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EDEXCEL INTERNATIONAL GCSE MATHS: QUESTIONS BY TOPIC

Statistics (S1)

International GCSE Mathematics A (4MA1) · Foundation tier

132 questions · 539 marks · Mark schemes included

Past papers June 2018 - 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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	No questions on this sub-topic in the available past papers.			
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S1d SCATTER GRAPHS & CORRELATION

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

S1e CUMULATIVE FREQUENCY, BOX PLOTS & HISTOGRAMS

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

QUESTIONS

132 questions · 539 marks · 2 sub-topics

SUB-TOPIC S1b

AVERAGES & RANGE

Sub-topic S1b · 74 questions · 285 marks · lowest tariff first

16 x, 10 and y are three integers written in order of size, starting with the smallest integer.

The mean of x, 10 and y is 11
The range of x, 10 and y is 7

Work out the value of x and the value of y.

$x =$ .....

$y =$ .....

(Total for Question 16 is 2 marks)

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

17 A box is put on a table.

The face of the box in contact with the table is in the shape of a rectangle, 2 m by 1.25 m.
The pressure on the table due to the box is 42 newtons/m^2

Work out the force exerted by the box on the table.

..... newtons

(Total for Question 17 is 3 marks)

A different sequence of patterns is made from triangles.
The rule to find the number of triangles in each pattern is

multiply the Pattern number by 5 and subtract 4

(e) Is there a pattern in this sequence that is made from exactly 136 triangles?
You must give a reason for your answer.

(1)

(Total for Question 9 is 6 marks)

10 Here are four different numbers written in order of size.

3 6 m n

The range of the four numbers is 13
The median of the four numbers is 8.5

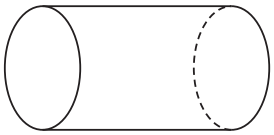
Find the value of m and the value of n.

m = ...

n = ...

(Total for Question 10 is 2 marks)

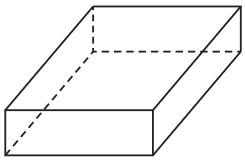
3 (a) Write down the mathematical name of this 3-D shape.



.....

(1)

Here is a solid prism.



(b) How many edges has the prism?

.....

(1)

(Total for Question 3 is 2 marks)

4 Here are the salaries, in thousands of dollars, of seven people.

21 28 29 32 34 34 39

(a) Find the mode of the salaries.

..... thousand dollars

(1)

(b) Find the range of the salaries.

..... thousand dollars

(1)

(Total for Question 4 is 2 marks)

19 Here is a list of four numbers written in ascending order of size

$$x \quad x \quad y \quad 15$$

where x and y are integers.

The numbers have

a median of 12.5
a range of 4

Find the value of x and the value of y

$x =$ .....

$y =$ .....

(Total for Question 19 is 2 marks)

5 The table shows information about the shoe sizes of the 25 children in a nursery class.

Shoe size	Frequency
18	2
19	4
20	5
21	6
22	8

Find the median shoe size.

.....

(Total for Question 5 is 2 marks)

6 Plates cost $14 each.
Ben has $250 to spend.

Ben buys as many plates as he can.

How much of the $250 does he have left?

$.....

(Total for Question 6 is 3 marks)

19 a, a, b and 40 are four numbers.

a is the least number.
40 is the greatest number.

The range of the four numbers is 14
The median of the four numbers is 30

Work out the value of a and the value of b.

$a =$

$b =$

(Total for Question 19 is 3 marks)

26 There are 12 boys and 8 girls in a class.
The boys and the girls have some coins.

The mean number of coins that the boys have is 5.5
The girls have a total of 18 coins.

Work out the mean number of coins the 20 children have.

(Total for Question 26 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS

21 There are 10 people in a lift.
These 10 people have a mean weight of 79.2 kg.

3 of these people get out of the lift.
These 3 people have a mean weight of 68 kg.

Work out the mean weight of the 7 people left in the lift.

.....kg

(Total for Question 21 is 3 marks)

22 (a) Simplify $t^9 \div t^3$

.....

(1)

(b) Simplify $w^5 \times w^7$

.....

(1)

(c) Simplify $(5xy^2)^3$

.....

(2)

(Total for Question 22 is 4 marks)

18 30 students in a class sat a Mathematics test.
The mean mark in the test for the 30 students was 26.8

13 of the 30 students in the class are boys.
The mean mark in the test for the boys was 25

Find the mean mark in the test for the girls.
Give your answer correct to 3 significant figures.

.....

(Total for Question 18 is 3 marks)

19 Change a speed of x kilometres per hour into a speed in metres per second.
Simplify your answer.

..... m/s

(Total for Question 19 is 3 marks)

22 5 children are playing on a trampoline.
The mean weight of the 5 children is 28 kg.

2 of the children get off the trampoline.
The mean weight of these 2 children is 26.5 kg.

Work out the mean weight of the 3 children who remain on the trampoline.

..... kg

(Total for Question 22 is 3 marks)

16 The table gives information about the amount of money, in £, that Fiona spent in a grocery store each week during 2019

Amount spent (£x)	Frequency
$0 \leqslant x < 20$	5
$20 \leqslant x < 40$	11
$40 \leqslant x < 60$	8
$60 \leqslant x < 80$	19
$80 \leqslant x < 100$	9

Work out an estimate for the total amount of money that Fiona spent in the grocery store during 2019

£.....

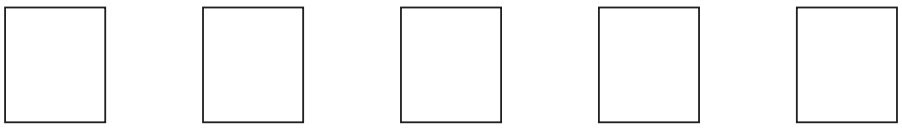
(Total for Question 16 is 3 marks)

17 Alexa has five cards.
Each card has a number on it.

The table gives information about the numbers on the five cards.

Total	Median	Mode	Range
45	8	5	10

Using the information in the table, complete each card by writing its number on it.



(Total for Question 17 is 3 marks)

18 The length of a book is 33.8 cm, correct to one decimal place.

(a) Write down the lower bound of the length of the book.

..... cm
(1)

(b) Write down the upper bound of the length of the book.

..... cm
(1)

(Total for Question 18 is 2 marks)

21 Alison buys 2 boxes of strawberries, box **A** and box **B**.

Box **A** contains 15 strawberries.
The strawberries in box **A** have a mean weight of 24 grams.

Box **B** contains 25 strawberries.
The strawberries in box **B** have a mean weight of 18 grams.

Alison puts all 40 strawberries into a bowl.
Work out the mean weight of the 40 strawberries.

..... grams

(Total for Question 21 is 3 marks)

16 Ava writes down five whole numbers.

For these five numbers

the median is 7

the mode is 8

the range is 5

Find a possible value for each of the five numbers that Ava writes down.

.....

(Total for Question 16 is 3 marks)

21 There are 5 cocoa pods in a bag.
The mean weight of the 5 cocoa pods is 398 grams.

A sixth cocoa pod is put into the bag.
The mean weight of the 6 cocoa pods is 401 grams.

Work out the weight of the sixth cocoa pod that is put into the bag.

..... grams

(Total for Question 21 is 3 marks)

24 (a) Factorise fully $25a^4c^7d + 45a^9c^3h$

.....

(2)

(b) Solve $(2x + 5)^2 = (2x + 3)(2x - 1)$

$x =$ .....

(3)

(Total for Question 24 is 5 marks)

25 Jethro has sat 5 tests.
Each test was marked out of 100 and Jethro's mean mark for the 5 tests is 74

Jethro has to sit one more test that is also to be marked out of 100

Jethro wants his mean mark for all 6 tests to be at least 77

Work out the least mark that Jethro needs to get for the last test.

.....

(Total for Question 25 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS

5 Adisha plays basketball for her school.

Here is the number of points that she scored in each of nine games.

15 16 15 18 17 15 13 19 18

(a) Find the mode of the numbers of points that Adisha scored.

.....

(1)

(b) Work out the range of the numbers of points that Adisha scored.

.....

(2)

(Total for Question 5 is 3 marks)

6 Here are the first four terms of a number sequence.

4 8 12 16

(a) Write down the next term of the sequence.

.....

(1)

(b) Explain how you found your answer to part (a).

.....

(1)

(c) Find an expression, in terms of n, for the nth term of the sequence.

.....

(1)

(Total for Question 6 is 3 marks)

11 The table shows information about the number of eggs laid by each of 36 hens in one week.

Number of eggs	Frequency
0	5
1	5
2	3
3	10
4	7
5	6

Work out the mean number of eggs laid.

.....

(Total for Question 11 is 3 marks)

25 A scientist is investigating the weight of 50 tigers.

Here is some information about these tigers.

	Type of tiger	
	Siberian	**Bengal**
Number of tigers	22	28
Mean weight of tigers (kg)	260	

The mean weight of all 50 tigers is 218 kg

Work out the mean weight of the Bengal tigers.

..... kg

(Total for Question 25 is 3 marks)

19 Here are five cards.

Each card has a number written on it.

15	7	–2	23	x

The mean of the five numbers is 12

Work out the value of x

$x =$ .....

(Total for Question 19 is 3 marks)

17 Here are some integers where $a < b < c < d$

$$a \quad b \quad c \quad d \quad d \quad d$$

The mode of the integers is 9
The median of the integers is 8
The range of the integers is 4

Work out the value of a, the value of b, the value of c and the value of d

$a =$ .....

$b =$ .....

$c =$ .....

$d =$ .....

(Total for Question 17 is 3 marks)

28 Larry is a delivery man.

He has 7 parcels to deliver.
The mean weight of the 7 parcels is 2.7 kg

Larry delivers 3 of the parcels.
Each of these 3 parcels has a weight of W kg

The mean weight of the other 4 parcels is 3.3 kg

Work out the value of W

$W =$ .....

(Total for Question 28 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS

20 Alberto, Bill, Candela and Diana are four friends.

Here is some information about the height of each of these friends.

Alberto's height is 158 cm.
Bill's height is 175 cm.
Candela's height is greater than Diana's height.

The median height of these four friends is 160 cm.
The range of the heights of these four friends is 21 cm.

Work out Candela's height and Diana's height.

Candela ..... cm

Diana ..... cm

(Total for Question 20 is 3 marks)

17 Here is a list of six numbers written in order of size.

x 5 y z 10 12

The numbers have
a range of 9
a median of 8
a mode of 10

Find the value of x, the value of y and the value of z

$x =$ .....

$y =$ .....

$z =$ .....

(Total for Question 17 is 3 marks)

18 (a) Simplify $w^{12} \div w^3$

.....

(1)

(b) Simplify $5m^4p^2 \times 2m^3p$

.....

(2)

(Total for Question 18 is 3 marks)

22 60 students sat a Mathematics exam.

The mean mark for the 32 students in Class A was 55
The mean mark for the 28 students in Class B was 52

Find the mean mark for all 60 students.

.....

(Total for Question 22 is 3 marks)

17 The table gives information about the number of minutes that Abby spent walking each day in September.

Number of minutes (M)	Frequency
$0 < M \leqslant 30$	5
$30 < M \leqslant 60$	6
$60 < M \leqslant 90$	8
$90 < M \leqslant 120$	9
$120 < M \leqslant 150$	2

Work out an estimate for the total number of minutes that Abby spent walking in September.

..... minutes

(Total for Question 17 is 3 marks)

25 Gemara works as a taxi driver.
Last week, he recorded the following information about the distances he drove.

For the 5 days from Monday to Friday, the mean number of kilometres he drove was 104
For the 7 days from Monday to Sunday, the mean number of kilometres he drove was 127

On Saturday, Gemara drove 132 kilometres.

Work out the number of kilometres he drove on Sunday.

..... kilometres

(Total for Question 25 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS

24 The mean number of goals scored by a hockey team in 8 matches is 6
The team plays 2 more matches and scores k goals in each match.
The mean number of goals scored by the hockey team in the 10 matches is 7

Work out the value of k

$k =$ .....

(Total for Question 24 is 3 marks)

25 A straight line passes through the points with coordinates (0, –3) and (2, 0)

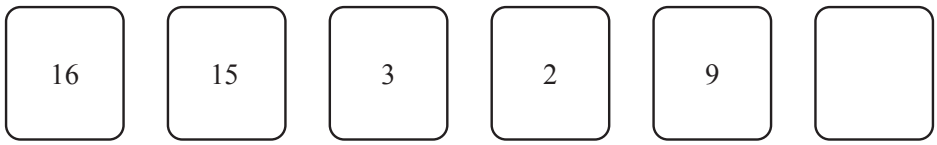
Find an equation of the line.

.....

(Total for Question 25 is 2 marks)

16 Here are six cards.

Five of the cards have a number written on them.



Work out the number that should be written on the last card so that the mean of the six numbers will be 11

.....

(Total for Question 16 is 3 marks)

17 Here are eight numbers written in order of size

$$h \quad 6 \quad 7 \quad 8 \quad j \quad 16 \quad k \quad k$$

where h, j and k are integers.

The median of the eight numbers is 10

The mode of the eight numbers is 18

The range of the eight numbers is 13

Work out the value of h, the value of j and the value of k

$h =$ .....

$j =$ .....

$k =$ .....

(Total for Question 17 is 3 marks)

28 Ali uses a fitness tracker to count the number of steps he walks each day for 7 days.

For the first 4 days, his mean number of steps is 11 800
For the next 3 days, his mean number of steps is 13 207

Work out his mean number of steps for the 7 days.

.....

(Total for Question 28 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS

24 Kim puts 4 bananas in a bag.
The mean weight of the 4 bananas in the bag is 145 grams.

Andy puts one more banana into the bag.
The mean weight of the 5 bananas in the bag is 142 grams.

Work out the weight of the banana that Andy puts into the bag.

..... grams

(Total for Question 24 is 3 marks)

25 Nisha invests 20 000 euros for 3 years in a savings account.
She gets 3.5% per year compound interest.

Work out how much money Nisha will have in her savings account at the end of the 3 years.
Give your answer correct to the nearest euro.

..... euros

(Total for Question 25 is 3 marks)

9 Here are the first four terms of a number sequence.

5 12 19 26

(i) Write down the next term of the sequence.

.....

(1)

(ii) Explain how you worked out your answer.

.....

.....

(1)

(Total for Question 9 is 2 marks)

10 The table shows information about the number of cars sold by a garage in each of 30 weeks.

Number of cars sold	Frequency
1	4
2	10
3	5
4	7
5	4

Work out the mean number of cars sold per week.

.....

(Total for Question 10 is 3 marks)

18 Rio has six cards.
He writes a number on each card so that

the range of the numbers is 10
the median of the numbers is 7.5
the mode of the numbers is 6

Rio arranges the cards so that the numbers are in order of size.

		6		10	14

Three of the numbers are hidden.

Complete the cards above to show the three numbers that are hidden.

(Total for Question 18 is 3 marks)

23 The mass of a silver coin is 48.3 g
The density of silver is 10.5 g/cm^3

Work out the volume of the silver coin.

..... cm^3

(Total for Question 23 is 2 marks)

24 The mean of 7 numbers is 60

The mean of 3 of the numbers is 46

Work out the mean of the other 4 numbers.

.....

(Total for Question 24 is 3 marks)

18 The table gives information about the times, in hours, some students spent doing sport one week.

Time (T hours)	Frequency
$0 < T \leqslant 2$	5
$2 < T \leqslant 4$	9
$4 < T \leqslant 6$	24
$6 < T \leqslant 8$	40
$8 < T \leqslant 10$	7

Calculate an estimate for the mean time these students spent doing sport.
Give your answer in hours, correct to 1 decimal place.

..... hours

(Total for Question 18 is 4 marks)

13 The table shows information about the heights, in cm, of 48 sunflowers in a garden centre.

Height of sunflower (h cm)	Frequency
$90 < h \leqslant 100$	8
$100 < h \leqslant 110$	12
$110 < h \leqslant 120$	15
$120 < h \leqslant 130$	10
$130 < h \leqslant 140$	3

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

..... cm

(Total for Question 13 is 4 marks)

2 Egor rolled a dice 24 times.
Here are his results.

2	3	5	4	6	2
1	3	3	5	1	3
3	5	5	6	2	5
4	3	4	3	3	4

(a) Complete the frequency table for Egor's results.

Number on dice	Tally	Frequency
1		
2		
3		
4		
5		
6		

(2)

(b) Write down the mode of the numbers that Egor rolled.

.....

(1)

Egor thinks the dice he rolled is biased.

(c) Give a reason why the results could show that the dice is biased.

.....

.....

.....

(1)

(Total for Question 2 is 4 marks)

17 Here is a list of six numbers written in order of size.

4 7 x 10 y y

The numbers have

a median of 9
a mean of 11

Find the value of x and the value of y.

$x =$ .....

$y =$ .....

(Total for Question 17 is 4 marks)

20 The table gives information about the length of time, in minutes, that each of 60 students took to travel to school on Monday.

Length of time (t minutes)	Frequency
$0 < t \leqslant 10$	4
$10 < t \leqslant 20$	10
$20 < t \leqslant 30$	15
$30 < t \leqslant 40$	25
$40 < t \leqslant 50$	6

Work out an estimate for the mean length of time taken by these 60 students to travel to school on Monday.
Give your answer correct to one decimal place.

..... minutes

(Total for Question 20 is 4 marks)

3 Paula asks 16 members of her class the number of pets they each have.
Here are her results.

1	2	2	4	0	1	2	1
3	3	4	1	1	0	3	2

(a) Complete the frequency table for her results.

Number of pets	Tally	Frequency
0		
1		
2		
3		
4		

(2)

(b) Write down the mode for the number of pets.

.....

(1)

(c) Work out the range for the number of pets.

.....

(1)

(Total for Question 3 is 4 marks)

16 Show that $3\frac{1}{5} \times 1\frac{5}{6} = 5\frac{13}{15}$

(Total for Question 16 is 3 marks)

17 Given that $a < b < c$

the four whole numbers a, a, b and c have

a mode of 7
a median of 8.5
a mean of 9

Work out the value of a, the value of b and the value of c.

$a =$ .....

$b =$ .....

$c =$ .....

(Total for Question 17 is 4 marks)

21 A mathematics teacher at a school asked a group of students how far, in kilometres, each student had travelled to get to school that day.

The table gives information about their answers.

Distance travelled (d km)	**Number of students**
$0 < d \leqslant 2$	x
$2 < d \leqslant 4$	11
$4 < d \leqslant 6$	8
$6 < d \leqslant 8$	6
$8 < d \leqslant 10$	5

The teacher calculated that an estimate for the mean distance travelled by the whole group of students was 4.25 km.

Work out the value of x.
Show your working clearly.

$x =$.....

(Total for Question 21 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

19 Yusuf sat 8 examinations.

Here are his marks for 5 of the examinations.

68 72 75 77 80

For his results in all 8 examinations

the mode of his marks is 80
the median of his marks is 74
the range of his marks is 16

Find Yusuf's marks for each of the other 3 examinations.

.....

.....

.....

(Total for Question 19 is 4 marks)

24 The frequency table gives information about the number of points scored by a player.

Number of points	Frequency
0	13
1	17
2	8
3	x
4	11

The mean number of points scored is 2

Work out the value of x

$x =$ .....

(Total for Question 24 is 4 marks)

12 The table gives information about the number of gold stars won by each of 25 students in class 7T last week.

Number of gold stars	Number of students
0	6
1	5
2	4
3	7
4	3

(a) Work out the mean number of gold stars won.

.....

(3)

A student in class 8R is to be chosen at random.

The probability that this student won at least one gold star last week is 0.39

(b) Work out the probability that this student did **not** win at least one gold star last week.

.....

(1)

(Total for Question 12 is 4 marks)

16 The table shows information about the number of mobile phones owned by each of 40 families.

Number of mobile phones	Frequency
0	1
1	5
2	12
3	9
4	11
5	2

For the information in the table,

(a) write down the mode,

.....

(1)

(b) work out the mean.

.....

(3)

(Total for Question 16 is 4 marks)

16 80 students entered a dancing competition.

The table gives information about the length of time, in minutes, for which each student spent dancing.

Time (m)	Frequency
$0 < m \leqslant 12$	11
$12 < m \leqslant 24$	25
$24 < m \leqslant 36$	23
$36 < m \leqslant 48$	15
$48 < m \leqslant 60$	6

Work out an estimate for the mean length of time the students spent dancing.

