81 and 45 as the key numbers, eg 81 – 45 or 45 – 81 or 45 to 81                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | It is insufficient to identify these on the diagram (eg as 1, 5)                                                                                                                                                                                                                 |
|                |            | A1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Answer of –36 gets M1A0                                                                                                                                                                                                                                                          |
| (c)            | comparison | C1   | for a correct comparison of medians that could fit their incorrect median in (a)<br><br><b>Acceptable examples</b><br>The adults were faster because they have the smaller median<br>The adults were [11] minutes faster (on average)<br>The adults were faster<br>The adults took less time<br>The children were slower<br>The children took more time<br>Children took [11] minutes more (on average)<br>Children had a larger median than the adults.<br><br><b>Not acceptable examples</b><br>The children were faster<br>The adults median was 64, the children's median was 75<br>11 minutes difference<br>The children had more time to run than the adults | Statement must be entirely true and not contradictory<br>Figures not required in comparison, but if seen must be correct.<br><br>Where [11] is the difference between 75 and their (a).<br><br>If median in (a) is greater than 75 then converse statements would be correct ft. |

| Paper: 1MA1/3F |               |      |                                                                                                                                                                       |                                                                                             |
|----------------|---------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Question       | Answer        | Mark | Mark scheme                                                                                                                                                           | Additional guidance                                                                         |
| 22             | Comparison    | B1   | for correctly identifying the median of (School) A as 57                                                                                                              | If median for school B is stated in the comparison it must be correct                       |
|                |               | C1   | (ft, dep on value for the median being stated) for making a correct comparison of <u>median</u> eg 'the median of (School) A is higher than the median of (School) B' |                                                                                             |
|                |               | B1   | for correctly identifying the range of (School) A as 49                                                                                                               |                                                                                             |
|                |               | C1   | (ft, dep on value for the range being stated) for making a correct comparison of <u>range</u> eg 'the range of (School) A is higher than the range of (School) B'     |                                                                                             |
| 23             | 10.2 and 10.3 | B1   | for 10.2 in the correct place                                                                                                                                         | Accept 10.29 or 10.299(99...)                                                               |
|                |               | B1   | for 10.3 in the correct place                                                                                                                                         |                                                                                             |
| 24             | 14.3          | M1   | for a correct statement for AB using trigonometry,<br>eg $\tan 62 = \frac{AB}{7.6}$ or $(AB =) 7.6 \times \tan 62$                                                    | If an answer is given in the range in working and then rounded incorrectly award full marks |
|                |               | A1   | answer in the range 14.28 to 14.3                                                                                                                                     |                                                                                             |



| Paper: 1MA1/1F |                 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                     |
|----------------|-----------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Question       | Answer          | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Additional guidance |
| 1              | 5e              | B1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                     |
| 2              | 0.75            | B1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                     |
| 3              | 6               | B1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                     |
| 4              | 32              | B1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                     |
| 5              | Acute           | B1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                     |
| 6 (a)          | 42              | B1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                     |
| (b)            | Yes (supported) | P1   | for a start to a process to find figures to compare,<br>eg $33 + 40 + 27 (= 100)$ <b>or</b> $20 + 14 + 15 (= 49)$<br><b>or</b> $(33 - 20) + (40 - 14) + (27 - 15) (= 51)$                                                                                                                                                                                                                                                                                                                                                                                                              |                     |
|                |                 | P1   | for complete process to give figures to compare, eg<br>$33 + 40 + 27 (= 100)$ <b>and</b> $20 + 14 + 15 (= 49)$ <b>and</b> " $49$ " $\times 2 (= 98)$<br><b>or</b><br>$33 + 40 + 27 (= 100)$ <b>and</b> $20 + 14 + 15 (= 49)$ <b>and</b> " $100$ " $\div 2 (= 50)$<br><b>or</b><br>$33 + 40 + 27 (= 100)$ <b>and</b> $20 + 14 + 15 (= 49)$ <b>and</b> " $100$ " $-$ " $49$ " $(= 51)$<br><b>or</b><br>$33 + 40 + 27 (= 100)$ <b>and</b> $20 \times 2 + 14 \times 2 + 15 \times 2 (= 98)$<br><b>or</b><br>$(33 - 20) + (40 - 14) + (27 - 15) (= 51)$<br><b>and</b> $20 + 14 + 15 (= 49)$ |                     |
|                |                 | C1   | for Yes with correct supporting figures,<br>eg 100 <b>and</b> 98 <b>or</b> 50 <b>and</b> 49 <b>or</b> 100 <b>and</b> 49 <b>and</b> 51<br><b>or</b> 51 <b>and</b> 49                                                                                                                                                                                                                                                                                                                                                                                                                    |                     |