..... minutes

(Total for Question 16 is 4 marks)

26 Team **A** and Team **B** take part in a quiz league.

After 11 rounds, Team **A** has a mean score per round of 17
After 9 rounds, Team **B** has a mean score per round of 18

Both teams take part in a further round.
After this round, both teams have a mean score per round of 18.5

In the further round, Team **A** scored more points than Team **B**.

How many more?

.....

(Total for Question 26 is 4 marks)

17 The table shows information about the lengths, in minutes, of 50 telephone calls.

Length of telephone call (m minutes)	**Frequency**
$0 < m \leqslant 5$	8
$5 < m \leqslant 10$	2
$10 < m \leqslant 15$	6
$15 < m \leqslant 20$	4
$20 < m \leqslant 25$	12
$25 < m \leqslant 30$	18

(a) Write down the modal class.

.....

(1)

(b) Work out an estimate for the total length, in minutes, of these telephone calls.

..... minutes

(3)

(Total for Question 17 is 4 marks)

12 The table shows information about the number of school lunches each of 30 students had in one week.

Number of school lunches	Frequency
0	2
1	5
2	11
3	7
4	4
5	1

(a) Work out the mean number of school lunches.

.....

(3)

The probability that Alex takes a packed lunch to school is 0.79

(b) Work out the probability that Alex does **not** take a packed lunch to school.

.....

(1)

(Total for Question 12 is 4 marks)

15 The table shows information about the number of oranges in each of 30 bags.

Number of oranges	Frequency
11	7
12	8
13	7
14	5
15	1
16	2

(a) Write down the mode of the number of oranges in a bag.

.....

(1)

(b) Work out the mean number of oranges in a bag.

.....

(3)

(Total for Question 15 is 4 marks)

2 Helena recorded the shoe sizes of seven of her friends.

Here are the results.

2 9 10 6 7 9 4

(a) Write down the mode of the shoe sizes.

.....

(1)

(b) Work out the median shoe size.

.....

(2)

(c) Find the range of the shoe sizes.

.....

(1)

(Total for Question 2 is 4 marks)

15 The table shows information about the weights, in kg, of 40 parcels.

Weight of parcel (p kg)	Frequency
$0 < p \leqslant 1$	19
$1 < p \leqslant 2$	12
$2 < p \leqslant 3$	5
$3 < p \leqslant 4$	2
$4 < p \leqslant 5$	2

(a) Write down the modal class.

.....

(1)

(b) Work out an estimate for the mean weight of the parcels.

..... kg

(4)

(Total for Question 15 is 5 marks)

9 The table shows information about the number of goals scored by a football team in each of 20 matches.

Number of goals scored	Frequency
0	6
1	5
2	7
3	1
4	0
5	1

(a) Write down the mode of the number of goals scored.

.....

(1)

(b) Find the median number of goals scored.

.....

(2)

(c) Work out the total number of goals scored.

.....

(2)

(Total for Question 9 is 5 marks)

5 The table shows information about the number of gold medals won by each of 8 countries at the 2016 Olympics.

Country	Number of gold medals
China	26
France	10
Germany	17
Great Britain and Northern Ireland	27
Japan	12
Russia	19
South Korea	9
United States	46

(a) Work out the range of the number of gold medals.

(1)

(b) Work out the median number of gold medals.

(2)

(c) Work out the mean number of gold medals.

(2)

(Total for Question 5 is 5 marks)

16 The table shows information about the number of birds each of 40 people counted in their garden one morning.

Number of birds	Frequency
1 − 5	5
6 − 10	10
11 − 15	16
16 − 20	9

(a) Write down the modal class.

(1)

(b) Work out an estimate for the mean number of birds.

(4)

(Total for Question 16 is 5 marks)

15 The table gives information about the number of days that 100 cars were in an airport car park.

Number of days (d)	Frequency
$0 < d \leqslant 4$	16
$4 < d \leqslant 8$	18
$8 < d \leqslant 12$	19
$12 < d \leqslant 16$	27
$16 < d \leqslant 20$	20

(a) Write down the modal class.

(1)

(b) Work out an estimate for the mean number of days.

days

(4)

(Total for Question 15 is 5 marks)

12 Ravina counts the number of matches in each of 40 boxes of matches.
The table shows information about her results.

Number of matches	Frequency
21	13
22	8
23	8
24	6
25	5

(a) Find the median of the numbers of matches in the boxes.

.....

(2)

(b) Work out the mean number of matches.

.....

(3)

(Total for Question 12 is 5 marks)

16 The table shows information about the lengths of time, in minutes, 120 customers spent in a supermarket.

Length of time (L minutes)	Frequency
$20 < L \leqslant 30$	6
$30 < L \leqslant 40$	26
$40 < L \leqslant 50$	31
$50 < L \leqslant 60$	40
$60 < L \leqslant 70$	17

(a) Write down the modal class.

.....

(1)

(b) Work out an estimate for the mean length of time spent by the 120 customers in the supermarket.

..... minutes

(4)

(Total for Question 16 is 5 marks)

18 The table gives information about the speeds, in kilometres per hour, of 80 motorbikes as each pass under a bridge.

Speed (s kilometres per hour)	**Frequency**
$40 < s \leqslant 50$	10
$50 < s \leqslant 60$	16
$60 < s \leqslant 70$	19
$70 < s \leqslant 80$	23
$80 < s \leqslant 90$	12

(a) Write down the modal class.

.....

(1)

(b) Work out an estimate for the mean speed of the motorbikes as they pass under the bridge. Give your answer correct to 3 significant figures.

..... kilometres per hour

(4)

(Total for Question 18 is 5 marks)

19 The table gives information about the amounts of money, in euros, that 70 of Anjali's friends spent last Saturday.

Money spent (S euros)	Frequency
$0 < S \leqslant 8$	6
$8 < S \leqslant 16$	14
$16 < S \leqslant 24$	19
$24 < S \leqslant 32$	25
$32 < S \leqslant 40$	6

One of Anjali's 70 friends is going to be chosen at random.

(a) Find the probability that this friend spent more than 24 euros last Saturday.

.....

(1)

(b) Work out an estimate for the mean amount of money spent by Anjali's friends last Saturday. Give your answer correct to 2 decimal places.

..... euros

(4)

(Total for Question 19 is 5 marks)

15 The table shows information about the frame size, in cm, of 60 bicycles sold in a shop.

Frame size (S cm)	Frequency
$30 < S \leqslant 36$	4
$36 < S \leqslant 42$	14
$42 < S \leqslant 48$	18
$48 < S \leqslant 54$	19
$54 < S \leqslant 60$	5

(a) Write down the modal class.

.....

(1)

(b) Work out an estimate for the mean frame size.

..... cm

(4)

(Total for Question 15 is 5 marks)

10 The frequency table shows information about the number of cookies made by each of the 21 people in a cookery class.

Number of cookies made	Frequency
10	1
11	7
12	2
13	5
14	4
15	2

(a) Write down the mode of the number of cookies made.

.....

(1)

(b) Find the median number of cookies made.

.....

(2)

(c) Find the total number of cookies made by the 21 people in the cookery class.

.....

(2)

(Total for Question 10 is 5 marks)

12 Pam plays netball for her school team.

Here are the numbers of goals she scored in the last 8 games.
The numbers of goals are written in order of size.

1 1 2 2 3 6 x 14

(a) Find the range of the number of goals Pam scored.

.....

(1)

(b) Find the median number of goals Pam scored.

.....

(1)

The mean number of goals Pam scored in the 8 games is 5

(c) Work out the value of x

$x =$ .....

(3)

(Total for Question 12 is 5 marks)

11 The table shows how many cousins each of 30 students in Class **A** has.

Number of cousins	Frequency
0	3
1	7
2	6
3	11
4	1
5	2

(a) Work out the range of the number of cousins.

.....

(1)

(b) Write down the mode of the number of cousins.

.....

(1)

(c) Work out the mean of the number of cousins.

.....

(3)

(Total for Question 11 is 5 marks)

18 The table shows some information about the hourly rates of pay of 60 workers.

Hourly rate of pay (p dollars)	Frequency
$10 < p \leqslant 15$	18
$15 < p \leqslant 20$	16
$20 < p \leqslant 25$	14
$25 < p \leqslant 30$	8
$30 < p \leqslant 35$	4

(a) Write down the modal class.

.....

(1)

(b) Work out an estimate for the mean hourly rate of pay of the 60 workers.

..... dollars

(4)

(Total for Question 18 is 5 marks)

18 The table gives information about the distances 100 adults travel to work.

Distance (d km)	Frequency
$0 < d \leqslant 5$	26
$5 < d \leqslant 10$	40
$10 < d \leqslant 15$	16
$15 < d \leqslant 20$	10
$20 < d \leqslant 25$	8

(a) Write down the modal class.

.....

(1)

(b) Work out an estimate for the mean distance.

..... km

(4)

(Total for Question 18 is 5 marks)

7 Here are the shoe sizes of 11 people.

7 8 4 4 4 10 5 7 7 4 4

(a) Write down the mode.

.....

(1)

(b) Work out the range.

.....

(2)

(c) Find the median.

.....

(2)

Clark works in a shoe shop.

On Tuesday morning he sold some pairs of shoes.
The mean price of the pairs of shoes was £34

On Tuesday afternoon he sold only two pairs of shoes.
The prices of these pairs of shoes were £31 and £49

(d) Is the mean price of all the pairs of shoes Clark sold on Tuesday more or less than £34?
You must give a reason for your answer.

.....

.....

.....

(1)

(Total for Question 7 is 6 marks)

9 The table shows information about the number of pieces of homework each student in Year 11 received last week.

Number of pieces of homework	Frequency
3	4
4	8
5	10
6	12
7	4

(a) Work out the range of the number of pieces of homework.

.....

(2)

(b) Write down the mode of the number of pieces of homework.

.....

(1)

(c) Work out the mean number of pieces of homework.
Give your answer correct to one decimal place.

.....

(3)

(Total for Question 9 is 6 marks)

20 Jenny has six cards.

Each card has a whole number written on it so that

the smallest number is 5
the largest number is 24
the median of the six numbers is 14
the mode of the six numbers is 8

Jenny arranges her cards so that the numbers are in order of size.



(a) For the remaining four cards, write on each dotted line a number that could be on the card.

(3)

A basketball team plays 6 games.
After playing 5 games, the team has a mean score of 21 points per game.
After playing 6 games, the team has a mean score of 23 points per game.

(b) Work out the number of points the team scored in its 6th game.

.....

(3)

(Total for Question 20 is 6 marks)

10 The table gives information about the number of rewards gained by each of 50 students last term.

Number of rewards	Frequency
0	3
1	9
2	15
3	18
4	4
5	1

(a) Write down the mode of the number of rewards.

.....

(1)

(b) Work out the mean number of rewards.

.....

(3)

One of these students is chosen at random.

(c) Find the probability that this student gained more than 2 rewards.

.....

(2)

(Total for Question 10 is 6 marks)

22 The students in Class A and in Class B take the same examination.

There are 28 students in Class A and 32 students in Class B.
The mean score for all the students in both classes is 72.6
The mean score for the students in Class A is 75

(a) Work out the mean score for the students in Class B.

.....

(4)

The lowest score in Class A is 39
The range of scores for Class A is 57
The lowest score in Class B is 33
The range of scores for Class B is 60

(b) Find the range of scores for all the students in both classes.

.....

(3)

(Total for Question 22 is 7 marks)

17 The table shows information about the weights, in kilograms, of 40 babies.

Weight (w kg)	Frequency
$2 < w \leqslant 3$	12
$3 < w \leqslant 4$	16
$4 < w \leqslant 5$	9
$5 < w \leqslant 6$	2
$6 < w \leqslant 7$	1

(a) Write down the modal class.

.....

(1)

(b) Work out an estimate for the mean weight of the 40 babies.

..... kg

(4)

One of the 40 babies is going to be chosen at random.

(c) Find the probability that this baby has a weight of more than 5 kg.

.....

(2)

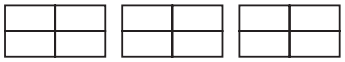
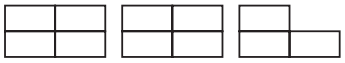
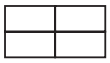
(Total for Question 17 is 7 marks)

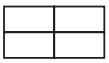
SUB-TOPIC S1c

CHARTS & DIAGRAMS

Sub-topic S1c · 58 questions · 254 marks · lowest tariff first

3 The pictogram shows information about the total weight of bananas grown last year in each of five countries.

India	
China	
Uganda	
Brazil	
Tanzania	
Indonesia	

 represents 4 million tonnes of bananas

(a) How many million tonnes of bananas were grown last year in Uganda?

.....million tonnes
(1)

Last year the weight of bananas grown in India was more than the weight of bananas grown in China.

(b) How many million tonnes more?

.....million tonnes
(1)

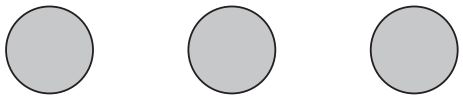
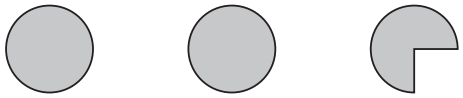
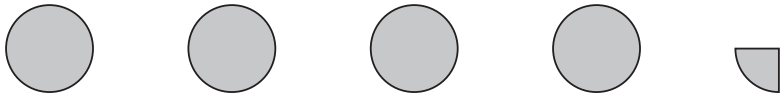
Last year the total weight of bananas grown in Indonesia was 6 million tonnes.

(c) Show this information on the pictogram.

(1)

(Total for Question 3 is 3 marks)

4 The pictogram gives information about the number of cakes Peony baked on Monday, on Tuesday, on Wednesday and on Thursday.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

 represents 8 cakes

(a) How many cakes did Peony bake on Wednesday?

(1)

Peony baked more cakes on Thursday than on Monday.

(b) How many more?

(1)

Peony baked 20 cakes on Friday.

(c) Show this information on the pictogram.

(1)

(Total for Question 4 is 3 marks)

14 Anjali, Ravina and Sandeep were the three candidates in an election.

Heidi draws a pie chart for the number of votes received by each of the three candidates.

The angle in the pie chart for the number of votes received by Anjali is 90°
The angle in the pie chart for the number of votes received by Ravina is 160°

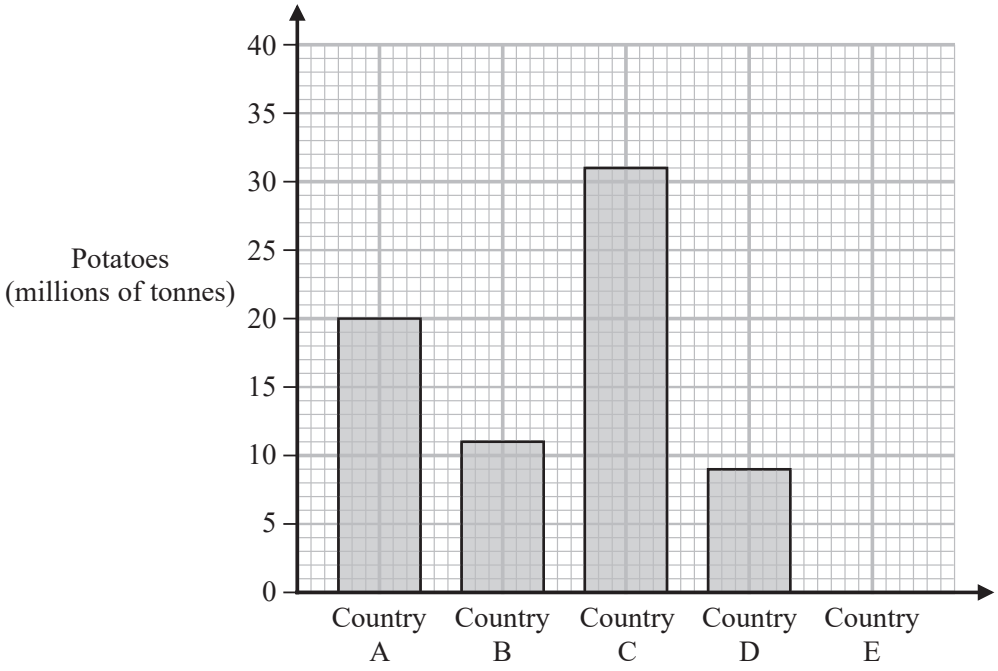
Ravina received 400 votes.

Work out the number of votes Sandeep received.

.....

(Total for Question 14 is 3 marks)

4 The bar chart shows information about the weight, in millions of tonnes, of the potatoes produced by each of four countries in 2016



In 2016, one of these four countries produced 11 million tonnes of potatoes.

(a) Which country?

.....

(1)

In 2016, Country E produced 7 million tonnes of potatoes.

(b) Draw a bar on the bar chart to show this information.

(1)

In 2016, the weight of potatoes produced by Country C was greater than the weight of potatoes produced by Country A.

(c) How many million tonnes greater?

..... million tonnes

(1)

(Total for Question 4 is 3 marks)

4 The pictogram shows information about the numbers of different breeds of dog that Lucy saw in the park.

Labrador	
Retriever	
Cockapoo	
Bulldog	
Spaniel	
Terrier	

Key:  represents 8 dogs

(a) How many Retrievers did Lucy see in the park?

.....

(1)

Lucy saw 10 Spaniels in the park.

(b) Show this information on the pictogram.

(1)

Lucy saw more Cockapoos than Bulldogs in the park.

(c) How many more?

.....

(1)

(Total for Question 4 is 3 marks)

Answer ALL TWENTY EIGHT questions.

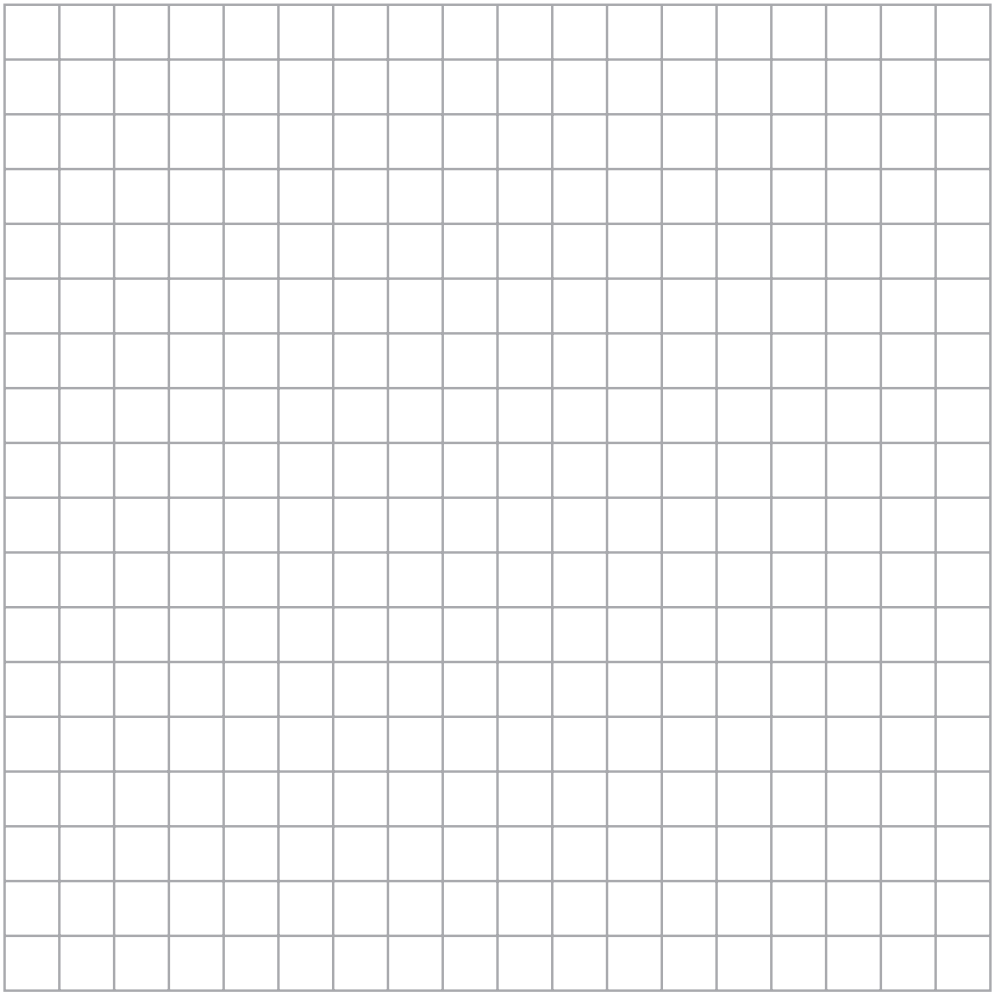
Write your answers in the spaces provided.

You must write down all the stages in your working.

1 The table shows the distance, in kilometres, each of 6 people travelled to get to a train station.

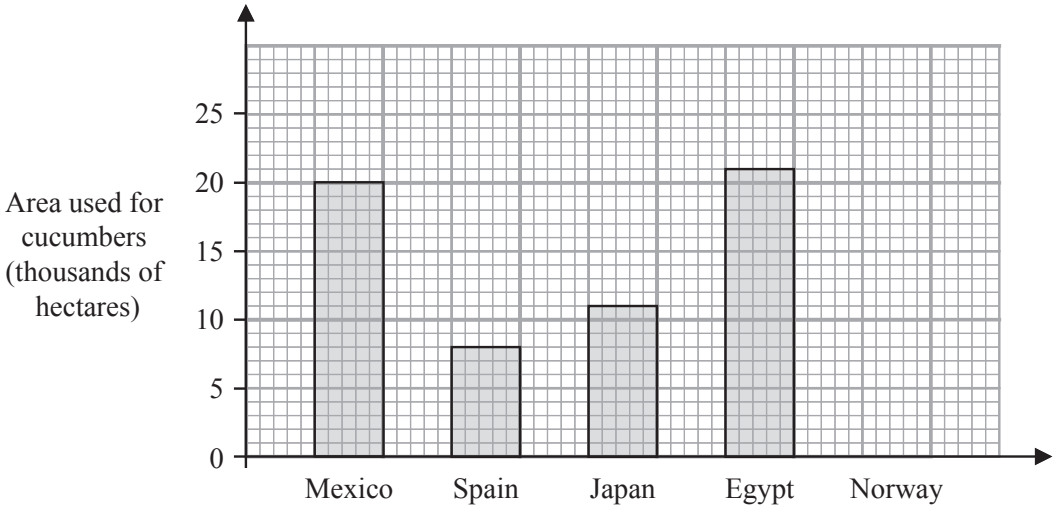
Name	Ted	Yui	Barney	Ichika	Wilfred	Bella
Distance (km)	7	12	10	5	4	9

On the grid, draw a bar chart to show this information.



(Total for Question 1 is 3 marks)

3 The bar chart shows information about the area, in thousands of hectares, that was used to grow cucumbers in each of four countries in 2021



(a) Write down the number of hectares that were used to grow cucumbers in Egypt.

..... thousand

(1)

More hectares were used to grow cucumbers in Mexico than in Spain.

(b) How many more?

..... thousand

(1)

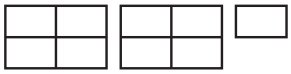
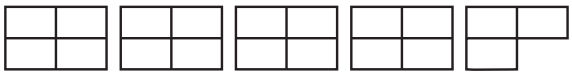
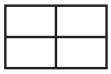
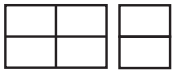
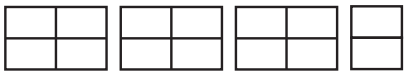
In Norway, 17 thousand hectares were used to grow cucumbers.

(c) Show this information on the bar chart.

(1)

(Total for Question 3 is 3 marks)

8 The pictogram shows information about the number of toys sold in a shop on each of five days.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

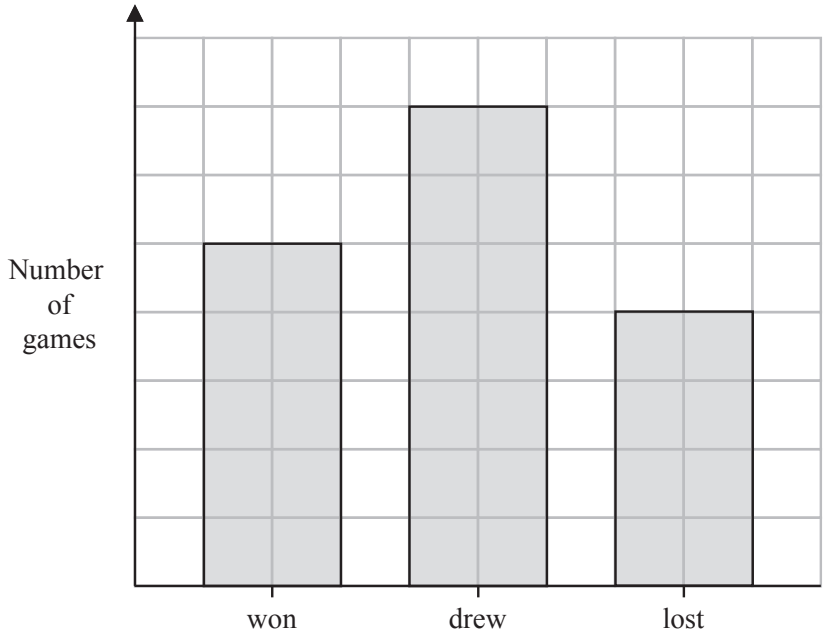
The number of toys sold on Friday was 16 more than the number of toys sold on Thursday.

Work out the number of toys sold on Monday.

.....

(Total for Question 8 is 3 marks)

11 The bar chart gives information about the results of the games played by a school team.



The team gained

3 points for each game it won
1 point for each game it drew
0 points for each game it lost

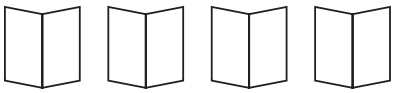
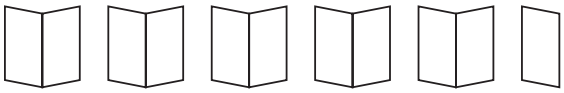
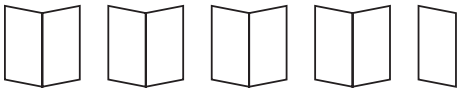
The team drew 14 games.

Work out the total number of points the team gained.

.....

(Total for Question 11 is 3 marks)

2 The pictogram shows some information about the number of books read by Theodore during each of five weeks.

Week 1	
Week 2	
Week 3	
Week 4	
Week 5	

(a) During which week did Theodore read the greatest number of books?

Week

(1)

Theodore read 16 books during Week 1

(b) (i) How many books does  represent?

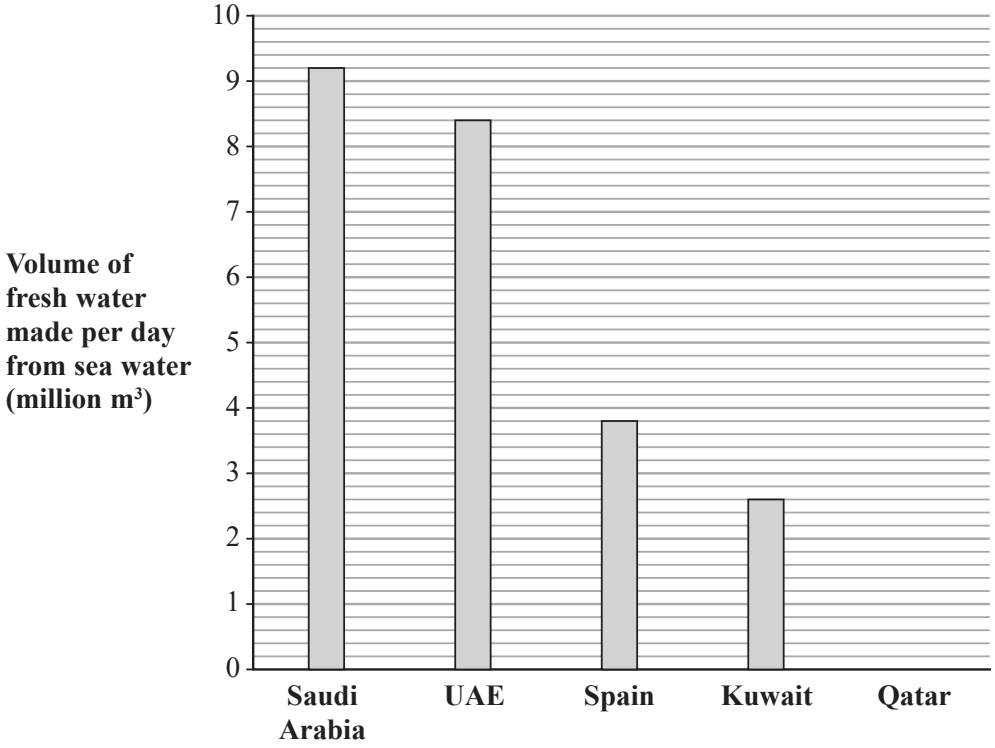
(ii) How many books did Theodore read during Week 2?

(iii) How many books did Theodore read during Week 5?

(3)

(Total for Question 2 is 4 marks)

4 The bar chart gives information about the volume of fresh water made per day from sea water in each of four countries in 2015



(a) Write down the volume of fresh water made per day from sea water in Saudi Arabia in 2015

million m^3

(1)

More fresh water was made per day from sea water in the UAE in 2015 than was made per day from sea water in Spain in 2015

(b) How much more?

million m^3

(2)

1.7 million m^3 of fresh water was made per day from sea water in Qatar in 2015

(c) Draw a bar on the bar chart to show this information.

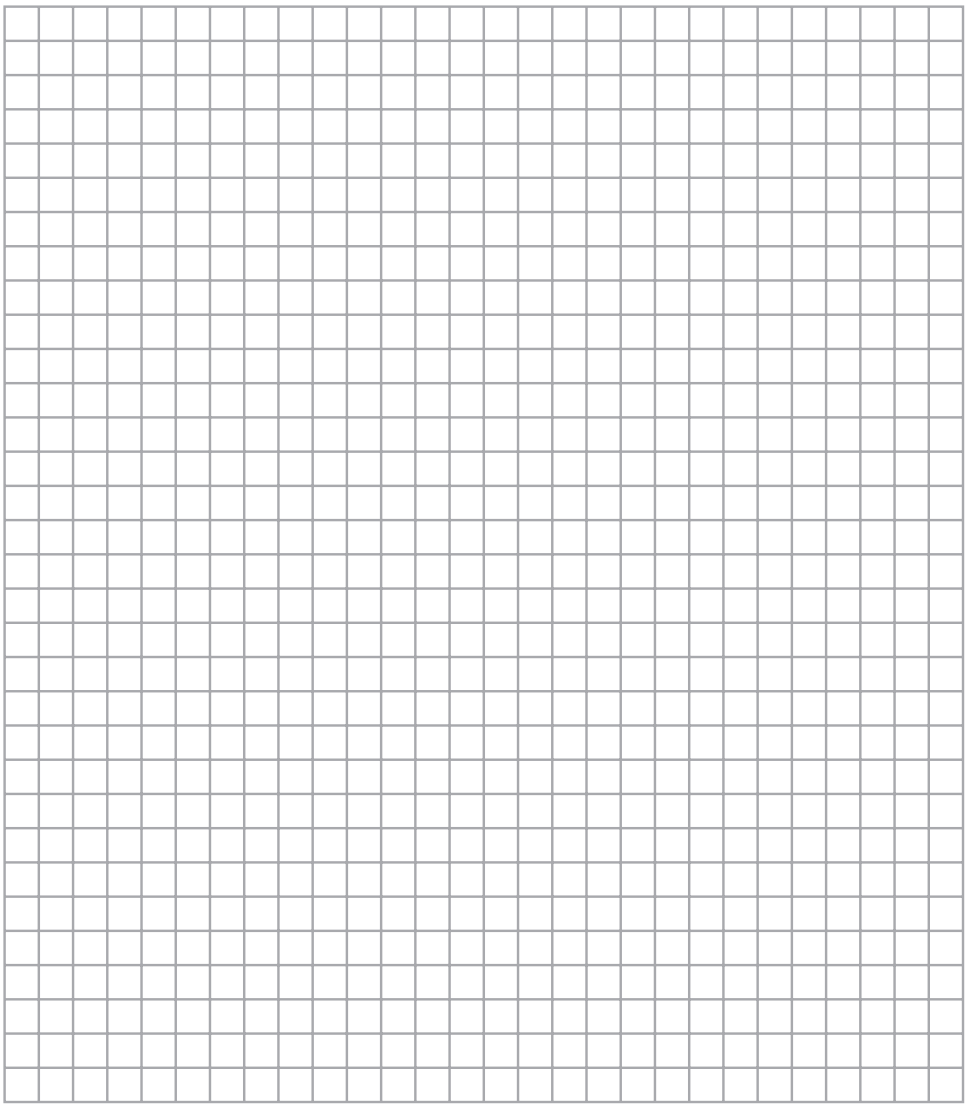
(1)

(Total for Question 4 is 4 marks)

5 The table shows the average monthly temperatures, in °C, for four months in London and in Cairo.

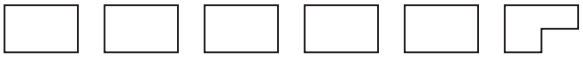
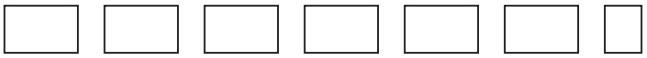
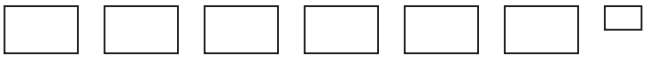
	January	April	July	October
London (°C)	5	11	19	13
Cairo (°C)	14	21	28	23

Show this information by drawing a suitable diagram on the grid below.



(Total for Question 5 is 4 marks)

10 The pictogram gives information about the number of emails Sami sent on each of five days last week.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

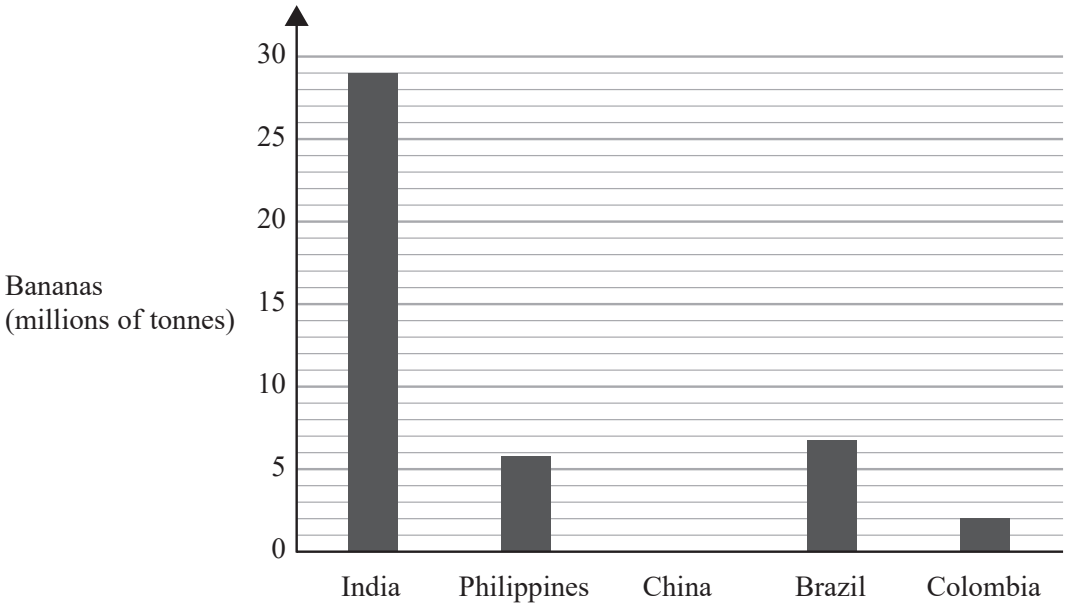


Work out the mean number of emails Sami sent on these 5 days.

.....

(Total for Question 10 is 4 marks)

2 The bar chart shows information about the weight, in millions of tonnes, of bananas produced by each of four countries in 2016



In 2016, China produced 13 million tonnes of bananas.

(a) Draw a bar on the bar chart to show this information.

(1)

One of these countries produced 6.8 million tonnes of bananas in 2016

(b) Which country?

.....

(1)

In 2016, a total of 113 million tonnes of bananas was produced worldwide.

(c) What fraction of the 113 million tonnes of bananas was produced in India in 2016?

.....

(2)

(Total for Question 2 is 4 marks)

11 Kwo asked 40 people where they went on holiday last year.
He is going to draw a pie chart for his results.

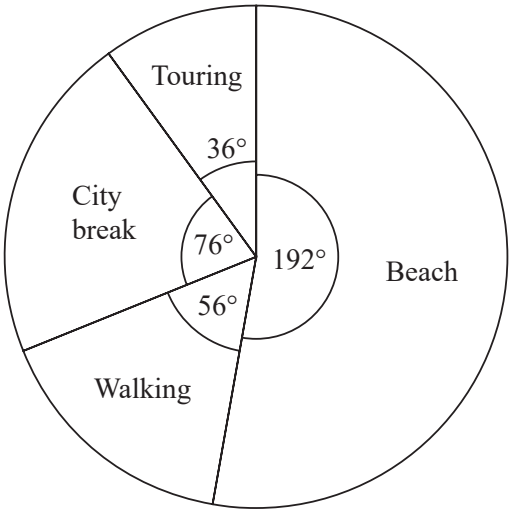
16 of the 40 people said they went to Egypt.

(a) Work out the size of the angle in the pie chart for Egypt.

.....°

(2)

Tiffany asked some people what type of holiday they each like the best.
She used her results to draw this pie chart.



48 of the people that Tiffany asked said they like beach holidays the best.

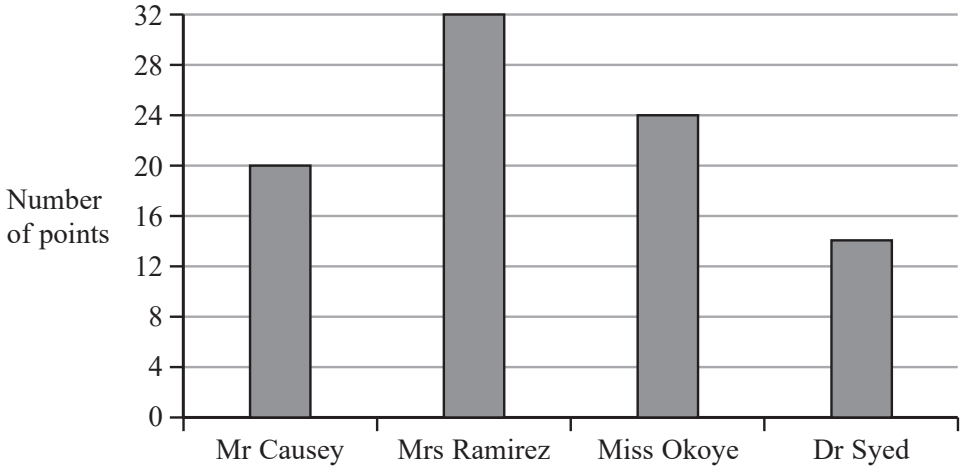
(b) Work out how many of the people Tiffany asked said they like walking holidays the best.

.....

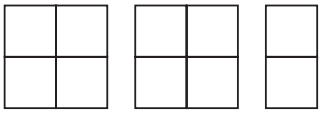
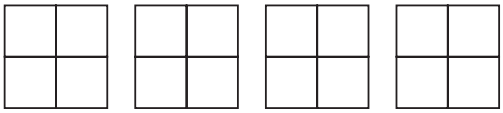
(2)

(Total for Question 11 is 4 marks)

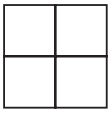
5 The bar chart gives information about the number of points scored by each of four teachers in a quiz.



Joseph starts to draw a pictogram, shown below, for this information.
The pictogram shows the number of points scored by Mr Causey and the number of points scored by Mrs Ramirez.

Mr Causey	
Mrs Ramirez	
Miss Okoye	
Dr Syed	

Key:

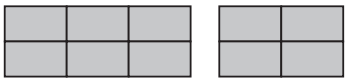


represents ..... points

Complete the pictogram, including the key.