| Paper: 1MA1/2F |                    |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                 |
|----------------|--------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer             | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Additional guidance                                                                                                                                             |
| 14 (a)         | Complete pie chart | M1   | for a full method to find at least one angle,<br>eg $\frac{360}{(45 + 20 + 55)} \times 20 (= 60)$ oe <b>or</b> $\frac{55}{(45 + 20 + 55)} \times 360 (= 165)$ oe<br><b>or</b> $\frac{135}{45} \times 20 (= 60)$ <b>or</b> $\frac{135}{45} \times 55 (= 165)$                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Award this mark even if more than 3 sectors are drawn                                                                                                           |
|                |                    | A1   | for both angles correctly calculated<br><b>or</b><br>for one correct and accurately drawn angle                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                 |
|                |                    | A1   | for a fully correct labelled pie chart                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                 |
|                | (b) Explanation    | C1   | for explanation relating to population size,<br><br><b>Acceptable examples</b><br>No as we do not know the number of students in year 11<br>It would be true if the number of students in each year was the same<br>No as pie charts show proportions not numbers<br>(No) as the populations may not be equal<br>No there may be more/less students in Yr10/Yr 11<br>Could be different number of degrees per person (on Yr 11 pie chart)<br>Yes but only if there are the same number of students<br>We don't know how many students are in year 10 compared to year 11<br><br><b>Not acceptable examples</b><br>Yes as $150^\circ$ is bigger than $135^\circ$<br>We don't know how many students are in year 10 | Do not award for drawing if the intention is to show more than 3 sectors<br><br>Each sector must be labelled with the associated language, not just angle size. |



| Paper 1MA1: 2F |         |                                                         |          |                                                                                                                                                                                                     |
|----------------|---------|---------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer                                                  | Mark     | Notes                                                                                                                                                                                               |
| 1 (a)          |         | $3p$                                                    | B1       | cao                                                                                                                                                                                                 |
|                |         | $2m^3$                                                  | B1       | cao                                                                                                                                                                                                 |
|                |         | $10 - 4c + 6d$                                          | M1<br>A1 | for $-4c$ or $6d$ (accept $+4c$ )<br>for $10 - 4c + 6d$                                                                                                                                             |
| 2              |         | 60                                                      | B1       | cao                                                                                                                                                                                                 |
| 3 (a)          |         | Walk                                                    | B1       | cao                                                                                                                                                                                                 |
|                |         | 7 on chart                                              | B1       | for bar of height 7 drawn for girls walking                                                                                                                                                         |
|                |         | 4                                                       | B1       | cao                                                                                                                                                                                                 |
|                |         | 96                                                      | M1<br>A1 | for method to find number of Year 6 students in the survey<br>e.g. $5 + 9 + 6 + 4 + 9 + 7 + 4 + 1 + 2 + 1$ (= 48) or $14 + 10 + 16 + 5 + 3$ (= 48)<br>for 96 or ft from (b), eg 82 if no bar in (b) |
| 4              |         | $\frac{11}{30}, \frac{2}{5}, \frac{7}{15}, \frac{1}{2}$ | M1<br>A1 | converts fractions to a common form, e.g. fractions with a denominator of 30, decimals or percentages, at least two conversions correct or any 3 fractions in correct order                         |

| Paper: 1MA1/3F |                                                                                   |                  |                                                                                                                                                                                                                             |                                                                                                                                                                                                                  |
|----------------|-----------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                                                            | Mark             | Mark scheme                                                                                                                                                                                                                 | Additional guidance                                                                                                                                                                                              |
| 13             | D, F, A                                                                           | C2<br>(C1)       | for all 3 correct<br>for 1 or 2 correct)                                                                                                                                                                                    |                                                                                                                                                                                                                  |
| 14 (a)         | $\begin{array}{r l} 6 & 4799 \\ 7 & 0015667 \\ 8 & 0011247 \\ 9 & 14 \end{array}$ | B2<br>(B1)<br>B1 | for correct ordered stem and leaf<br>for fully correct unordered or ordered with one error or omission)<br>(indep) for key (units not required but must be correct if stated)<br>eg $6 \mid 4 = 64$ (marks)                 |                                                                                                                                                                                                                  |
| (b)            | Explanation                                                                       | C1<br><br>C1     | for identifying "6" students failed (ft their diagram)<br><b>OR</b> for $20 \div 4 (= 5)$<br><br>for comparing $\frac{1}{4}$ with $\frac{6}{20}$ or $\frac{3}{10}$ (ft their diagram)<br><b>OR</b> for comparing "6" with 5 | Explanation does not need to state that Omar is wrong, but just needs to provide two comparable values (that are not the same) unless ft values show that Omar is not wrong in which case a statement is needed. |
| 15 (a)         | Incorrect order of operation                                                      | C1               | for identifying an incorrect order of operation, eg should be $12 - 8$ <b>or</b> "should multiply first"                                                                                                                    | Showing that $12 - 2 \times 4$ is 4 (and not 40) is insufficient for this mark; the explanation should focus on what Jenny has done wrong.                                                                       |
| (b)            | Statement                                                                         | C1               | for stating that the range is the difference between the greatest and least values, <b>or</b> stating that he didn't put numbers in order                                                                                   | Stating the correct calculation for the range $(8 - 1)$ or stating the (correct) range as 7 is sufficient for this mark.                                                                                         |