(Total for Question 5 is 4 marks)

2 The pictogram gives information about the number of eggs laid by Ellie's chickens in April, in May and in June.

April	
May	
June	
July	

 represents 24 eggs

(a) How many eggs were laid by Ellie's chickens in April?

.....

(1)

Ellie's chickens laid more eggs in June than in May.

(b) How many more?

.....

(2)

Ellie's chickens laid 52 eggs in July.

(c) Show this information on the pictogram.

(1)

(Total for Question 2 is 4 marks)

10 Hugo records the number of pairs of trainers sold in each of four shoe shops last Saturday. He is going to draw a pie chart for his results.

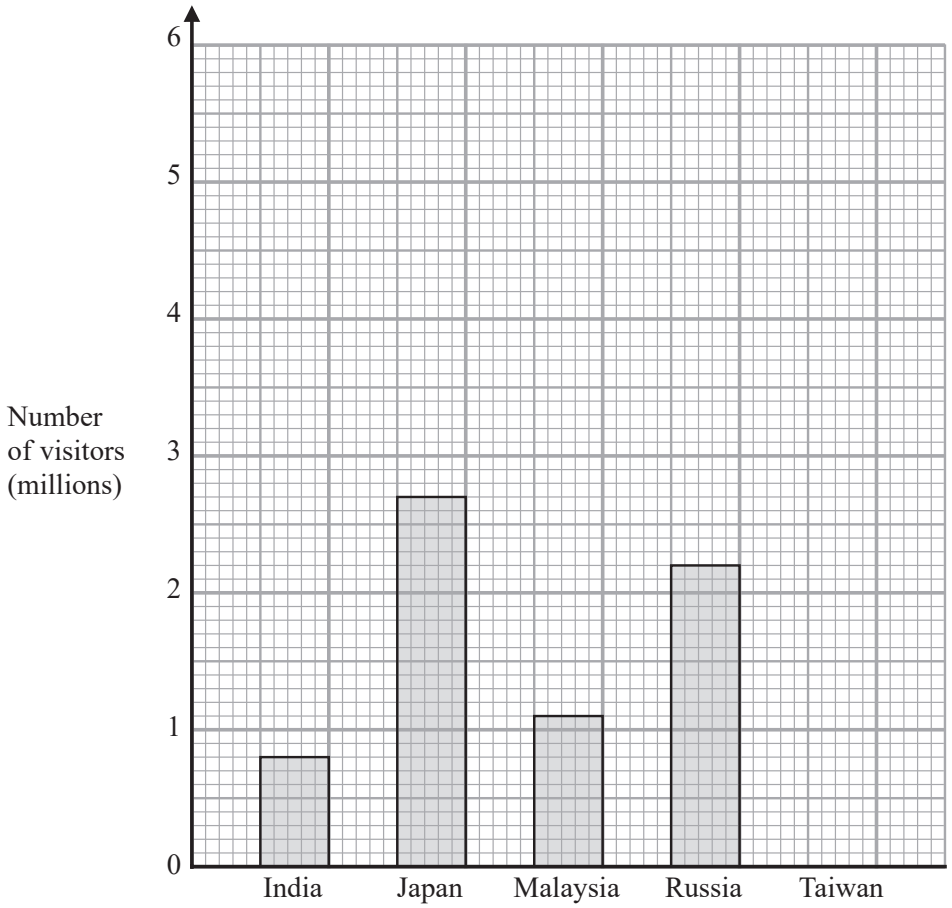
The incomplete table shows two of Hugo's results and the sizes of three of the angles in his pie chart.

Name of shop	Number of pairs of trainers	Angle in pie chart
ABC Shoes	.....	30°
Kilian Stuart Sports	18	45°
One Stop Shoes	48	..... °
Superfast Trainers	.....	165°

Complete the table.

(Total for Question 10 is 4 marks)

4 The bar chart shows information about the number of visitors to China from each of four countries in 2015



(a) Write down the number of visitors from Japan.

..... million

(1)

(b) From which country were there 1.1 million visitors?

.....

(1)

The number of visitors from Taiwan was 5.4 million.

(c) Draw a bar on the bar chart to show this information.

(1)

The number of visitors from one country was twice the number of visitors from Malaysia.

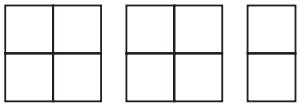
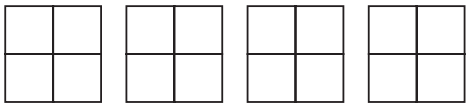
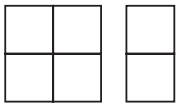
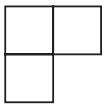
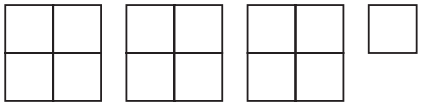
(d) Write down the name of this country.

.....

(1)

(Total for Question 4 is 4 marks)

3 The pictogram gives some information about the number of parcels delivered by a delivery company on each of five days last week.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

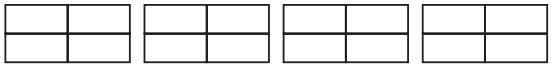
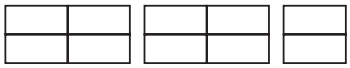
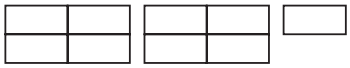
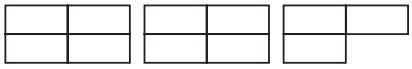
On Monday, the delivery company delivered 20 parcels.

Work out the total number of parcels delivered by the delivery company on these five days.

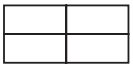
.....

(Total for Question 3 is 4 marks)

2 The pictogram shows information about the number of text messages Colin sent on each of four days last week.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

Key:

 represents 8 text messages

(a) How many text messages did Colin send on Tuesday?

.....

(1)

(b) Work out the total number of text messages that Colin sent on the four days from Monday to Thursday last week.

.....

(2)

On Friday, Colin sent 26 text messages.

(c) Show this information on the pictogram.

(1)

(Total for Question 2 is 4 marks)

3 The pictogram shows information about the number of loaves of bread sold in a bakery each day from Tuesday to Friday last week.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

Key:  represents 6 loaves of bread

(a) How many loaves of bread were sold on Friday?

.....

(1)

The total number of loaves sold in the bakery from Monday to Friday last week was 66

(b) (i) Work out the number of loaves sold on Monday last week.

.....

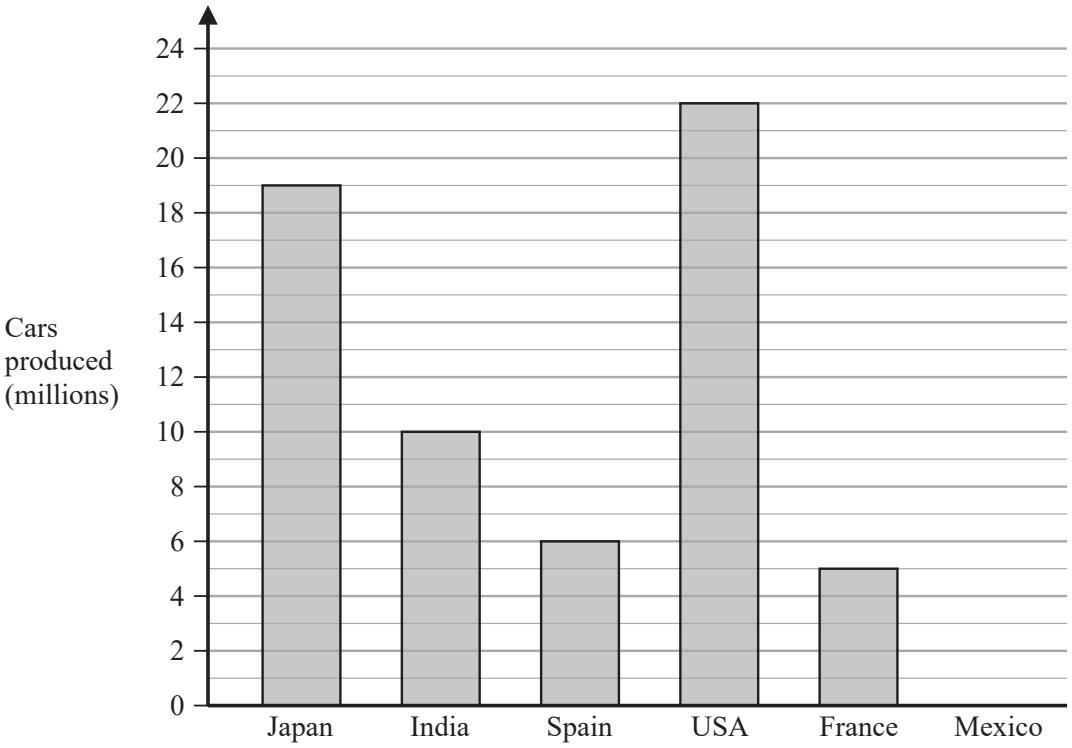
(2)

(ii) Show this information for Monday on the pictogram.

(1)

(Total for Question 3 is 4 marks)

2 The bar chart gives information about the total number, in millions, of cars produced in 2017 and 2018 for each of five countries.



The total number of cars produced in 2017 and 2018 in Mexico was 8 million.

(a) Draw a bar on the bar chart to show this information.

(1)

(b) Which of these six countries produced the greatest total number of cars?

.....

(1)

(c) Which country produced half as many cars as India?

.....

(1)

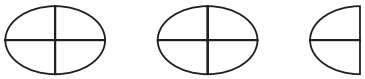
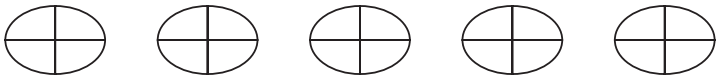
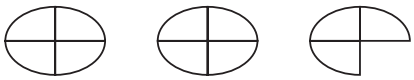
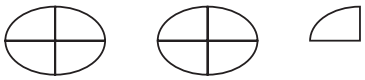
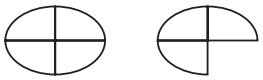
(d) Work out the difference between the total number of cars produced in Japan and the total number of cars produced in Spain.

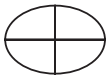
..... million

(1)

(Total for Question 2 is 4 marks)

2 The pictogram shows information about the total weight of potatoes grown last year in each of five countries.

Bangladesh	
USA	
Germany	
Poland	
France	
The Netherlands	

Key:  represents 4 million tonnes of potatoes

The pictogram shows one country where the total weight of potatoes grown last year was 20 million tonnes.

(a) Which country?

.....

(1)

Last year, the weight of potatoes grown in The Netherlands was 6 million tonnes.

(b) Show this information on the pictogram.

(1)

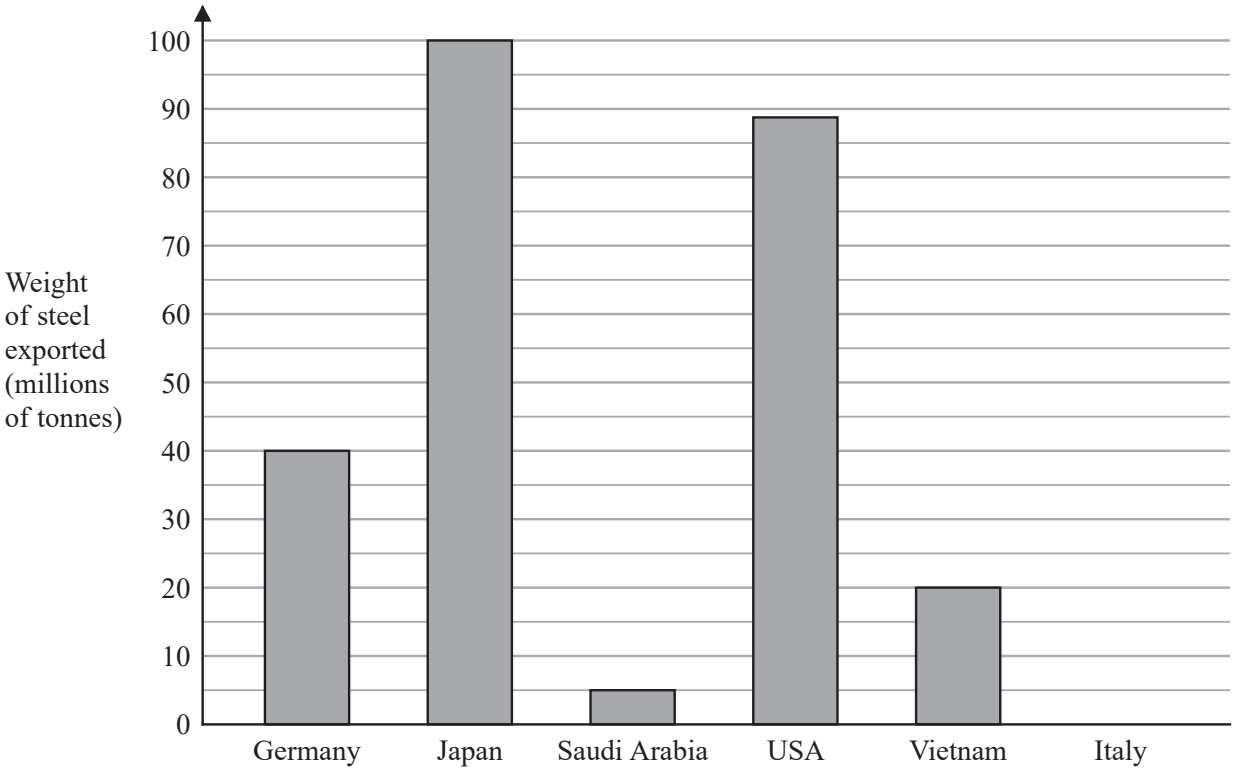
(c) Work out the total weight of potatoes grown in Germany **and** in France last year.

..... million tonnes

(2)

(Total for Question 2 is 4 marks)

2 The bar chart shows information about the weight of steel, in millions of tonnes, exported by each of five countries in 2019



Using the information in the bar chart,

(a) write down the weight of steel exported by Germany,

..... million tonnes
(1)

(b) write down the country that exported 88 million tonnes of steel,

.....
(1)

(c) work out the difference between the weight of steel exported by Japan and the weight of steel exported by Saudi Arabia.

..... million tonnes
(1)

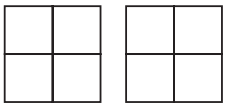
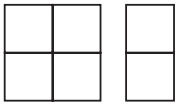
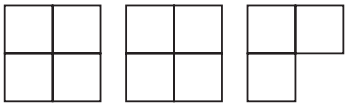
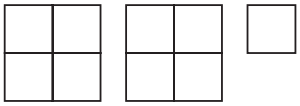
Italy exported 25 million tonnes of steel in 2019

(d) Draw a bar on the bar chart to show this information.

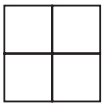
(1)

(Total for Question 2 is 4 marks)

9 The pictogram gives some information about the number of cars sold by each of the four employees of Best Cars in April.

Andros	
Belinda	
Carmen	
Decheng	

Key:



represents 8 cars

In March, Best Cars sold 60 cars in total.

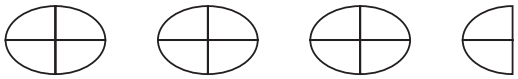
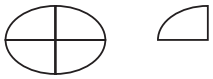
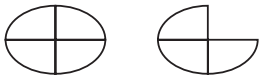
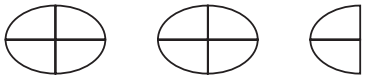
Its target for April was to sell 15% more cars in total than it sold in March.

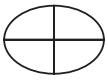
Show that Best Cars did not meet its target.
Show your working clearly.

(Total for Question 9 is 4 marks)

3 Peter owns boarding kennels for dogs.

The pictogram shows information about the number of dogs that were at the kennels each day from Monday to Thursday last week.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

Key:  represents 8 dogs

(a) How many dogs were at the kennels on Monday?

.....

(1)

18 dogs were at the kennels on Friday.

(b) Show this information on the pictogram.

(1)

Peter gave each dog 2 biscuits each day.

(c) Work out the total number of biscuits that Peter gave the dogs during the five days from Monday to Friday last week.

.....

(2)

(Total for Question 3 is 4 marks)

11 Trisha asked 90 people to name their favourite type of cheese to put on a pizza.
She is going to draw a pie chart for her results.

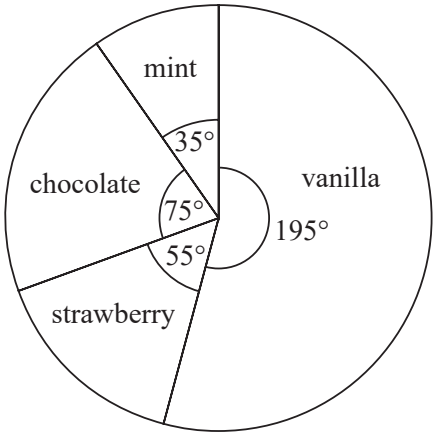
55 of the 90 people said that mozzarella was their favourite.

(a) Work out the size of the angle on the pie chart for the sector representing mozzarella.

.....°

(2)

Haashir asked a different group of people to name their favourite ice cream flavour.
He used his results to draw this pie chart.



39 of the people Haashir asked said that vanilla was their favourite.

(b) Work out how many of the people Haashir asked said that chocolate was their favourite.

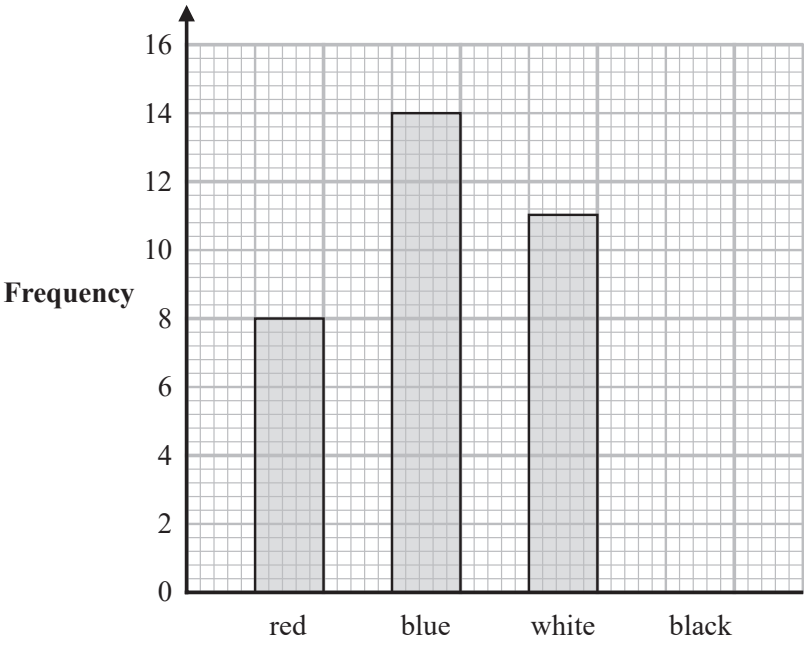
.....

(2)

(Total for Question 11 is 4 marks)

6 Tamzin recorded the colour of each of the cars she saw one afternoon.
She saw only red cars, blue cars, white cars and black cars.

The bar chart gives information about the numbers of red cars, blue cars and white cars that she saw.



(a) Write down the number of red cars that Tamzin saw.

.....

(1)

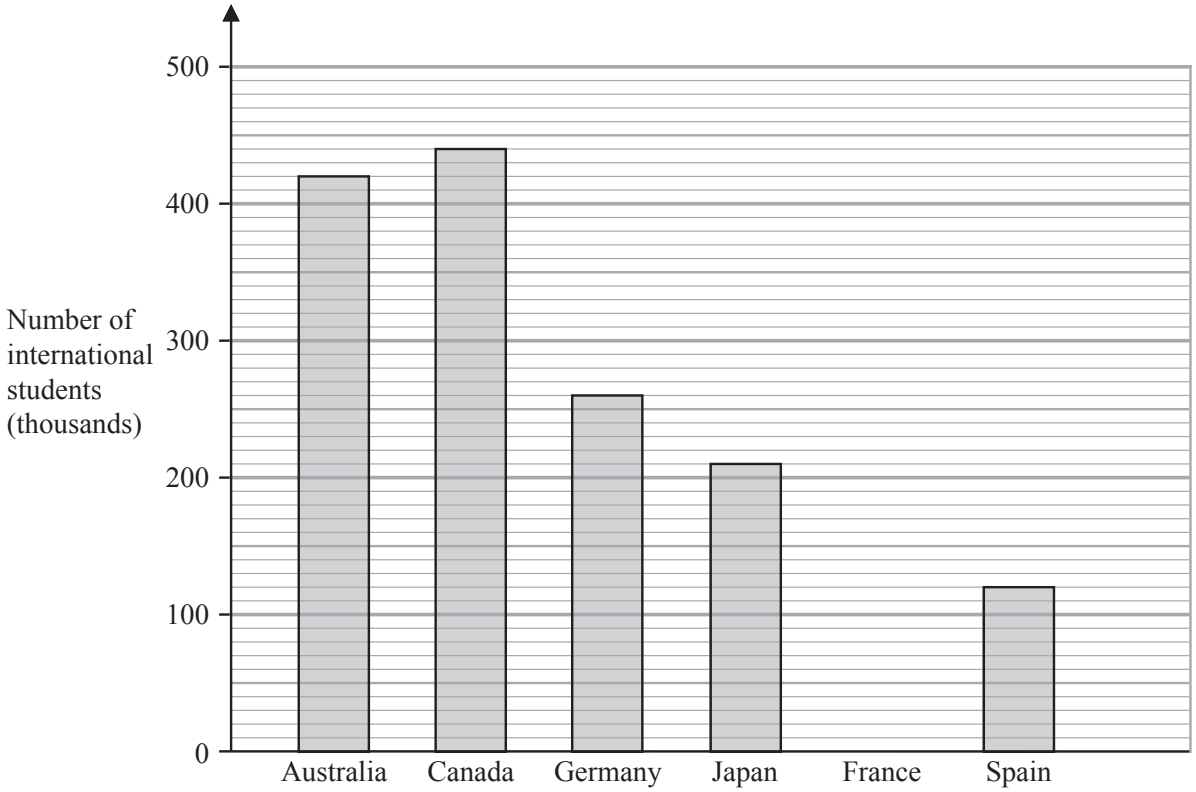
Tamzin saw 40 cars in total.

(b) Draw a bar on the bar chart to show the number of black cars that Tamzin saw.

(3)

(Total for Question 6 is 4 marks)

2 The bar chart shows information about the number of international students who studied in each of five countries in 2019



(a) In which of these five countries did the greatest number of international students study?

.....

(1)

(b) Write down the number of international students who studied in Australia.

..... thousand

(1)

The number of international students who studied in Japan was more than the number of international students who studied in Spain.

(c) How many more?

..... thousand

(1)

In 2019, the number of international students who studied in France was 340 thousand.

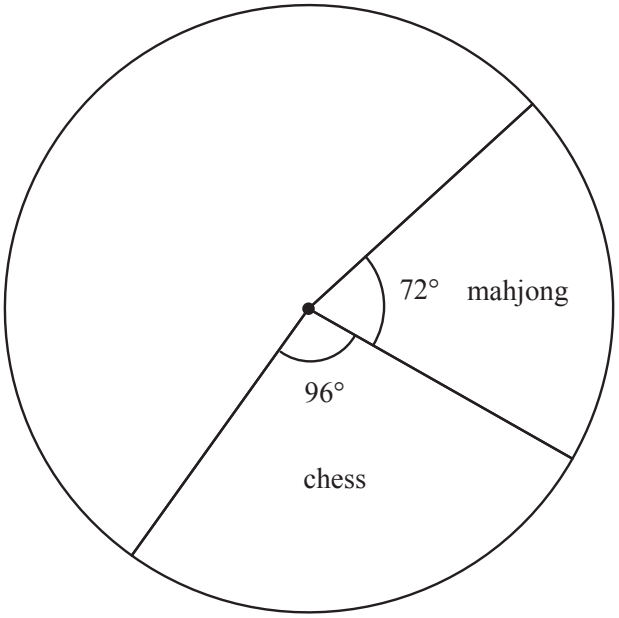
(d) Draw a bar on the bar chart to show this information.

(1)

(Total for Question 2 is 4 marks)

7 At a games club, people played chess or mahjong or rummy or whist.
Each person played only one of these games.

Helena starts to draw a pie chart to show information about the games played.



24 people played mahjong.

(a) Work out the number of people who played chess.

.....

(2)

40 people played whist.

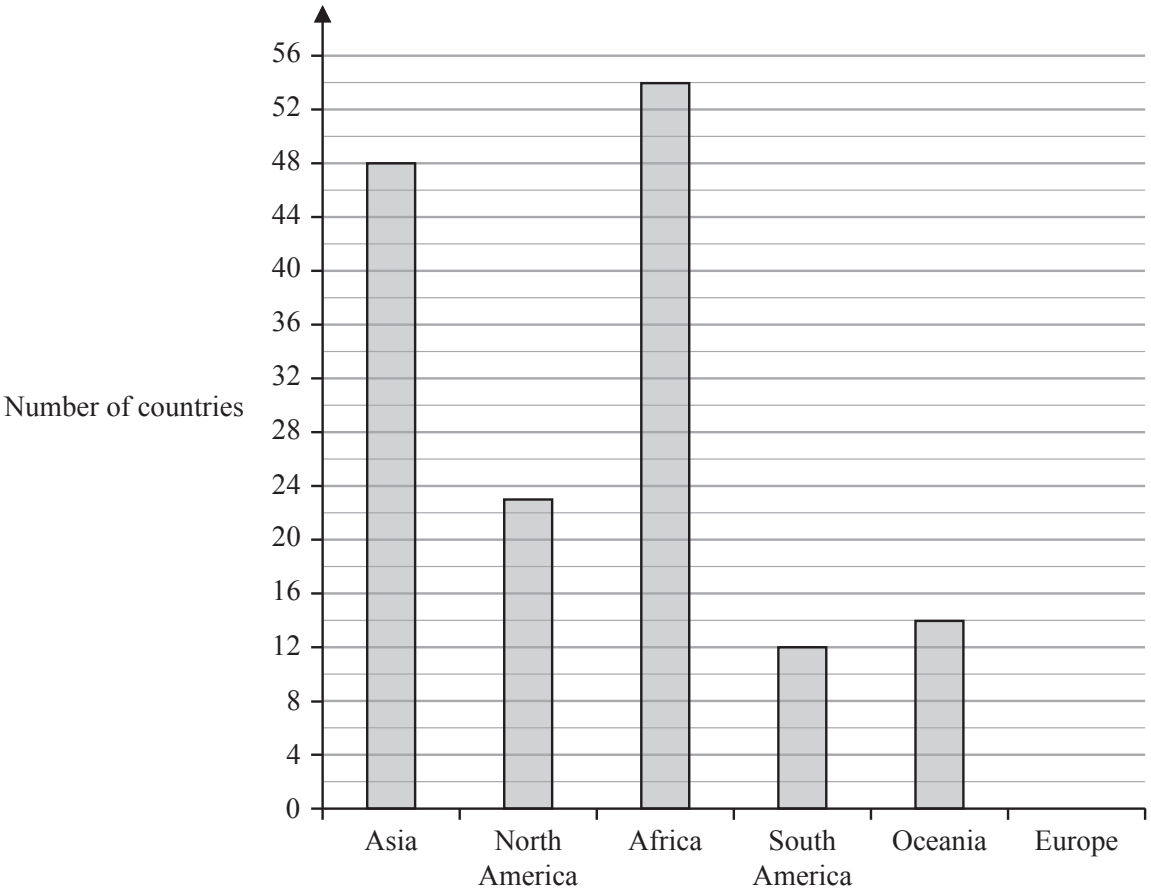
(b) Work out the size of the angle on the pie chart for the sector representing whist.
You do not need to complete the pie chart.

..... °

(2)

(Total for Question 7 is 4 marks)

2 The bar chart gives information about the total number of countries in each of five continents.



The total number of countries in Europe is 44

(a) Draw a bar on the bar chart to show this information.

(1)

(b) Write down the name of the continent with 23 countries.

.....

(1)

(c) Which continent has 4 times as many countries as South America?

.....

(1)

(d) Work out the sum of the total number of countries in Africa and the total number of countries in Oceania.

.....

(1)

(Total for Question 2 is 4 marks)

3 The pictogram gives information about the number of kilometres Thomas travelled on Monday, on Tuesday, on Wednesday and on Thursday.

Monday	□ □ □ □
Tuesday	□ □ □ □
Wednesday	□ □ □ □ ⌐
Thursday	□ □ ▯
Friday	

□ represents 4 kilometres

(a) Write down the number of kilometres Thomas travelled on Tuesday.

..... kilometres
(1)

On Wednesday, Thomas travelled further than he did on Thursday.

(b) How much further?

..... kilometres
(2)

On Friday, Thomas travelled 13 kilometres.

(c) Show this information on the pictogram.

(1)

(Total for Question 3 is 4 marks)

2 The pictogram shows some information about the number of tyres sold in a garage each month from January to April.

January	◯ ◯ ◯
February	◯ ◯ ◯ ◯
March	◯ ◯ ◯ ◯ ◯ ◢
April	◯ ◯ ◯ ◗
May	

Key: ◯ represents 8 tyres

(a) How many tyres were sold in January?

.....

(1)

(b) Work out the total number of tyres sold in the four months from January to April.

.....

(2)

In May, 22 tyres were sold.

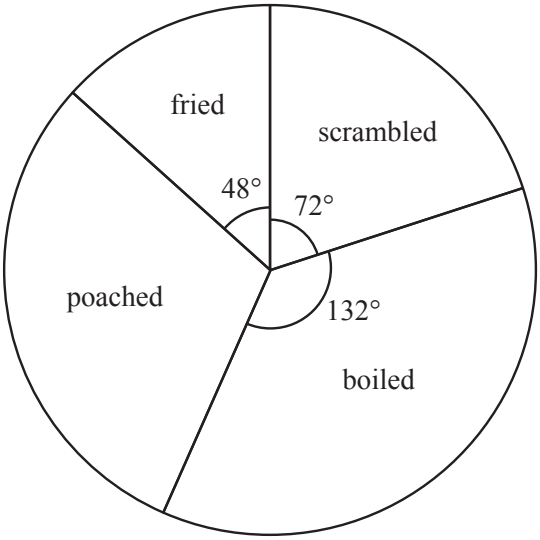
(c) Show this information on the pictogram.

(1)

(Total for Question 2 is 4 marks)

9 Tamsin asked some people how they prefer their eggs cooked.
They could choose scrambled or boiled or poached or fried.

The pie chart shows some information about their answers.



(a) Use the pie chart to complete the table.

Egg	Frequency	Angle of sector
scrambled	6	72°
boiled	.....	132°
poached	.....	.....
fried	.....	48°

(3)

One of these people is selected at random.

(b) Write down the probability that this person chose scrambled.

.....

(1)

(Total for Question 9 is 4 marks)

7 Here is a list of all the nut trees Caterina counted one day.

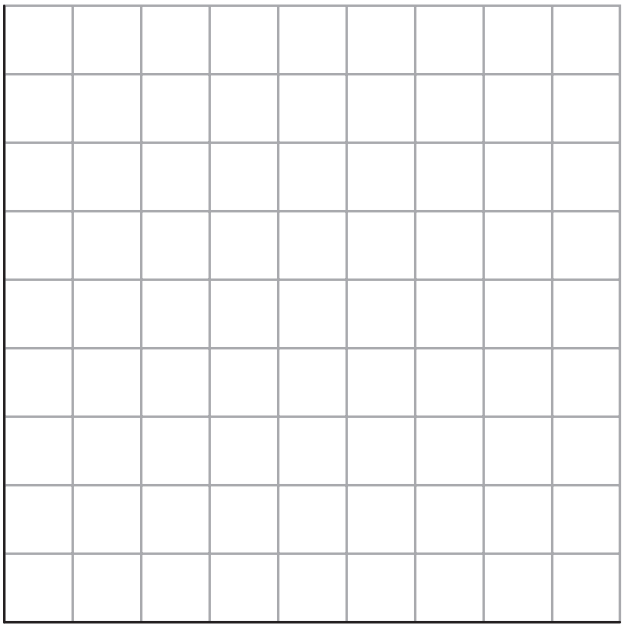
cashew	pistachio	almond	cashew	almond
walnut	walnut	almond	pistachio	cashew
cashew	walnut	almond	walnut	pistachio
almond	walnut	pistachio	walnut	walnut

(a) Complete the frequency table for Caterina's list.

Nut tree	Tally	Frequency
cashew		
walnut		
almond		
pistachio		

(2)

(b) Draw a bar chart for the information in your table.

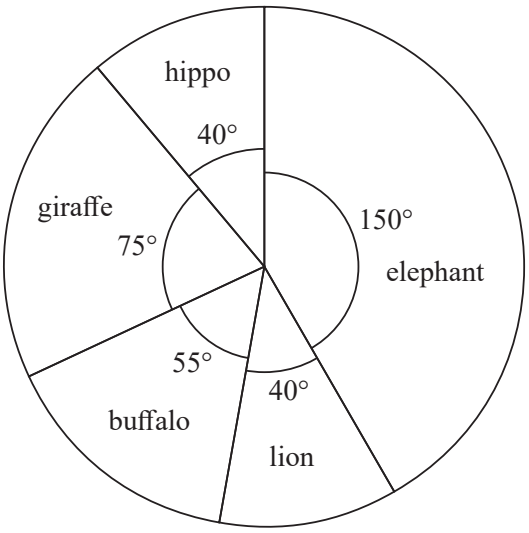


(3)

(Total for Question 7 is 5 marks)

10 Jerry went on holiday to a game reserve.
He recorded the number of each of five different types of animal he saw.

The pie chart below gives information about his results.



(a) Write down the ratio of the number of elephants Jerry saw to the number of giraffes he saw.
Give your ratio in its simplest form.

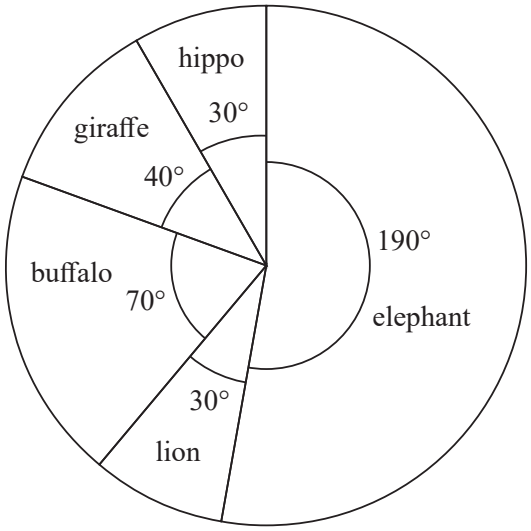
(2)

Jerry saw 8 lions.

(b) How many giraffes did Jerry see?

(2)

Lesley went on holiday to the same game reserve.
She also recorded the number of each of five different types of animal she saw.
The pie chart below gives information about her results.



Lesley says,

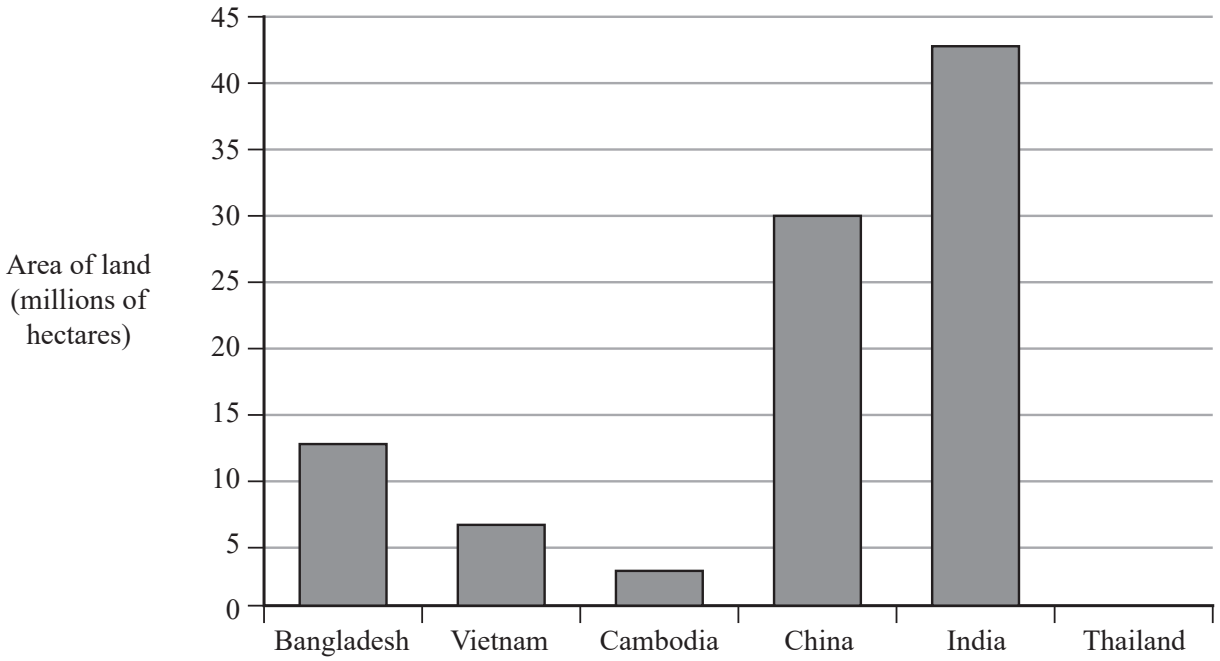
"The pie charts show that I saw more elephants than Jerry saw."

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

(1)

(Total for Question 10 is 5 marks)

2 The bar chart gives information about the area, in millions of hectares, of the land used in five countries to grow rice.



(a) In which of these five countries are 7 million hectares of land used to grow rice?

.....

(1)

(b) How many millions of hectares of land are used to grow rice in China?

..... millions of hectares

(1)

In Thailand 10 million hectares of land are used to grow rice.

(c) Draw a bar on the bar chart to show this information.

(1)

More land is used to grow rice in India than in Cambodia.

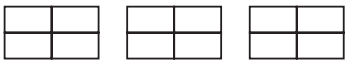
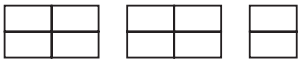
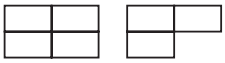
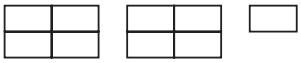
(d) How many millions of hectares more?
Show your working clearly.

..... millions of hectares

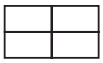
(2)

(Total for Question 2 is 5 marks)

4 The pictogram gives information about the number of rickshaws sold from a garage each month from January to April.

January	
February	
March	
April	
May	

Key:



represents ..... rickshaws

36 rickshaws were sold in January.

(a) Complete the key.

(1)

(b) How many rickshaws were sold in February?

.....

(1)

15 rickshaws were sold in May from the garage.

(c) Show this information on the pictogram.

(1)

Sandeep makes a profit of 5000 rupees on each rickshaw sold from the garage.

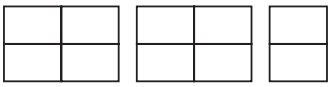
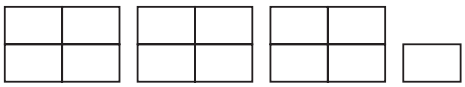
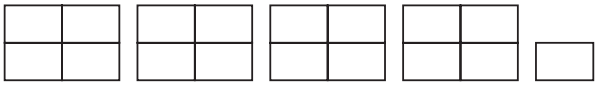
His target profit for January was 200 000 rupees.

(d) Did Sandeep reach his target profit for January?
You must show your working.

(2)

(Total for Question 4 is 5 marks)

2 The pictogram shows information about the number of books sold in a shop each day from Monday to Thursday last week.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

Key:

 represents 20 books

(a) How many books were sold on Wednesday last week?

.....

(1)

35 books were sold in the shop on Friday last week.

(b) Show this information on the pictogram.

(1)

Last week

some books were sold in the shop on Saturday
no books were sold in the shop on Sunday
a total of 500 books were sold in the shop.

(c) Work out the number of books that were sold in the shop on Saturday last week.

.....

(3)

(Total for Question 2 is 5 marks)

7 Cate asked the 60 members of a leisure centre how many times they had each visited the leisure centre last week.

The table gives information about her results.