| Paper: 1MA1/2F |                                                                  |      |                                                                                                                                                                                                                               |                                                                                                                                                                                                                              |
|----------------|------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                                           | Mark | Mark scheme                                                                                                                                                                                                                   | Additional guidance                                                                                                                                                                                                          |
| 8              | (a) $7ab$                                                        | B1   | for $7ab$                                                                                                                                                                                                                     |                                                                                                                                                                                                                              |
|                | (b) $y^3$                                                        | B1   | cao                                                                                                                                                                                                                           |                                                                                                                                                                                                                              |
|                | (c) $\frac{e}{f}$                                                | M1   | for a correct first step,<br>eg. numerator of $e^3 \times f$ or denominator of $e^2 \times f^2$<br><b>OR</b> $e \div f$ or $e \times f^{-1}$<br><b>OR</b> relevant crossings out for all the $e$ 's <b>and</b> all the $f$ 's |                                                                                                                                                                                                                              |
|                |                                                                  | A1   | for $\frac{e}{f}$ or $ef^{-1}$                                                                                                                                                                                                |                                                                                                                                                                                                                              |
| 9              | (a)(i) 24                                                        | B1   | cao                                                                                                                                                                                                                           | Fully correct diagram with no method shown gets all 3 marks<br><br>SC: B2 for 4 full circles for Wed <b>and</b> half a circle for Thursday<br>SC: B1 for either Wed correct or for Thurs correct in the diagram if M0 scored |
|                | (ii) 18                                                          | B1   | cao                                                                                                                                                                                                                           |                                                                                                                                                                                                                              |
|                | (b) Diagram                                                      | M1   | for $36 \div 9$ or for using ratio 1 : 8 or setting up $w + 8w (=36)$                                                                                                                                                         |                                                                                                                                                                                                                              |
|                |                                                                  | A1   | for 4 and 32                                                                                                                                                                                                                  |                                                                                                                                                                                                                              |
|                |                                                                  | C1   | for correct diagram or ft (dep on M1) for drawing "4" and "32"                                                                                                                                                                |                                                                                                                                                                                                                              |
| 10             | $14 < 21$<br>$4+7 = 103 - 92$<br>$2^2 = 2 \times 2$<br>$-3 > -5$ | B2   | for all 4 correct                                                                                                                                                                                                             |                                                                                                                                                                                                                              |
|                |                                                                  | (B1  | for 2 or 3 correct)                                                                                                                                                                                                           |                                                                                                                                                                                                                              |

| Paper: 1MA1/2F |                  |      |                                                                                                                                                                                                                                                 |                                                                                      |
|----------------|------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Question       | Answer           | Mark | Mark scheme                                                                                                                                                                                                                                     | Additional guidance                                                                  |
| 16 (a)         | 120              | M1   | for sensible use of proportion eg $\frac{135}{90} (= 1.5)$ or $\frac{90}{135} (= \frac{2}{3})$ or $135 \times 4 (= 540)$ or $135 \div 9 (=15)$ or $80 \div 90 (= 0.888...)$                                                                     | ie $135 \div 9$ but not $135 \div 10$ without $80 \div 9$                            |
|                |                  | M1   | for a complete method eg $80 \times "1.5"$ or $80 \div \frac{2}{3}$ or $"540" \times \frac{80}{360}$ or $"15" \times 8$ or $"0.888..." \times 135$                                                                                              |                                                                                      |
|                |                  | A1   | cao                                                                                                                                                                                                                                             |                                                                                      |
| (b)            | $\frac{50}{540}$ | M1   | for method to find total number of cars,<br>eg $135 \times \frac{360}{90} (= 540)$ or for $\frac{50}{135} \times \frac{1}{4}$ oe<br>or begins to work with probability by using a numerator of 50 eg $\frac{50}{a}$ where a > 50 and an integer |                                                                                      |
|                |                  | A1   | for $\frac{50}{540}$ oe ft "540" from part (a)                                                                                                                                                                                                  | Accept any equivalent fraction, decimal form 0.09(25..) or percentage form 9(.25..)% |

| Paper: 1MA1/2F |           |                                                                                                                                                                                  |                                                                                                                     |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
|----------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Question       | Answer    | Mark                                                                                                                                                                             | Mark scheme                                                                                                         | Additional guidance                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
| 14 (a)         | $7c + 6d$ | M1                                                                                                                                                                               | for $7c$ <b>or</b> $6d$                                                                                             | Condone use of $b$ and $p$          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
|                |           | A1                                                                                                                                                                               | for $7c + 6d$                                                                                                       |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
|                | 7         | M1                                                                                                                                                                               | for correct method to expand, eg $5 \times 2m - 5 \times 6$ ,<br><b>or</b> divides both sides by 5 as a first step. |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
|                |           | M1                                                                                                                                                                               | for correct method to isolate terms in $m$ , eg $10m - 30 + 30 = 40 + 30$                                           |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
|                | $3x + 2y$ | A1                                                                                                                                                                               | cao                                                                                                                 |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
|                |           | M1                                                                                                                                                                               | for $3x$ or $2y$                                                                                                    |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
|                |           | A1                                                                                                                                                                               | cao                                                                                                                 |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
|                | 15 (a)    | Diagram                                                                                                                                                                          | B2                                                                                                                  | for a fully correct ordered diagram | <table><tr><td>7</td><td>1</td><td>1</td><td>4</td><td>5</td><td>7</td></tr><tr><td>8</td><td>2</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr><tr><td>9</td><td>1</td><td>4</td><td>7</td><td>8</td></tr><tr><td>10</td><td>3</td></tr></table> <p>Accept stem of 70, 80, 90, 100<br/>Can be in reverse vertical order (with matching leaves) eg 10, 9, 8, 7<br/>Errors can be omissions; one number in the wrong position is one error.</p> | 7 | 1 | 1 | 4 | 5 | 7 | 8 | 2 | 4 | 5 | 6 | 7 | 8 | 9 | 9 | 1 | 4 | 7 | 8 | 10 |
| 7              |           | 1                                                                                                                                                                                | 1                                                                                                                   | 4                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 5 | 7 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
| 8              |           | 2                                                                                                                                                                                | 4                                                                                                                   | 5                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 6 | 7 | 8 | 9 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
| 9              |           | 1                                                                                                                                                                                | 4                                                                                                                   | 7                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 8 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
| 10             |           | 3                                                                                                                                                                                |                                                                                                                     |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
|                |           | (B1                                                                                                                                                                              | for a complete unordered diagram or for an ordered diagram with at most one error or omission)                      |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
|                | B1        | for correct key eg $7 \mid 1$ or $70 \mid 1$ represents 71<br>Key must be consistent with the stem                                                                               |                                                                                                                     |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
| 86             | M1        | for identifying the median, eg “6” circled or an answer of 6<br><b>or</b> ft their list or diagram for selection of middle value (allow up to two errors or omission in listing) |                                                                                                                     |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
|                | A1        | for 86 <b>or</b> ft their list or diagram for selection of middle value (allow up to two errors or omission in listing)                                                          |                                                                                                                     |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |

| Paper: 1MA1/2F |                                               |      |                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------|-----------------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                        | Mark | Mark scheme                                                                                                                                                 | Additional guidance                                                                                                                                                                                                                                                                                                                                                                     |
| 1              | -3 -1 2 4 7                                   | B1   | for -3 -1 2 4 7                                                                                                                                             | Allow correct reverse order:<br>7 4 2 -1 -3                                                                                                                                                                                                                                                                                                                                             |
| 2              | 5                                             | B1   | cao                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                         |
| 3              | 0.31                                          | B1   | cao                                                                                                                                                         | Accept .31                                                                                                                                                                                                                                                                                                                                                                              |
| 4              | 35                                            | B1   | cao                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                         |
| 5              | 2                                             | B1   | cao                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                         |
| 6              | (a) 10                                        | B1   | cao                                                                                                                                                         | eg 11 quarter squares drawn separately<br>3 quarters may be seen as one half square<br>and one quarter square<br>February and March totals may be seen on<br>the diagram<br>May be implied by 42<br>[Jan + Feb + Mar] is clearly their houses<br>sold in Jan, Feb and March for this mark<br>only<br>$4\frac{1}{2}$ squares drawn for May gets P2<br><br>18 must be seen for full marks |
|                | (b) 2 full squares and 3 quarters of a square | B1   | for a diagram for April showing the equivalent of 2 full squares and 3 quarters of a square                                                                 |                                                                                                                                                                                                                                                                                                                                                                                         |
|                | (c) 18                                        | P1   | for process to find houses sold in February = $4 + 4 + 1 (= 9)$<br>or March = $4 + 4 + 4 (= 12)$<br>or $60 - ((\text{Jan} + \text{Feb} + \text{Mar}) + 11)$ |                                                                                                                                                                                                                                                                                                                                                                                         |
|                |                                               | P1   | for a complete process,<br>eg. $60 - ((\text{answer to part (a)}) + "9" + "12" + 11)$<br>or $60 - (2\frac{1}{2} + 2\frac{1}{4} + 3) \times 4 - 11$          |                                                                                                                                                                                                                                                                                                                                                                                         |
|                |                                               | A1   | cao                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                         |
| 7              | (a) 8.7                                       | B1   | for answer in the range 8.5 to 8.9                                                                                                                          | Allow free hand drawing                                                                                                                                                                                                                                                                                                                                                                 |
|                | (b) 67                                        | B1   | for answer in the range 65 to 69                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                         |
|                | (c) 6-sided shape                             | B1   | for a 6-sided shape                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                         |

| Paper: 1MA1/1F |        |                     |             |                                                                                                                                                                                                                        |                                                                                                                                                  |
|----------------|--------|---------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer | Mark                | Mark scheme |                                                                                                                                                                                                                        | Additional guidance                                                                                                                              |
| 7              | (a)    | Completed bar chart | B2          | for a fully correct bar chart                                                                                                                                                                                          | Condone bars of unequal width<br>Condone no gaps or inconsistent gaps                                                                            |
|                |        |                     | (B1         | for one bar correct, eg ‘50p’ plotted at 8 or ‘£1’ plotted at 3 or both reversed ie ‘50p’ plotted at 3 and ‘£1’ plotted at 8)                                                                                          |                                                                                                                                                  |
|                | (b)    | Shown               | M1          | for method to find total amount of at least two coin types, from $10(p) \times 12 (= 120(p))$ , $20(p) \times 7 (= 140(p))$ , $50(p) \times 8 (= 400(p))$ , $(£)1 \times 3 (= 300(p) \text{ or } (£)3)$                | Accept mixed units for both method marks<br>e.g. $10p \times 12 (= 120)$ , $20 \times 7 (= 1.4)$ , $50(p) \times 8 (= 4)$ , $1 \times 3 (= 300)$ |
|                |        |                     | M1          | for a complete method to find the total amount of money<br>e.g.<br>“120” + “140” + “400” + “300” (= 960)<br>or “1.20” + “1.40” + “4” + “3” (= 9.60)                                                                    | Accept mixed units for both method marks<br>e.g. $120 + 140 + 4 + 3 (= 9.60)$                                                                    |
|                |        |                     | C1          | (dep on method shown for totals for at least two coin types or separate correct totals for at least two coin types)<br>showing correct comparable figures<br>eg (£)9.6(0) or 960(p) and 1000(p)<br>or (£)0.4(0) or 40p | Answer must be in consistent units<br>9.60 oe alone with no working will score M1M1                                                              |
|                |        |                     |             |                                                                                                                                                                                                                        |                                                                                                                                                  |
| 8              | (a)    | Completed kite      | B1          | cao                                                                                                                                                                                                                    | Condone unruled lines.                                                                                                                           |
|                | (b)    | Cylinder            | B1          |                                                                                                                                                                                                                        | Allow circular prism, do not allow prism or circle alone<br>Condone poor spelling                                                                |
| 9              | (a)    | $x - 5$             | B1          | cao                                                                                                                                                                                                                    | Allow $- 5 + x$                                                                                                                                  |
|                | (b)    | $2x$                | B1          |                                                                                                                                                                                                                        | Allow $x + x$ or $x2$ or $x \times 2$ or $2 \times x$                                                                                            |
|                | (c)    | 3                   | B1          | cao                                                                                                                                                                                                                    |                                                                                                                                                  |