Number of visits	Frequency
0	4
1	12
2	17
3	20
4	7

(a) Write down the mode of the number of visits.

.....

(1)

Cate is going to draw a pie chart for the information in the table.

(b) Work out the size of the angle in the pie chart for the sector representing 1 visit.

.....°

(2)

35% of the 60 members are aged 50 or over.

(c) Work out how many of the members are aged 50 or over.

.....

(2)

(Total for Question 7 is 5 marks)

2 The students in class 7T were asked how they got to school one day.

Here is a list of their method of travel to school.

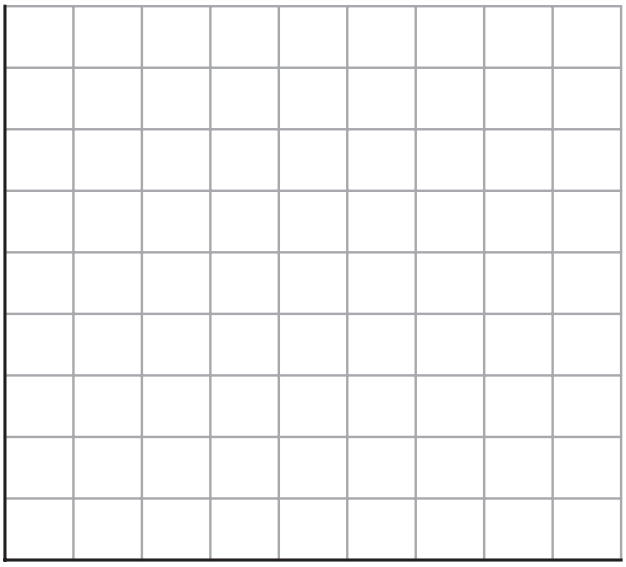
walk	bus	bicycle	walk	bus
bicycle	walk	car	bus	bicycle
bus	bicycle	bus	car	walk
walk	bus	walk	walk	car

(a) Complete the frequency table for the methods of travel in the list.

Method of travel	Tally	Frequency
walk		
bus		
bicycle		
car		

(2)

(b) Draw a bar chart for the information in your table.



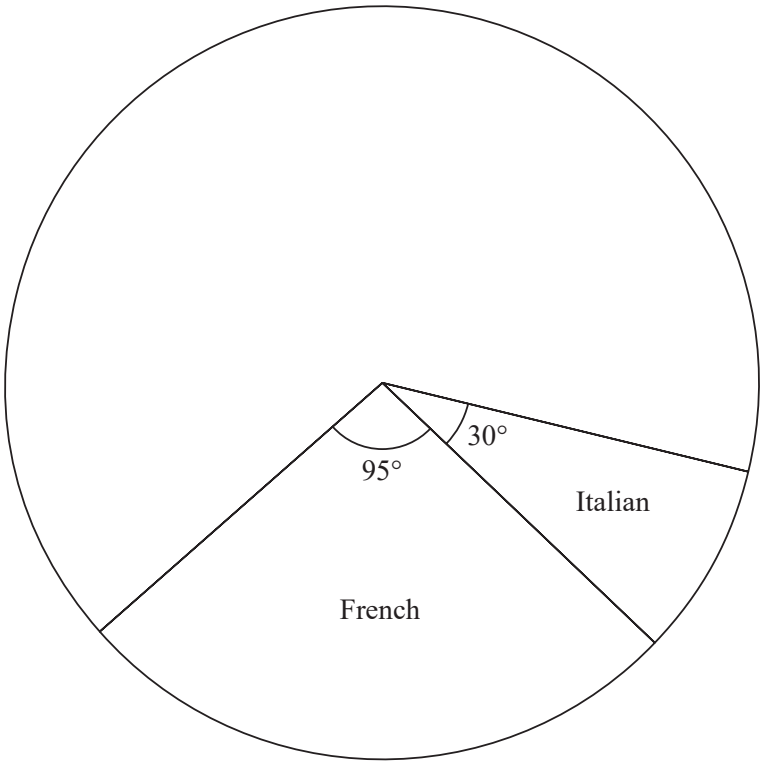
(3)

(Total for Question 2 is 5 marks)

8 Some students leaving a language school one day were each asked which language lesson they had just attended.

The table and the pie chart give some information about their answers.

Language	Frequency	Angle in pie chart
Italian	24	30°
French		95°
Arabic	48	
English		
Spanish	80	



(a) Work out the number of students who answered French.

.....

(2)

(b) Complete (i) the table and (ii) the pie chart.

(3)

(Total for Question 8 is 5 marks)

15 150 students were each asked to name their favourite sport from hockey, rugby and football.

The two-way table gives information about the results.

	Hockey	**Rugby**	**Football**	Total
Year 10		42		78
Year 11	27			
Total	39	58		150

(a) Complete the two-way table.

(3)

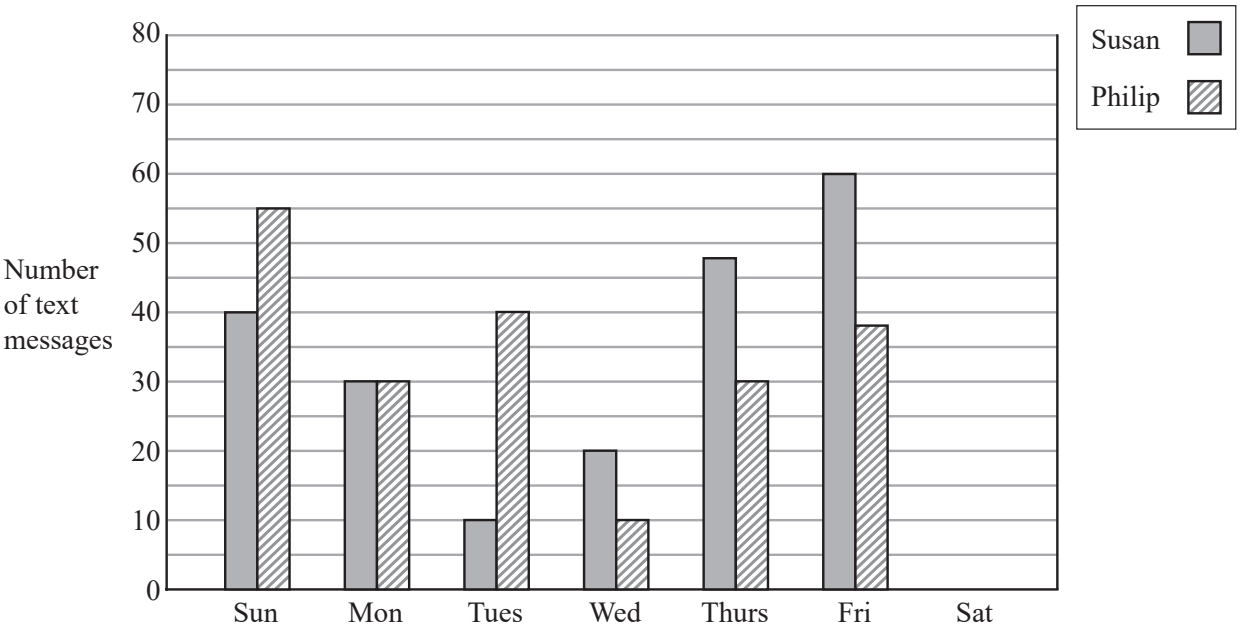
(b) Work out what percentage of the 150 students are in year 10

.....%

(2)

(Total for Question 15 is 5 marks)

3 The bar chart shows information about the numbers of text messages that Susan and Philip sent from their mobile phones on each of six days one week.



(a) On which day did Susan send twice as many text messages as Philip?

.....

(1)

(b) How many text messages did Philip send on Sunday?

.....

(1)

On Saturday, Susan sent 15 text messages and Philip sent 40 text messages.

(c) Show this information on the bar chart.

(1)

In the following week, Philip sent a total of 180 text messages.
Of these text messages, 25% were sent to Susan.

(d) Work out 25% of 180

.....

(2)

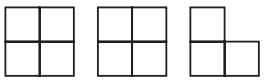
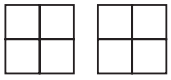
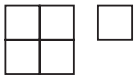
(Total for Question 3 is 5 marks)

Answer ALL TWENTY SIX questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 The pictogram shows information about the number of ice creams Sandeep sold on each of four days last week.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

Key:



represents 20 ice creams

(a) How many ice creams did Sandeep sell on Thursday?

.....

(1)

Sandeep sold 30 ice creams on Friday.

(b) Complete the pictogram to show the number of ice creams Sandeep sold on Friday.

(1)

(c) On which day was the least number of ice creams sold?

.....

(1)

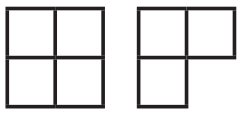
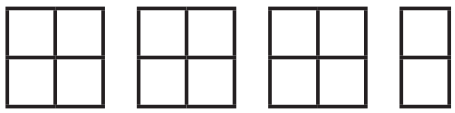
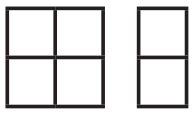
(d) Work out the total number of ice creams Sandeep sold last week.

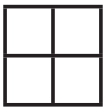
.....

(2)

(Total for Question 1 is 5 marks)

4 40 people were asked to name their favourite type of holiday.
The pictogram gives information about the number of these people who said each of City Break or Beach or Walking.

City Break	
Beach	
Walking	
Cruise	
Skiing	


represents 4 people

(a) How many of these people said Beach?

.....

(1)

4 people said Cruise.
9 people said Skiing.

(b) Show this information on the pictogram.

(2)

One person from the 40 people asked is selected at random.

(c) Find the probability that this person said City Break.

.....

(2)

(Total for Question 4 is 5 marks)

13 Salma asked some people what type of exercise they each liked the best from walking or running or swimming or cycling.

Salma is going to draw a pie chart for her results.

The incomplete table gives some information about her results.

Type of exercise	Number of people	Angle in pie chart
Walking	18	90°
Running		150°
Swimming		
Cycling	15	

18 people answered walking.

(a) How many people answered running?

.....

(2)

15 people answered cycling.

(b) How many people answered swimming?

.....

(3)

(Total for Question 13 is 5 marks)

3 Ivor asks 20 children in his class to name their favourite fruit.
Here are his results.

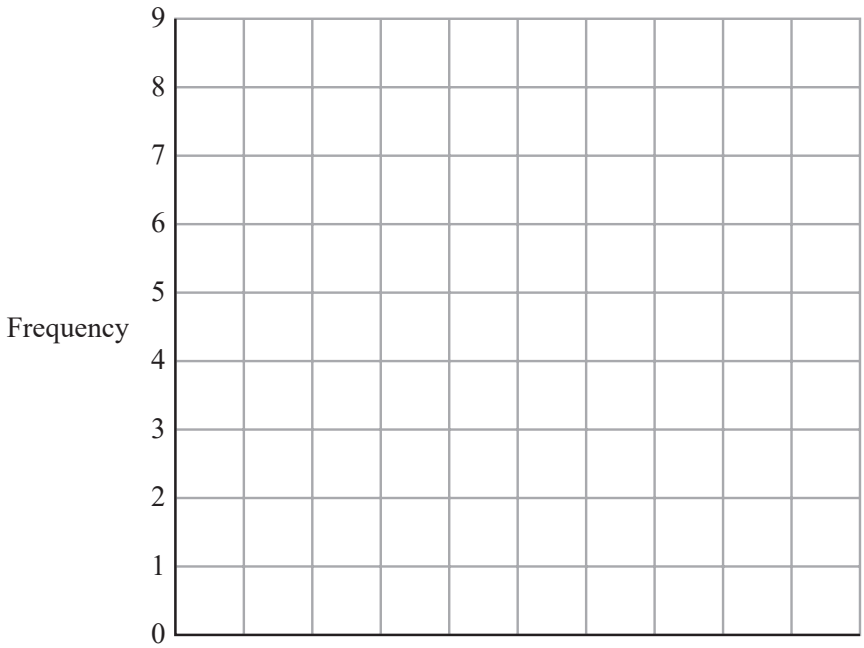
apple	orange	grape	peach	grape
banana	apple	orange	grape	peach
apple	apple	banana	peach	orange
grape	orange	apple	orange	orange

(a) Complete the frequency table to show this information.

Fruit	Tally	Frequency
apple		
banana		
grape		
peach		
orange		

(2)

(b) Complete the bar chart for the information in your table.

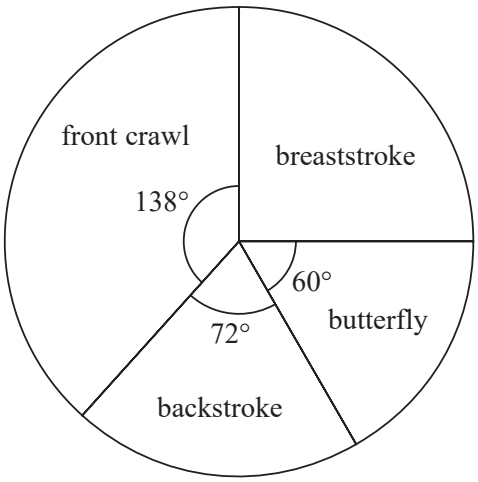


(3)

(Total for Question 3 is 5 marks)

15 Sayeeda asked the members of a swimming club which one of front crawl, breaststroke, backstroke or butterfly is their favourite stroke.

The pie chart shows some information about their answers.



12 members said backstroke.

(a) Work out the number of members who said front crawl.

.....

(2)

There are 90 members in a diving club.
The diving club has a beginners group, an intermediate group and an advanced group.
Every member of the diving club is only in one of these groups.

The table shows information about the number of members in each group.

Group	beginners	intermediate	advanced
Frequency	18	x	$2x$

Kasim chooses at random one of the members of the diving club.

(b) Find the probability that this member is in the intermediate group.

.....

(3)

(Total for Question 15 is 5 marks)

2 The pictogram gives information about the number of parcels a company posted on each of four days last week.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

Represents 16 parcels

(a) How many parcels were posted on Tuesday?

.....

(1)

24 parcels were posted on Friday.

(b) Show this information on the pictogram.

(1)

More parcels were posted on Wednesday than on Monday.

(c) How many more?

.....

(1)

(d) Find the ratio

number of parcels posted on Monday : number of parcels posted on Thursday

Give your answer in its simplest form.

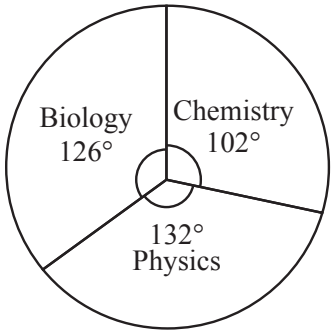
.....

(2)

(Total for Question 2 is 5 marks)

26 All the students in year 10 and all the students in year 11 named their favourite science subject from Biology, Chemistry and Physics.

The pie chart shows information about the results for the year 10 students.
The table shows information about the results for the year 11 students.



Pie chart for year 10

science subject	number of students
Biology	$3x + 6$
Chemistry	$5x + 8$
Physics	$7x - 9$

Table for year 11

There are 300 students in year 10
There are 320 students in year 11

More students in year 10 than in year 11 said Biology was their favourite science subject.

How many more?

.....

(Total for Question 26 is 5 marks)

Turn over for Question 27

2 Zia asks 20 adults to name their favourite African animal.
Here are her results.

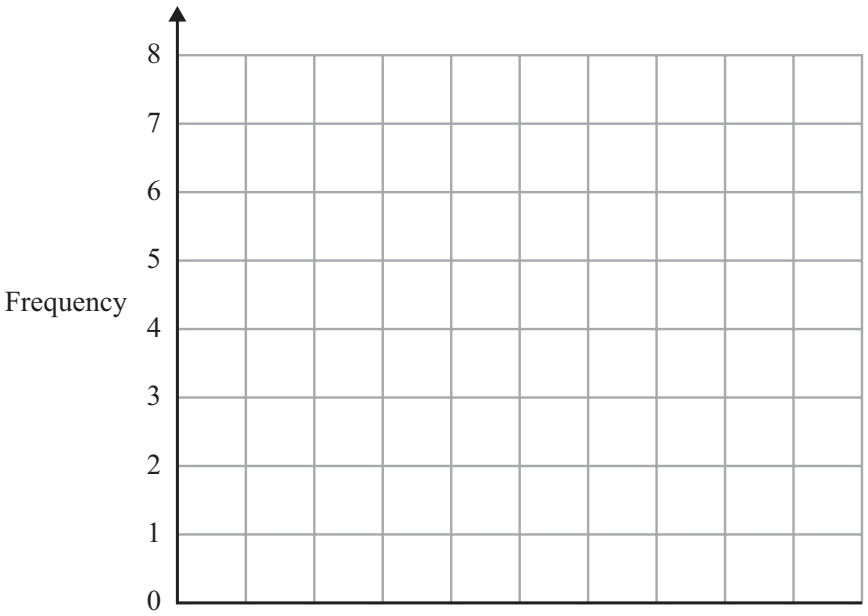
elephant	rhinoceros	rhinoceros	lion	elephant
lion	zebra	elephant	rhinoceros	lion
buffalo	elephant	buffalo	buffalo	elephant
rhinoceros	lion	rhinoceros	elephant	zebra

(a) Complete the frequency table to show this information.

Animal	Tally	Frequency
elephant		
lion		
buffalo		
rhinoceros		
zebra		

(2)

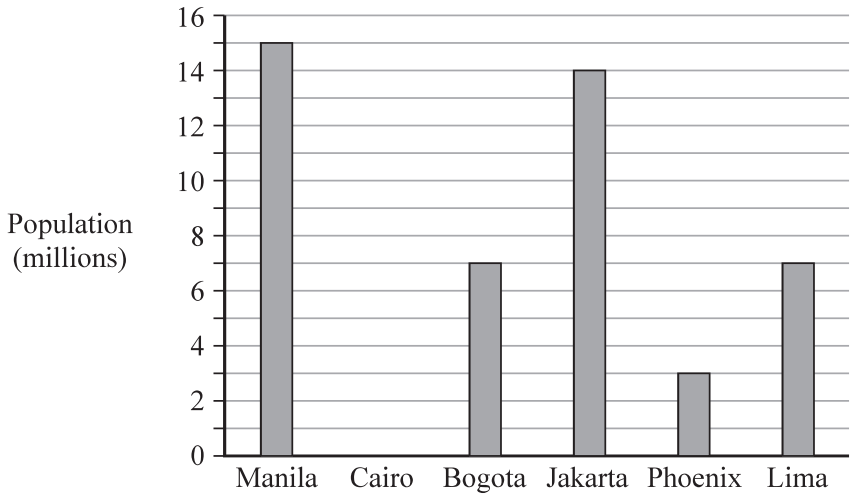
(b) Complete the bar chart for the information in your table.



(3)

(Total for Question 2 is 5 marks)

2 The bar chart gives information about the population, in millions, of each of five cities.



Cairo has a population of 12 million.

(a) Draw a bar on the bar chart to show this information.

(1)

The populations of two cities are equal.

(b) Write down the names of these two cities.

..... and .....

(1)

(c) Write down the name of the city with a population of 15 million.

.....

(1)

(d) Work out the difference in population between Jakarta and Phoenix.

..... million

(1)

In Manila, there are 90 badminton clubs and 60 football clubs.

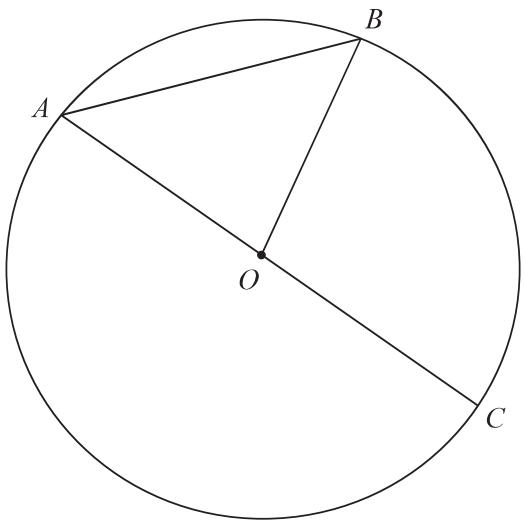
(e) Find the ratio of the number of badminton clubs to the number of football clubs.
Give your ratio in its simplest form.

.....

(2)

(Total for Question 2 is 6 marks)

3 A, B and C are points on a circle, centre O.
AOC is a straight line.



(a) Write down the mathematical name for the line AC.