| Paper: 1MA1/2F |         |                 |      |                                                                                                                                                                                                                                                                                                    |
|----------------|---------|-----------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer          | Mark | Notes                                                                                                                                                                                                                                                                                              |
| 5 (a)          |         | $\frac{33}{60}$ | M1   | for method to find number of students who did not walk to school<br>eg $15 + 12 + 6$ or $60 - 27 (=33)$ or $0.55$ or for $1 - \frac{27}{60}$                                                                                                                                                       |
|                |         |                 | A1   | for $\frac{33}{60}$ or equivalent fraction                                                                                                                                                                                                                                                         |
| (b)            |         | Pie chart drawn | M1   | for method to find the angle for at least one sector eg<br>$\frac{27}{60} \times 360$ , $\frac{12}{60} \times 360$ , $\frac{6}{60} \times 360$ , $27 \div \frac{60}{360}$ , $12 \div \frac{60}{360}$ , $6 \div \frac{60}{360}$ oe (0.166..)<br>NB: could be implied by one angle drawn accurately. |
|                |         |                 | M1   | for drawing at least one sector accurately (from 4 sectors) eg $162^\circ$ or $72^\circ$ or $36^\circ$                                                                                                                                                                                             |
|                |         |                 | A1   | for an accurately drawn pie chart                                                                                                                                                                                                                                                                  |
|                |         |                 | B1   | (dep on 4 sectors with at least one accurately drawn) for showing labels Walk Car Bicycle                                                                                                                                                                                                          |
| 6 (a)          |         | $\frac{3}{7}$   | B1   | for $\frac{3}{7}$ or equivalent fraction                                                                                                                                                                                                                                                           |
| (b)            |         | 3 : 1           | B1   | for 3 : 1 or equivalent ratio                                                                                                                                                                                                                                                                      |



| Paper: 1MA1/3F |           |      |                                                                                                                                                                                                                                                         |                                                                                           |
|----------------|-----------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Question       | Answer    | Mark | Mark scheme                                                                                                                                                                                                                                             | Additional guidance                                                                       |
| 23 (a)         | 5         | M1   | "2" $\div 40 \times 100$                                                                                                                                                                                                                                | "2" comes from their reading of the height of the 20 to 24 column                         |
|                |           | A1   | cao                                                                                                                                                                                                                                                     |                                                                                           |
|                | 9.5 shown | M1   | for frequencies of 11, 8, 13, 6 and 2 (allow one error)<br><b>or</b> for midpoints 2, 7, 12, 17 and 22                                                                                                                                                  | May be seen on chart                                                                      |
|                |           | M1   | for finding at least 4 products $fx$ consistently within interval (including end points)                                                                                                                                                                |                                                                                           |
|                |           | M1   | for $\Sigma "fx" \div ("11" + "8" + "13" + "6" + "2")$<br><b>or</b> $(11 \times 2 + 8 \times 7 + 13 \times 12 + 6 \times 17 + 2 \times 22) \div 40$<br><b>OR</b><br>$\Sigma "fx" (=380) \text{ and } 9.5 \times ("11" + "8" + "13" + "6" + "2") (=380)$ |                                                                                           |
| (b)            |           | C1   | for correct figures showing the answer or accurate figures to compare from correct working eg 380 from two calculations                                                                                                                                 | Evidence of two different calculations that should lead to 380 are required for this mark |

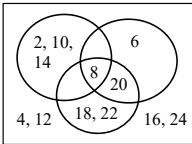
| Paper: 1MA1/3F |        |                                   |                                                          |                                                                                                          |                                                                                                                                                                                                                                                                                                             |
|----------------|--------|-----------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer | Mark                              | Mark scheme                                              | Additional guidance                                                                                      |                                                                                                                                                                                                                                                                                                             |
| 9              | (a)    | Correct frequencies<br>8, 3, 5, 2 | B2                                                       | all frequencies correct                                                                                  | Correct tallies alone scores B1<br>Correct frequencies with no tallies scores B2                                                                                                                                                                                                                            |
|                |        |                                   | (B1                                                      | Starts to work with tallies, eg 2 tallies fully correct, or 2 frequencies fully correct)                 | Tallies need not be crossed                                                                                                                                                                                                                                                                                 |
|                | (b)    | Bar chart                         | M1                                                       | for labelling pet names on the horizontal axis or bars<br><b>OR</b> a linear scale on the vertical axis. | Accept unambiguous abbreviations for labels, eg D, R, C, H<br>Horizontal axis does not need “pet” label                                                                                                                                                                                                     |
|                |        |                                   | M1                                                       | for at least two correct bars fit their table in (a)                                                     | Condone bars of unequal width<br><br>Condone no gaps or inconsistent gaps<br><br>Bars must be unambiguously correct for their scale                                                                                                                                                                         |
|                |        |                                   | A1                                                       | for a fully correct bar graph fit from their frequencies or tallies in (a).                              | All four bars must be correct with labels, ft, to award this mark.<br><br>Vertical axis must have a suitable label, accept unambiguous abbreviations, eg freq or number<br><br>Condone no gaps, or inconsistent gaps.<br><br>Condone bars of unequal width<br><br>Horizontal axis does not need “pet” label |
| (c)            | dog    | B1                                | cao or ft from frequencies in (a) <b>or</b> chart in (b) | Mark to the benefit of the candidate if table and graph are different.                                   |                                                                                                                                                                                                                                                                                                             |

| Paper: 1MA1/1F |                         |                            |                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                        |
|----------------|-------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                  | Mark                       | Mark scheme                                                                                                                                                                                                                                                                                                                                                       | Additional guidance                                                                                                                                                    |
| 9              | No with correct figures | P1<br><br>P1<br><br>A1     | for $1.20 + 0.70 + 2.30 + 2.30 (= 6.5(0))$<br>or for adding 3 correct costs<br>or for 2 correct costs plus change<br>or for 10 – 2 correct costs<br><br>for a complete correct method,<br>eg $10 - "6.50"$ or $10 - 1.20 - 0.70 - 2.30 - 2.30 (= 3.50)$<br>or $1.20 + 0.70 + 2.30 + 2.30 + 3.30 (= 9.80)$<br><br>for No with correct figures, eg 3.5(0) or 9.8(0) | Could work in £ or p for P marks<br><br>Accept $2.30 + 2.30 (= 4.60)$ as 2 costs<br><br>Accept absence of "0" in pence column                                          |
| 10             | 7                       | P1<br><br>A1               | for process to find temperature on Wednesday, eg $5 - 10 + 3 (= -2)$<br>or $-10 + 3$ or $10 - 3$<br><br>for 7, accept -7                                                                                                                                                                                                                                          | Be aware of correct use of a number line                                                                                                                               |
| 11 (a)         | 16                      | B1                         | cao                                                                                                                                                                                                                                                                                                                                                               | If the scale is misread in part (a), allow ft marks in parts (b) and (c) for all marks provided consistently used.<br><br>Some interpretation of shapes will be needed |
| (b)            | 12                      | M1<br><br>A1               | for 22 or 10<br>or $(11 - 5) \times 2$ oe<br>or $1.5 \times 8$ oe<br><br>cao                                                                                                                                                                                                                                                                                      |                                                                                                                                                                        |
| (c)            | Pictogram               | C3<br><br>(C2)<br><br>(C1) | for Thursday = 8 drawn oe and Friday = 24 drawn oe<br><br>for Thursday = 8 drawn oe or for Friday = 24 drawn oe<br>or Thursday = 8 and Friday = 24<br>or for Thursday = 24 drawn oe and Friday = 8 drawn oe<br><br>for $32 \div 4 (= 8)$ or $32 \div 4 \times 3 (= 24)$ or $32 \div 8$<br>or for a total of 32 drawn for Thursday and Friday)                     |                                                                                                                                                                        |
|                |                         |                            |                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                        |

| Paper: 1MA1/1F |                 |      |                                                                                                                                                                                |                                                                                                                                                                                                                         |
|----------------|-----------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer          | Mark | Mark scheme                                                                                                                                                                    | Additional guidance                                                                                                                                                                                                     |
| 8 (a)          | 11, 7, 6        | B2   | for all frequencies correct                                                                                                                                                    | Any discrepancy mark frequencies                                                                                                                                                                                        |
|                |                 | (B1) | for two tallies or two frequencies correct                                                                                                                                     |                                                                                                                                                                                                                         |
|                | Castle          | B1   | Castle or ft their tallies or frequencies                                                                                                                                      | Any discrepancy ft frequencies                                                                                                                                                                                          |
|                |                 | B1   | for correct place labels or a linear scale                                                                                                                                     |                                                                                                                                                                                                                         |
| (c)            | Bar chart       | M1   | for at least two correct bars ft their table in (a)                                                                                                                            | Accept key in place of labels<br>Accept unambiguous abbreviations for labels eg C, F, M<br>Condone bars of varying widths<br>Condone no gaps or inconsistent gaps<br>Bars must be unambiguously correct for their scale |
|                |                 | A1   | for a fully correct bar chart with linear scale of numbers on the vertical axis and a set of place labels on the horizontal axis (ft from their frequencies or tallies in (a)) |                                                                                                                                                                                                                         |
| 9 (i)          | $\frac{9}{22}$  | B1   | oe                                                                                                                                                                             | If incorrect notation used in both (i) and (ii), penalise once only in (i)                                                                                                                                              |
|                | $\frac{14}{22}$ | B1   | oe eg $\frac{7}{11}$                                                                                                                                                           |                                                                                                                                                                                                                         |
|                | 0               | B1   |                                                                                                                                                                                |                                                                                                                                                                                                                         |