.....

(1)

(b) Write down the mathematical name for the line AB.

.....

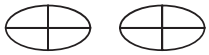
(1)

(c) On the diagram, shade a sector of the circle.

(1)

(Total for Question 3 is 3 marks)

2 The pictogram shows information about the number of naan breads sold in a restaurant each day from Wednesday to Saturday.

Wednesday	
Thursday	
Friday	
Saturday	
Sunday	



represents 8 naan breads

(a) How many naan breads were sold on Wednesday?

.....

(1)

More naan breads were sold on Saturday than were sold on Friday.

(b) How many more?

.....

(2)

12 naan breads were sold in the restaurant on Sunday.

(c) Show this information on the pictogram.

(1)

The manager of the restaurant says,

"More than 100 naan breads were sold in the restaurant from Wednesday to Sunday."

(d) Is the manager correct?
You must show your working.

.....

(2)

(Total for Question 2 is 6 marks)

8 The table shows information about the grades some Year 9 students gained in a biology test and in a physics test. The highest grade is **A** and the lowest grade is **D**.

		Biology			
	Grades	**A**	**B**	**C**	**D**
Physics	**A**	8	6	2	1
	B	3	5	4	0
	C	4	2	6	2
	D	0	0	5	0

(a) How many students gained a grade **C** in biology?

.....

(2)

(b) How many students gained the same grade in biology as they gained in physics?

.....

(2)

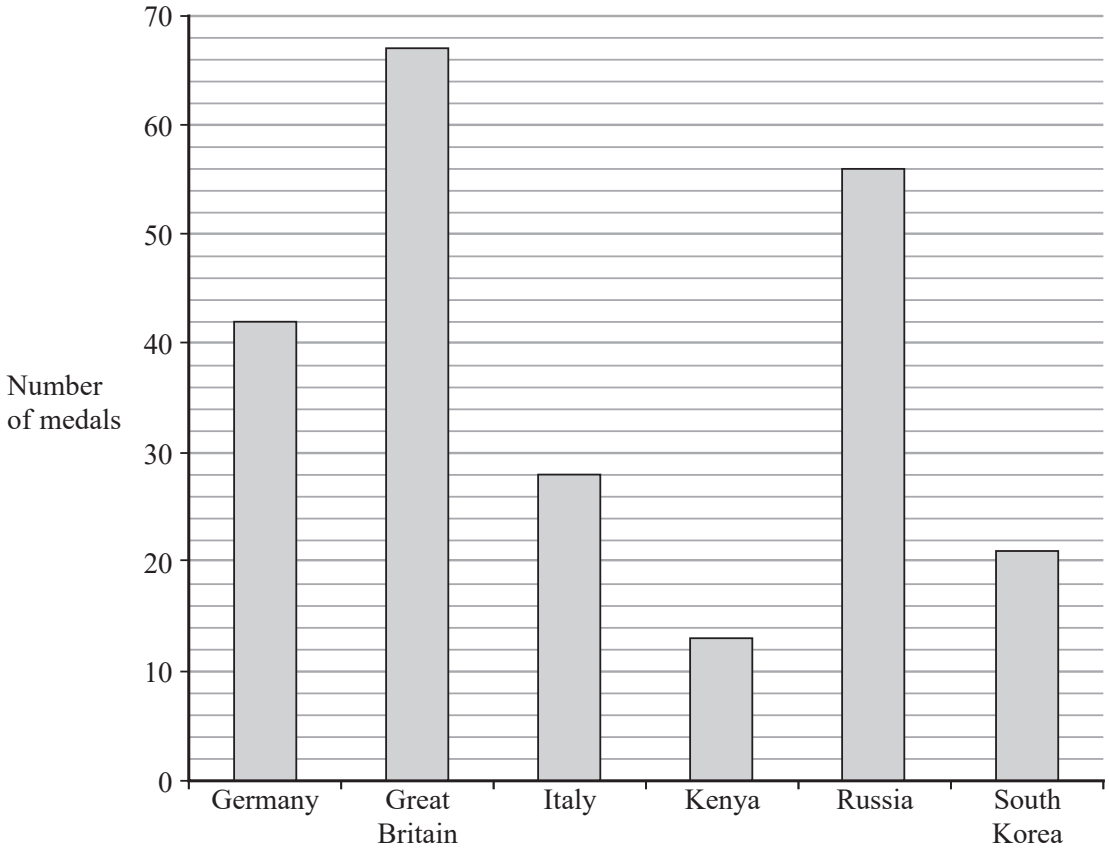
(c) How many students gained a higher grade in biology than they gained in physics?

.....

(2)

(Total for Question 8 is 6 marks)

2 The bar chart gives information about the total number of medals won by each of six countries at the 2016 Olympic Games.



(a) Which of these countries won the fewest total number of medals?

.....

(1)

Great Britain won 27 gold medals.

(b) How many of the medals won by Great Britain were **not** gold medals?

.....

(2)

(c) Write down the ratio of the total number of medals won by Russia to the total number of medals won by Germany.
Give your ratio in its simplest form.

.....

(2)

The USA won

46 gold medals
37 silver medals
38 bronze medals

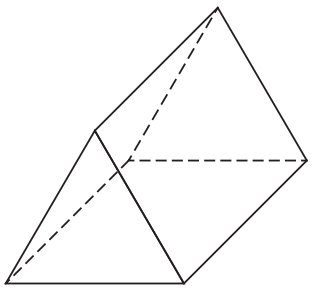
(d) What fraction of the total number of medals won by the USA were gold medals?

.....

(2)

(Total for Question 2 is 7 marks)

3 (i) Write down the mathematical name of this 3-D shape.



.....

(ii) How many faces does the shape have?

.....

(iii) How many vertices does the shape have?

.....

(Total for Question 3 is 3 marks)

2 The pictogram shows information about the number of emails Sophie received on each of four days.

Monday	⊠ ⊠ ⊠ ⊠
Tuesday	⊠ ⊠ ▷
Wednesday	⊠ ▷
Thursday	⊠ ⊠ ⊠ ◸
Friday	

Key:
⊠
represents: 4 emails

(a) On which of Monday, Tuesday, Wednesday or Thursday did Sophie receive the least number of emails?

.....

(1)

(b) Find the ratio of the number of emails Sophie received on Monday to the number of emails Sophie received on Tuesday.
Give your ratio in its simplest form.

.....

(2)

On Friday, Sophie received 14 emails.

(c) Show this information on the pictogram.

(1)

On Friday, 6 of the 14 emails Sophie received were from Kamil.

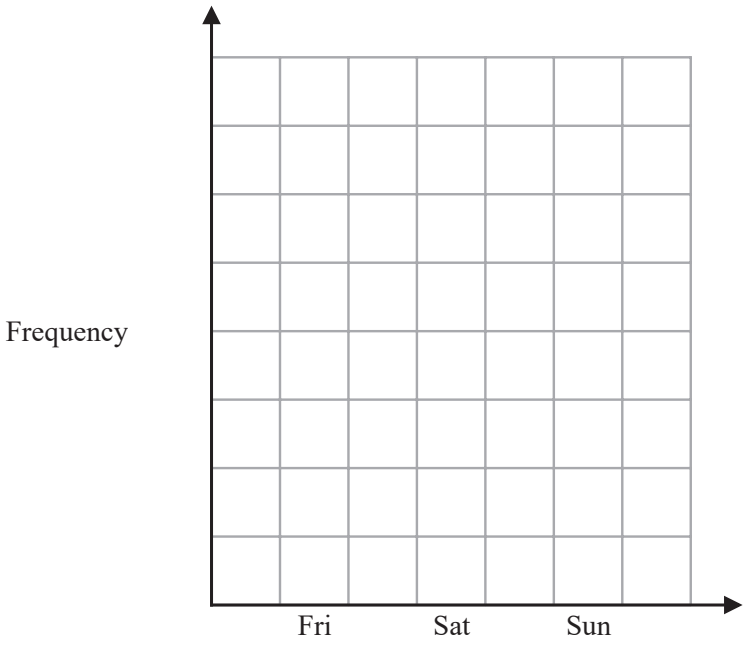
(d) Write 6 as a fraction of 14
Write your fraction in its simplest form.

.....

(2)

On Friday, Sophie received 14 emails, on Saturday she received 11 emails and on Sunday she received 6 emails.

(e) Draw a bar chart to show the number of emails Sophie received on each of Friday, Saturday and Sunday.
Complete the frequency axis.



(2)

(Total for Question 2 is 8 marks)

3 (a) Complete the following estimates by writing a suitable metric unit on each of the dotted lines.

(i) The distance from Paris to Berlin is about 1000 .....

(ii) A bucket holds about 5 ..... of water.

(iii) The area of the screen of a mobile phone is about 90 .....

(3)

(b) Write down an estimate for the height of a bedroom door in a house.
Use a suitable metric unit.



....

(2)

(Total for Question 3 is 5 marks)

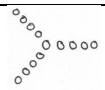
MARK SCHEMES

official mark schemes, in the same order as the questions

Question		Working	Answer	Mark	Notes
15	(a)	$-2p = 15 - 8$ or $8 = 2p + 15$ or $\frac{8}{2} - p = \frac{15}{2}$ oe	-3.5	2	M1 A1 oe
	(b)	eg $7x - 2 = 4(3x + 1)$ oe $7x - 12x = 4 + 2$ oe or $-2 - 4 = 12x - 7x$ oe	$-\frac{6}{5}$	3	M1 correct first step M1 for rearranging the x terms on one side and the numerical terms on the other. ft rearranging their expansion $ax + b = cx + d$ eg $7x - 2 = 12x + 4$ A1 oe, dep on M1
					Total 5 marks

16	eg $\frac{x+10+y}{3} = 11$ oe **or** $y - x = 7$ oe 3×11 (=33)	$x = 8$, $y = 15$	2	M1 for one correct equation in x and y **OR** finding the total of x, 10 and y **OR** two numbers with a sum of 23 **OR** two numbers with a range of 7 Note: condone non-integers for the award of M1 A1
				Total 2 marks

Question		Working	Answer	Mark	Notes
8	(a)			3	B3 All 6 entries correct B2 for 4 or 5 correct entries B1 for 2 or 3 correct entries
	(b)		$\frac{23}{60}$	1	B1 Allow 0.38(333...) or 38(.33...)%
	(c)		$\frac{13}{33}$	2	B2 B1 for $\frac{n}{33}$ where $n < 33$ or $\frac{13}{m}$ where $m > 13$
					Total 6 marks

9	(a)			1	B1 Correct diagram
	(b)		13, 16	1	B1 Both values correct
	(c)		22	1	B1
	(d)		$C = 3P - 2$ oe	2	B2 B1 for $3P$ or $3P$ + constant (constant $\neq -2$)
	(e)		(Yes) pattern 28 has 136 triangles	1	B1 or $5 \times 28 - 4 = 136$ oe Sight of 28 is sufficient
					Total 6 marks

10		$n - 3 = 13$ oe or $n = 16$ or $(6 + m) \div 2 = 8.5$ oe or $m = 11$		2	M1
			$n = 16$ & $m = 11$		A1 Both values correct
					Total 2 marks

3	(a)		cylinder	1	B1 allow circular prism
	(b)		12	1	B1
					Total 2 marks

4	(a)		34	1	B1
	(b)		18	1	B1
					Total 2 marks

5	(a)		64	1	B1
	(b)		0.45	1	B1
	(c)		$\frac{3}{8}$	1	B1
	(d)		$2\frac{3}{4}$	1	B1
	(e)		square	1	B1
					Total 5 marks

6	24 ÷ 4 (= 6) **or** width = 24		3	M1 Could be clearly shown on diagram.
	10 × '6' oe **or** 24 + 24 + 6 + 6 oe			M1 dep M1
		60		A1 SC if no other marks scored B1 for 24 × 4 (= 96)
				Total 3 marks

18	(a)	Allow translated translating translate Allow misspelling of the word eg translat	Translation	2	B1	for translation (with none of reflection, rotation, enlargement, mirrored, turned, move or flipped stated) NB Move with translation is acceptable
			$\begin{pmatrix}3\\-5\end{pmatrix}$		B1	for (vector =) $\begin{pmatrix}3\\-5\end{pmatrix}$
	(b)		Shape drawn at (−6, −1) (−4, −1) (−4, −2) (−5, −2)	2	B2	condone missing label If not B2 then B1 for a correct trapezium drawn with correct orientation in wrong position **or** 3 points plotted correctly)
						Total 4 marks

19		(x =) 11 (and) (y =) 14	2	B2 (B1	for x = 11 and y = 14 for x = 11 or y = 14) SC B1 for x = 14 and y = 11
					Total 2 marks

3	(a)	Allow 21 thousand	21	1	B1	Could be written at the top of the bar for Egypt if not on answer line
	(b)		12	1	B1	
	(c)		Bar completed to show 17 thousand	1	B1	Bar can be of any width
						Total 3 marks

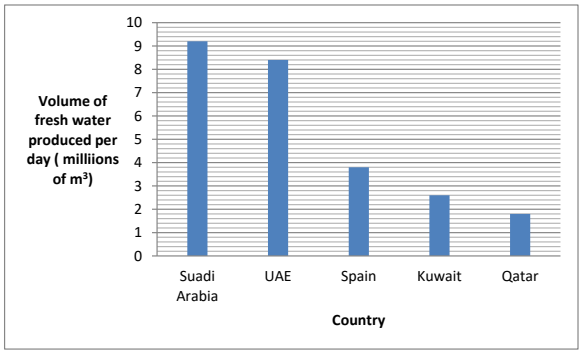
4	(a)		9 squares (3 columns) shaded	1	B1	Any 9 squares shaded.
	(b)		$\frac{18}{24}, \frac{12}{16}$	2	B2	For both and no others. B1 for one correct with no more than one incorrect
	(c)		$3\frac{3}{7}$	1	B1	Must be written like this and not as a decimal
	(d)	Accept 90% in answer space	90	1	B1	Allow 'ninety'
	(e)	$\frac{2}{5}\times 80$ oe or $1-\frac{2}{5}\left(=\frac{3}{5}\right)$ or ÷5, ×3 or 32		2	M1	we would accept $\frac{32}{80}$ or $\frac{48}{80}$ for M1
		Correct answer scores full marks (unless from obvious incorrect working)	48		A1	
						Total 7 marks

5	(25 + 1) ÷ 2 (=13) or 18,18,19,19,19,19,20,20,20,20,20,21,21… etc with no more than one error 2, 6, 11, 17…. or 8, 14		2	M1	For a correct method to find position of median; allow 12.5 or a list – need to go up to 2nd 21 or down to this 2nd 21 or adding the frequencies cumulatively
	Correct answer scores full marks (unless from obvious incorrect working)	21		A1	from correct working
					Total 2 marks

Question	Working	Answer	Mark	Notes
17	$\frac{3}{4}\times 60$ (= 45) **or** $\frac{1}{4}\times 60 (=15)$ **OR** $\frac{3}{4}\times\frac{3}{5}\left(=\frac{9}{20}\right)$ $\frac{3}{5}\times$"45" (= 27) **or** $\frac{4}{5}\times$"15" (= 12) **OR** $\frac{1}{4}\times\frac{4}{5}\left(=\frac{4}{20}\right)$ $\frac{\text{"27"+"12"}}{60}$ **OR** "$\frac{9}{20}$"+"$\frac{4}{20}$"	$\frac{13}{20}$	4	M1 M1 M1 For a complete method A1 oe
18	$14^2 - 10^2$ (= 96) "96"+ 5^2 (= 121) $\sqrt{\text{"121"}}$	11	4	M1 M1 M1 A1
19	(a =) 40 − 14 (=26) e.g. $\frac{\text{"26"}+b}{2}=30$ **or** 30 + (30 – "26")	26 34	3	M1 Method to find a M1 Method to find b A1

25	$\pi\times\left(\frac{12}{2}\right)^2$ (=113….) or $\pi\times\left(\frac{12}{2}-2\right)^2$ (= 50.2…) or $\pi\times\left(\frac{12}{2}\right)^2\div 2$ (=56.5...) or $\pi\times\left(\frac{12}{2}-2\right)^2\div 2$ (= 25.1…) eg $(\pi\times 6^2-\pi\times 4^2)\div 2$ oe	10π	3	M1 M1 for a complete method A1
26	$12\times 5.5 = 66$ "66" + 18 = 84 "84" ÷ 20	4.2	3	M1 M1 for a complete method A1

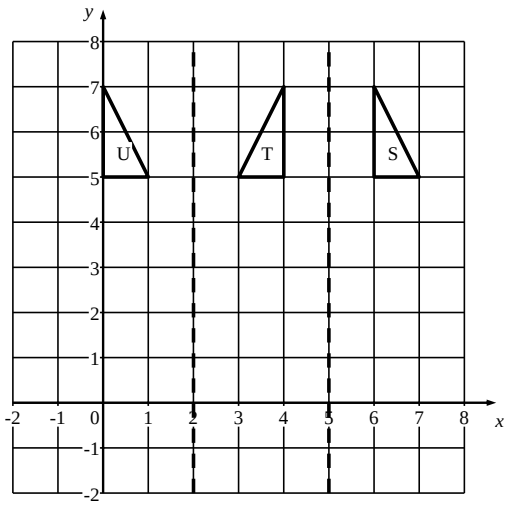
4


Volume of fresh water produced per day (milliions of m³)
10
9
8
7
6
5
4
3
2
1
0
Suadi Arabia
UAE
Spain
Kuwait
Qatar
Country

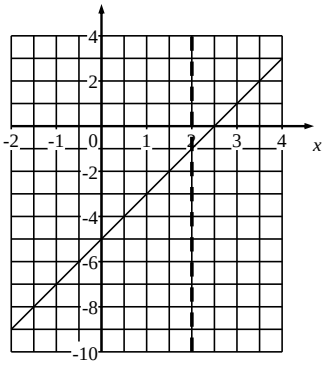
9



11



13



20	$7.5^2 - 6^2$ (= 20.25)		4	M1	**OR** for a correct trig statement involving one of the angles e.g. $\cos BAM = \frac{6}{7.5}$ **or** $\sin ABC = \frac{6}{7.5}$ where *M* is the midpoint of *BC*
	$\sqrt{7.5^2 - 6^2}$ (= 4.5)			M1	**OR** for a method to find one of the angles in the triangle e.g. $BAM = \cos^{-1}\left(\frac{6}{7.5}\right)(= 36.8...)$ **or** $ABC = \sin^{-1}\left(\frac{6}{7.5}\right)(= 53.1...)$
	"4.5"× 6 oe			M1	for a complete method to find the area of triangle *ABC* e.g. $2 \times \frac{1}{2} \times 7.5 \times 6 \times \sin("36.8")$ oe **or** $2 \times \frac{1}{2} \times 7.5 \times \sqrt{7.5^2 - 6^2} \times \sin("53.1")$ oe
		27		A1	cao
					Total 4 marks

21	10 × 79.2 (= 792) **or** 3 × 68 (= 204)		3	M1
	(10 × 79.2 − 3 × 68) ÷ 7			M1
		84		A1
				Total 3 marks

17	(a)	$\frac{15}{6}$ **or** $\frac{6}{15}$ **or** $\frac{4.2}{6}$ **or** $\frac{6}{4.2}$ oe 2.5 **or** 0.4 **or** 0.7 **or** 1.4(2857.....)			M1 for a correct scale factor, accept ratio notation eg 6 : 15
			10.5	2	A1 oe
	(b)	19.5 ÷ 2.5 **or** 19.5 × 0.4 oe **or** $4.2\times\frac{19.5}{(a)}$			M1 If using *DF* ft their answer from part (a)
			7.8	2	A1 oe
					Total 4 marks

18		e.g. 30 × 26.8 (= 804) **or** 13 × 25 (= 325) **or** (26.8 – 25) × 30 **or** 1.8 × 30			M1 for finding the total marks for the boys or the total test marks
		e.g. (30 × 26.8 − 13 × 25) ÷ (30 – 13) (= 28.1764...) **or** ('804' – '325') ÷ (30 – 13) (= 28.1764...) **or** ('804' – '325' ÷ 17) (= 28.1764...) **or** ((26.8 – 25) × 30) ÷ 17 + 25 (= 28.1764...) **or** '1.8' × 30 ÷ 17 + 25 (= 28.1764...)			M1 for a complete method to find the mean mark for the girls
			28.2	3	A1 accept 28.15 – 28.2 (accept without working) (Accept 28 from complete working)
					Total 3 marks