| Paper: 1MA1/1F |                       |      |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                        |
|----------------|-----------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                   | Additional guidance                                                                                                                                                                                                                    |
| 12 (a)         | 100                   | B1   | for answer in the range 95 to 100                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                        |
| (b)            | 660                   | M1   | for reading at least 3 of the required figures from the graph<br>eg 3 of "100", 260, 120, 340, 160, 440<br><b>OR</b> for $260 - "100" (= 160)$ <b>or</b> $340 - 120 (= 220)$ <b>or</b> $440 - 160 (= 280)$<br><b>OR</b> for $"100" + 60 (= 160)$ <b>or</b> $80 + 100 + 40 (= 220)$<br><b>or</b> $40 + 100 + 100 + 40 (= 280)$ | Figures may be seen on graph                                                                                                                                                                                                           |
|                |                       | M1   | (dep) for adding their 3 differences eg $"160" + "220" + "280"$                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                        |
|                |                       | A1   | for 660 or fit their answer to part (a)                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                        |
| (c)            | Tablets               | B1   | Tablets                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                        |
|                | and statement         | C1   | Statement eg the bars get proportionally longer over time (most in 2017 and least in 2015) <b>or</b> they (more than) double each year<br><b>or</b> for an increase of 280 <b>or</b> numbers range from 60 to 340                                                                                                             | Values quoted for tablets must be correct. Ignore any calculations relating to laptops and/or desktop computers whether correct or not. Award previous mark if "tablets" is not specifically stated but can be implied from statement. |
| (d)            | Statement (supported) | C1   | for statement, eg (No because) we do not know costs or prices or profit.                                                                                                                                                                                                                                                      | Answer of 'Yes' gets C0<br>Answer of 'No' without justification gets C0                                                                                                                                                                |



| Paper: 1MA1/2F |            |                |                                                                                                                                                                                                                                                                                                              |                                                      |                                                                                                                |
|----------------|------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Question       | Answer     | Mark           | Mark scheme                                                                                                                                                                                                                                                                                                  | Additional guidance                                  |                                                                                                                |
| 20             | (a)        | Venn diagram   | C4                                                                                                                                                                                                                                                                                                           | fully correct Venn diagram                           |                             |
|                |            | (C3            | 7 of the 8 regions correct <b>or</b> for a diagram with only one number incorrectly placed)                                                                                                                                                                                                                  |                                                      |                                                                                                                |
|                |            | (C2            | 5 or 6 of the 8 regions correct)                                                                                                                                                                                                                                                                             |                                                      |                                                                                                                |
|                |            | (C1            | 3 or 4 of the 8 regions correct)                                                                                                                                                                                                                                                                             |                                                      |                                                                                                                |
|                | (b)        | $\frac{1}{12}$ | M1                                                                                                                                                                                                                                                                                                           | ft for identification of 1 or 12 eg from the diagram | Need not be written as a fraction or probability at this stage. eg could be a ratio 1:12                       |
|                |            |                | A1                                                                                                                                                                                                                                                                                                           | ft oe                                                | Acceptable equivalents are (eg, could fit) any fraction equivalent to $\frac{1}{12}$ , 0.08(33..) or 8(.33..)% |
| 21             | statements | C1             | for lobf incorrect<br><br><b>Acceptable examples</b><br>lobf<br>lobf does not suit all points/not a lobf<br>lobf wrong since hits x axis/is inaccurate/should be amongst the crosses<br>lobf goes through the origin/through one point<br><b>Not acceptable examples</b><br>no correlation/there is no title |                                                      |                                                                                                                |
|                |            | C1             | for height scale not linear<br><br><b>Acceptable examples</b><br>150 missing<br>Height not linear / Height numbers going up wrong<br><b>Not acceptable examples</b><br>150<br>graph does not start at 140/graph does not start at 0<br>height should start at 170                                            |                                                      |                                                                                                                |

| Paper: 1MA1/3F |        |      |             |                     |  |
|----------------|--------|------|-------------|---------------------|--|
| Question       | Answer | Mark | Mark scheme | Additional guidance |  |
| 22             | (a)    |      |             |                     |  |
|                |        |      |             |                     |  |
|                | (b)    |      |             |                     |  |
|                |        |      |             |                     |  |
| 23             | (a)    |      |             |                     |  |
|                |        |      |             |                     |  |
|                | (b)    |      |             |                     |  |
|                |        |      |             |                     |  |
| 24             |        |      |             |                     |  |
|                |        |      |             |                     |  |

| Paper: 1MA1/3F |                     |              |                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                              |
|----------------|---------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer              | Mark         | Mark scheme                                                                                                                                                                                                                                                                                                      | Additional guidance                                                                                                                                                          |
| 19 (a)         | negative            | B1           | cao                                                                                                                                                                                                                                                                                                              | Ignore any description of a relationship and any reference to strength of correlation                                                                                        |
| (b)            | Explanation         | C1           | for a correct explanation,<br>eg "not in line with the trend of the other points"<br>"does not fit in with the correlation"<br>"is far away from the other points or line of best fit"                                                                                                                           |                                                                                                                                                                              |
| (c)            | Comment             | C1           | for an explanation<br>eg "point would be outside of the range of the scatter diagram"                                                                                                                                                                                                                            |                                                                                                                                                                              |
| 20             | $9p + 13$           | M1<br><br>A1 | for method to expand one bracket,<br>eg $5 \times p + 5 \times 3 (= 5p + 15)$<br>or $2 \times 1 - 2 \times 2p (= 2 - 4p)$ or $-2 \times 1 - 2 \times -2p (= -2 + 4p)$<br><br>cao                                                                                                                                 | If an attempt is made to multiply by $-2$ in the second brackets then it must be done consistently.                                                                          |
| 21             | Triangle of area 18 | M1<br><br>A1 | for a complete method to find area of trapezium<br>eg $\frac{1}{2}(2 + 7) \times 4 (= 18)$<br><b>OR</b> for a triangle drawn of area 36<br><b>OR</b> for a triangle that would give an area ft their area of trapezium<br><br>for a triangle drawn of area 18<br>eg base = 6, height = 6 or base = 9, height = 4 | The value for the area of the trapezium must be clear for the ft to be checked.<br><br>Accept use of dimensions that are not whole numbers as long as the intention is clear |

| Paper: 1MA1/1F |                     |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                  |
|----------------|---------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| Question       | Answer              | Mark                   | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Additional guidance                                              |
| 25 (a)         | Description         | C1                     | for a valid description of the relationship<br><b>Acceptable examples</b><br>As age increases, weight increases<br>The older you are the greater the weight<br>Positive correlation<br><br><b>Not acceptable examples</b><br>Positive (relationship)<br>age and weight are in proportion<br>strong correlation or correlation is increasing<br>as the babies get older the heavier they get, negative correlation<br>they are directly proportional, weight goes up as age goes up | Accept positive correlation<br>Ignore any comment about strength |
| (b)            | 2.5 to 4.5          | B2<br><br>(B1          | for an answer in the range 2.5 to 4.5<br><br>for a suitable line of best fit drawn<br><b>or</b> for a point on the grid at (x, 5.8) where x lies between 2.5 and 4.5<br><b>or</b> a horizontal line drawn from 5.8 across to (x, 5.8) where x is in the range 2.5 to 4.5)                                                                                                                                                                                                          |                                                                  |
| 26             | 1200                | M1<br>A1               | for a fully correct method, eg $240 \div 0.2$ or $240 \times 5$ oe<br>cao<br><br>SC B1 for an answer of 960 or 1440 if M0 scored                                                                                                                                                                                                                                                                                                                                                   |                                                                  |
| 27             | 3                   | P1<br><br>P1<br><br>A1 | for process to find area of base, eg $1200 \div 40 (= 30)$<br><br>for process to find pressure, eg $90 \div "30"$<br><br>cao                                                                                                                                                                                                                                                                                                                                                       |                                                                  |
| 28             | $x = 6$<br>$y = -2$ | B1                     | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                  |

| Paper: 1MA1/2F |                  |      |                                                                                                           |                                                                                                                                                                      |
|----------------|------------------|------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer           | Mark | Mark scheme                                                                                               | Additional guidance                                                                                                                                                  |
| 20             | 4.643(069317)    | M1   | for 192.6 <b>or</b> 8.934 <b>or</b> 21.558(09268)<br><b>or</b> answer of 4.64<br><b>or</b> digits 4643... | Answer must be given to at least 3 decimal places rounded or truncated<br>Check first 3 decimal places only<br>If given to 3 dp or better ignore subsequent rounding |
|                |                  | A1   | for 4.643(069317)                                                                                         |                                                                                                                                                                      |
| 21             | (a) positive     | C1   | cao                                                                                                       | Ignore any description of a relationship and any reference to strength of correlation                                                                                |
|                | (b) lobf drawn   | C1   | for straight line passing between (140, 20) and (140, 22.5) and between (220, 30) and (220, 32.5)         |                                                                                                                                                                      |
|                | (c) 26.5 to 29.5 | C1   | for answer in range 26.5 – 29.5 <b>or</b> ft single line with positive gradient                           |                                                                                                                                                                      |



| Paper: 1MA1/1F |         |                                |          |                                                                                                                                                                                                          |
|----------------|---------|--------------------------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer                         | Mark     | Notes                                                                                                                                                                                                    |
| 21 (a)         |         | 10,19                          | B1       | cao                                                                                                                                                                                                      |
| (b)            |         | Positive                       | C1       | positive (correlation)                                                                                                                                                                                   |
| (c)            |         | 12 to 13                       | M1<br>A1 | for an appropriate line of best fit drawn, or a point marked at (x, 16.4) or a horizontal line drawn from 16.4 across to (x, 16.4) where x is in the range 12 to 13<br>hours given in the range 12 to 13 |
| (d)            |         | explanation                    | C1       | (yes) e.g. as the majority of points for high temperature appear when there are more hours of sunshine (positive correlation)                                                                            |
| 22             |         | $2 \times 2 \times 2 \times 7$ | M1<br>A1 | for complete method to find prime factors; could be shown on a complete factor tree with no more than 1 arithmetic error<br>accept $2^3 \times 7$                                                        |