21	20.40 ÷ (1 – 0.15)			M2	for a complete method eg 20.40 ÷ (1 – 0.15) for 20.40 ÷ (100 – 15) (= 0.24) (M1) **or** e.g. $0.85x = 20.40$
		24	3	A1	
					Total 3 marks

22	28 × 5 (= 140) **OR** 26.5 × 2 (= 53)			M1	or 87
	(28 × 5 − 26.5 × 2) ÷ (5 – 2)			M1	for a complete method
		29	3	A1	
					Total 3 marks

23	1.5 × 2 × 8 (= 24 (cm^3))			M1	for finding the volume of the cuboid
	e.g. $(V =) \frac{5.73 \times 1000}{19.32}$ (= 296.58...) **or** $(M =)$ 19.32 × "24" (= 463.68)			M2	complete method to find the volume of statue **or** the mass of one block, could work in g or kg (if not M2 then award M1 for correct use of density formula e.g. $19.32 = \frac{5.73 \times 1000}{V}$ **or** $19.32 = \frac{M}{"24"}$)
	e.g. "296.58" ÷ "24" (= 12.3576...) **or** "5730" ÷ "463.68" (= 12.3576...)			M1	could work in g or kg
		13	5	A1	cao
					Total 5 marks

Question	Working	Answer	Mark	Notes
14 (a)	$\frac{40}{750}$ oe		2	M1 Numerator and denominator must be integers.
		$\frac{4}{75}$		A1
(b)	$\frac{40}{100} \times 6.8$ oe		2	M1
		2.72		A1
(c)	$\frac{3}{40} \times 100$ oe		2	M1
		7.5		A1
				Total 6 marks

15	$\angle ABC = 360° - 298° (= 62°)$ or $\angle BCA = 97°$		4	M1 Could be marked on diagram
		21		A1
	vertically opposite, (are equal) angles at (around) a point, (= 360°) angles in a triangle (= 180°)			B2 B2 for 3 correct reasons which must include the underlined words B1 for 1 or 2 correct reasons which must include the underlined words Any B marks dep on M1
				Total 4 marks

16	10 × 5 + 30 × 11 + 50 × 8 + 70 × 19 + 90 × 9 (50 + 330 + 400 + 1330 + 810)		3	M2 Correct products using midpoints (allowing one error) with intention to add. M1 for products using frequency and a consistent value within the range (allowing one error) with intention to add. or correct products using midpoint without intention to add.
		2920		A1 N.B. 2920 ÷ 52(=56.15...) gains M2 only
				Total 3 marks

16	(a)		2 460 000	1	B1	accept 2,460,000 or 246 0000
	(b)		7.4×10^{-4}	1	B1	
	(c)			2	M1	for correct value not in standard form e.g. 58.3×10^5 or 583×10^4 or 0.583×10^7 oe
			5 830 000		A1	5 830 000 or 5.83×10^6 do not isw.
						Total 4 marks

17			3	M1	for one of - 5 numbers with a median of 8 - 5 numbers with a mode of 5 - 5 numbers with a range of 10 - 5 numbers with a sum of 45
				M1	for two of - 5 numbers with a median of 8 - 5 numbers with a mode of 5 - 5 numbers with a range of 10 - 5 numbers with a sum of 45
		5, 5, 8, 12, 15		A1	Note: The numbers can be in any order
					Total 3 marks

20	$4.3^2 + 6.4^2$ or 59.45		4	M1	for squaring and adding
	$\sqrt{4.3^2 + 6.4^2}$ or $\sqrt{59.45}$ or 7.71(038…) or 7.7			M1	dep 1st M1 for square rooting
	e.g ('7.71' + 4.3 + 6.4) × 22 or '18.4' × 22 or ('8' + 4.3 + 6.4) × 22 or '18.7' × 22 or '19' × 22 or '20' × 22			M1	dep 2nd M1 for a non-rounded perimeter × 22 or 18 × 22 or 19 × 22 accept 20 × 22
		\$418		A1	answer must come from 19
					Total 4 marks

21	15 × 24 (= 360) **or** 25 × 18 (= 450)		3	M1	may be implied by 810 seen
	$\frac{'360'+'450'}{40}$ $(=\frac{810}{40})$			M1	dep on M1
		20.25 oe		A1	for 20.25 accept 20.3 (allow 20 from correct working)
					Total 3 marks

16		3, 7, 8, 8 and one of 4 or 5 or 6		B3	For a list of 5 correct numbers (B2 for a list of 5 numbers with 2 of: median of 7, mode of 8, range of 5 B1 for a list of 5 or 6 numbers with 1 of: median of 7, mode of 8, range of 5)
					Total 3 marks

17	(a)	$520 - 465$ (= 55) **or** $\frac{520}{465}$ (=1.118…)	11.8	3	M1	
		$\frac{"55"}{465} \times 100$ **or** $100 \times$ ("1.118" – 1) oe			M1	
					A1	11.8 or better (11.827956...)
	(b)	0.12×550 (= 66)	484	3	M1 oe	M2 for 0.88×550
		550 – "66"			M1	
					A1	
						Total 6 marks

20	(a)		1	1	B1	
	(b)	$3\times10^{125}+2\times10^{124}$ **or** digits 1024 × 10^n oe		3	M1	
		32×10^{124} **or** $3 \times 10^{125} + 0.2 \times 10^{125}$ **or** $30 \times 10^{124} + 2 \times 10^{124}$			M1	oe 'correct' answer in incorrect form.
			3.2×10^{125}		A1	
						Total 4 marks

21		5 × 398 (= 1990) or 6 × 401 (= 2406)		3	M1	Correct total for 5 or for 6 cocoa pods
		"2406" – "1990"			M1	(M2 for 398 + 6 × 3 or 401 + 5 × 3)
			416		A1	
						Total 3 marks

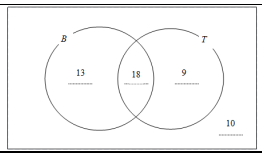
25	5 × 74 (= 370) **or** 6 × 77 (= 462) **or** 5 × 0.74 (= 3.7) **or** 6 × 0.77 (= 4.62)		3	M1	one correct product	M2 for 74 + (3 × 6) oe **or** 77 + (3 × 5) oe (where 3 = 77 – 74)
	6 × 77 – 5 × 74 **or** "462" – "370" **or** (6 × 0.77 – 5 × 0.74) × 100 **or** ("4.62" – "3.7") × 100			M1	from correct working	
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	92		A1	allow 92/100 **or** 92% **or** 92 out of 100 (trial and error scores no marks unless correct – and then it gains full marks)	
						Total 3 marks

3		$7x$	1	B1	cao
		$28p$	1	B1	cao
					Total 2 marks

4	(a)		548	1	B1 cao
	(b)		4.6	1	B1 allow 4.6000….
	(c)	(32 – 5) ÷ 2		2	M1
		Correct answer scores full marks (unless from obvious incorrect working)	13.5		A1 oe
					Total 4 marks

5	(a)		15	1	B1 cao
	(b)	19 – 13		2	M1 19 and 13 selected or $a - b$ where $a = 19$ or $b = 13$
		Correct answer scores full marks (unless from obvious incorrect working)	6		A1 cao
					Total 3 marks

6	(a)		20	1	B1 cao
	(b)		add 4	1	B1 oe 4 times table or $4n$ or goes up in 4's, allow 'the gap is +4' but not 'the gap is 4'
	(c)		$4n$	1	B1 $4n + 0$ not n = 4×n
					Total 3 marks

10			3	B3 for a fully correct Venn diagram (B2 for 3 correct values) (B1 for 1 or 2 correct values)
				Total 3 marks

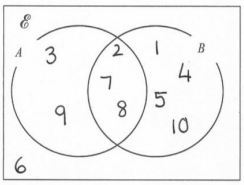
11	$0 \times 5 + 1 \times 5 + 2 \times 3 + 3 \times 10 + 4 \times 7 + 5 \times 6$ (= 99) **or** $0 + 5 + 6 + 30 + 28 + 30$ (= 99)		3	M1 for at least 4 correct products with intention to add
	"99" ÷ 36			M1
		2.75		A1 oe If no other marks awarded, award SC B1 for 2.8(88…)
				Total 3 marks

25	22 × 260 (= 5720) or 50 × 218 (= 10 900)		3	M1
	$\frac{'10900' - '5720'}{28}$ $\left(= \frac{5180}{28}\right)$			M1
		185		A1
				Total 3 marks

17	(a)		0.45	1	B1	oe eg $\frac{9}{20}, \frac{45}{100}, 45\%$
	(b)	eg 1 – (0.25 + 0.2 + 0.2) (= 0.35) **or** 1 – (“0.45” + 0.2) (= 0.35) **or** $300\times(0.25+0.2+0.2)(=195)$		3	M1	allow use of their “0.45” from part (a), check the table
		eg $300 \times$ “0.35” **or** $300-$"195"			M1	for a complete method
			105		A1	cao (award $\frac{105}{300}$ M2 only)
						Total 4 marks

18	(a)	eg $6 \times 2.4 + 5 \times 3.5$		2	M1	
			31.9		A1	oe
	(b)	(W =) $5.9n$ **or** (W =) $5.9(n – 1) + 2.4$ **or** (W =) $2.4n + 3.5(n – 1)$		2	M1	for $2.4n + 3.5n$ or $5.9n$ seen
			$5.9n – 3.5$		A1	oe but must be in simplest form eg $–3.5 + 5.9n$
						Total 4 marks

19	5×12 (= 60) **or** $\frac{15+7-2+23+x}{5}=12$ oe **or** $\frac{x+"43"}{5}=12$		3	M1	for a method to find the total of the 5 numbers **or** setting up an equation in x “43” comes from 15 + 7 – 2 + 23
	x + 15 + 7 – 2 + 23 = “60” **or** x + “43” = ”60” **or** “60” – (15 + 7 – 2 + 23)			M1	for forming an equation with their 60 **or** for a complete calculation to find the value of x “43” comes from 15 + 7 – 2 + 23
		17		A1	
					Total 3 marks

16			3	B3	For all 4 regions of Venn diagram correct (B2 for 2 or 3 regions correct, B1 for 1 region correct) numbers must not be repeated in a region
					Total 3 marks

17			3	M1	for $d = 9$ **or** $(c + d) \div 2 = 8$ (algebraically or clearly labelled integers) **or** $d - a = 4$ (algebraically or clearly labelled integers)
				M1	for two of $a = 5$ **or** $c = 7$ **or** $d = 9$ **or** $(c + d) \div 2 = 8$ (algebraically or clearly labelled integers) **or** $d - a = 4$ (algebraically or clearly labelled integers)
		$a = 5$, $b = 6$, $c = 7$, $d = 9$		A1	All correct
					Total 3 marks

28	7×2.7 (=18.9) or 4×3.3 (= 13.2) or $\frac{3W + 4 \times 3.3}{7} = 2.7$ oe eg $3W + 13.2 = 18.9$		3	M1 For one correct product or for a correct equation for W
	$\frac{7 \times 2.7 - 4 \times 3.3}{3}$ or $\frac{18.9 - 13.2}{3}$ or $\frac{5.7}{3}$ or $3W = 5.7$			M1
	If you see 1.9 from correct working and they do further work to this value, award M2	1.9		A1
				Total 3 marks

20	eg $\frac{158+C}{2}=160$ **or** (C =) 160 + (160 – 158) (= 162) oe **or** (C =) 162		3	M1	for method to find Candela's height or Candela's height or Candela's height in the wrong place on the answer line
	eg (D =) 175 – 21 **(=** 154) oe			M1	indep for method to find Diana's height or Diana's height or Diana's height in the wrong place on the answer line
		Candela 162 Diana 154		A1	Correctly attributed If no marks awarded, SCB1 for Candela's height 179
					Total 3 marks

16			3	M1	For area of 2 different faces (ie not 2 triangles)
	0.5 × 4.8 × 3.6 (= 8.64) oe or 4.8 × 3.6 if clear intention for this to be 2 triangles 7 × 3.6 (= 25.2) 7 × 4.8 (= 33.6) 7 × 6 (= 42) (**all measurements with intention to add**)			M1	For adding together 5 areas , at least 4 of which are correct NB: (3.6 + 4.8 + 6) × 7 (= 100.8) is 3 faces
	Correct answer scores full marks (unless from obvious incorrect working)	118		A1	118.1 or 118.08
					Total 3 marks

17		(x =) 3	3	B1
		(y =) 6		B1
		(z =) 10		B1
				Total 3 marks

22	55 × 32 (= 1760) **or** 52 × 28 (= 1456) **or** 55 × 32 + 52 × 28 (= 3216)		3	M1	for one correct product or method to find the total mark for both classes
	eg $\frac{"1760"+"1456"}{32+28}$ **or** $\frac{3216}{60}$			M1	for a complete method
	Correct answer scores full marks (unless from obvious incorrect working)	53.6		A1	
					Total 3 marks

16	$12 \div (5-2)\ (=4)$ **or** $2:5=8:20$ **or** $A=8$ **or** $S=20$ **or** $=20$ eg $\frac{5}{15}x-\frac{2}{15}x=12$ **or** $x=60$		3	M1 for method to find the value of one share **or** working with the ratio for Arjun or Simon **or** setting up an equation **or** for finding the total number of goals (= 60)	M2 for $\frac{8}{5-2}\times 12$ oe
	eg $8 \times$ "4" **or** $8\times\frac{8}{2}$ **or** 8 + 12 + 12 **or** $8\times\frac{20}{5}$ **or** 20 + 12 **or** "60" $\times\frac{8}{15}$			M1 for a complete method	
	Correct answer scores full marks (unless from obvious incorrect working)	32		A1 SCB1 for $\frac{8}{15}\times 12 (=6.4)$	
					Total 3 marks

17	$15 \times 5 + 45 \times 6 + 75 \times 8 + 105 \times 9 + 135 \times 2$ **or** $75 + 270 + 600 + 945 + 270$ [lower bound products are: 0, 180, 480, 810, 240] [upper bound products are: 150, 360, 720, 1080, 300]		3	M2 for correct products using midpoints (allow one error or omission) with attempt to add (M1 for products using a consistent value within range and attempt to add **or** for at least 4 correct products without addition)	
	Correct answer scores full marks (unless from obvious incorrect working)	2160		A1 (an answer of 72 loses the final A mark but gains M2)	
					Total 3 marks

25	104 × 5 (= 520) or 127 × 7 (= 889) or $\frac{m+tu+w+th+f}{5} = 104$ oe		3	M1
	"889" – "520" – 132 or "369" – 132 or $\frac{520+132+x}{7} = 127$ oe or $\frac{132+x}{2} = \frac{369}{2}$ oe $652 + x = 127 \times 7$			M1 (x = Sunday)
	Correct answer scores full marks (unless from obvious incorrect working)	237		A1
				Total 3 marks

Question	Working	Answer	Mark	Notes	
24	8 × 6 (= 48) or 10 × 7 (= 70)		3	M1	M2 for a correct equation in k that if rearranged correctly should give the correct answer eg $\frac{48+2k}{10}=7$ or allow for $\frac{48+x}{10}=7$ or use of mean increased by 1 so 8 + 7 + 7 (= 22) oe
	"70" – "48"(= 22) oe eg $\frac{8\times6+22}{10}=7$ oe			M1	
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	11		A1	
					Total 3 marks

16	$11 \times 6\ (= 66)$ **or** $\frac{16+15+3+2+9+x}{6} = 11$		3	M1	for a correct calculation for the total **or** a correct equation for the last card eg using 'x'
	$16 + 15 + 3 + 2 + 9 + x =$ "66" oe eg $45 + x =$ "66" **or** "66" **– (**16 + 15 + 3 + 2 + 9)			M1	for a correct equation for 'x' with no fraction **or** a correct calculation for the number on the last card
	Correct answer scores full marks (unless from obvious incorrect working)	21		A1	if the answer line is blank, check the card
					Total 3 marks

17	for $k = 18$ or $(8 + j) \div 2 = 10$ or $(j =)\ 10 \times 2 - 8$ or $8 + j = 2 \times 10$ or $j = 12$ or $k - h = 13$ or "18" $- h = 13$ or $h = 5$		3	M1	For a correct value for h, j or k or for a correct statement for one of these
	for two of the above			M1	for 2 correct values from h, j or k or for 2 correct statements for them
	Correct answer scores full marks (unless from obvious incorrect working)	$h = 5$ $j = 12$ $k = 18$		A1	All correct
					Total 3 marks

27	(i)	$(x \pm 2)(x \pm 11)$		2	M1 or $(x + a)(x + b)$ where $ab = -22$ **or** $a + b = 9$
		Correct answer scores full marks (unless from obvious incorrect working)	$(x - 2)(x + 11)$		A1
	(ii)		$2, -11$	1	B1ft **Must** ft from their factors in (i)
					Total 3 marks

28	$4 \times 11\,800$ (= 47 200) or $3 \times 13\,207$ (= 39 621) or 86 821		3	M1 for one correct product or for the sum of the products
	$\frac{"47\,200" + "39\,621"}{7} \left(= \frac{86\,821}{7}\right)$			M1 for a fully correct method to find the mean for the 7 days
	Correct answer scores full marks (unless from obvious incorrect working)	12 403		A1
				Total 3 marks

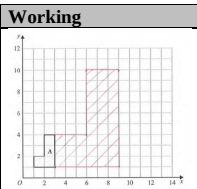
24	4×145 (= 580) or 5×142 (= 710) or $\frac{145+145+145+145+x}{5} = 142$ oe		3	M1 for one correct product or for a correct equation for the weight of the last banana
	$5 \times 142 - 4 \times 145$ or "710" – "580" or $145+145+145+145+x = 5 \times 142$			M1 A fully correct method to find the weight of the 5th banana or a fully correct equation to find the missing weight with no denominator
	Correct answer scores full marks (unless from obvious incorrect working)	130		A1
				Total 3 marks

8	eg 8 small squares = 16 **or** 2 large squares = 16 **or** 2 small squares = 4 **or** [small square =] 16 ÷ 8 (= 2) **or** [large square =] 16 ÷ 2 (= 8) **or** [small square =] 4 ÷ 2 (=2) **or** [2 small squares] = 16 ÷ 4 (=4) **or** Friday = 28 (toys) and Thursday = 12 (toys)		3	M1	for starting to work with proportion may be seen in a square on the pictogram or in working or implied by correct working **or** for finding the correct number of toys sold on Thursday and Friday
	eg 9 × "2"oe **or** 2.25 × "8"oe **or** 4.5 × "4" oe			M1	for a complete method to find the toys sold on Monday
	Correct answer scores full marks (unless from obvious incorrect working)	18		A1	cao
					Total 3 marks

9 (i)		33	1	B1	
(ii)		Added 7	1	B1	accept eg add 7, $(n) + 7$, $7n - 2$
					Total 2 marks

10	$1 \times 4 + 2 \times 10 + 3 \times 5 + 4 \times 7 + 5 \times 4$ (= 87) **or** 4 + 20 + 15 + 28 + 20 (= 87)		3	M1	for at least 4 correct products and intention to add. Products may be seen by the side of the table.
	"87" ÷ 30 oe			M1	dep on M1. Allow use of their "30" from adding the frequencies from the table.
	Correct answer scores full marks (unless from obvious incorrect working)	2.9		A1	accept an answer of 3 if correct working seen eg 87 ÷ 30 oe
					Total 3 marks

Question	Working	Answer	Mark	Notes
18*		1st card = 4	3	B1
		2nd card = 6		B1 or a list of 6 numbers with a mode of 6
		4th card = 9		B1
				SCB2 for 4, 6 and 9 in the incorrect order
				Total 3 marks

Question		Working	Answer	Mark	Notes	
19	(a)		Correct shape drawn in correct position	2	B2 Shape drawn with coordinates (3, 1), (9, 1), (9, 10), (6, 10), (6, 4), (3, 4) (B1 for a shape of the correct size but in the wrong position) NB Overlay is available	
	(b)	'Turn' is not sufficient	Rotation	3	B1 with no mention of any other transformation words or move, flip, transform, up, right etc	B2 for enlargement SF –1 (Ignore any reference to clockwise or anticlockwise)
			180°		B1 allow 'half turn'	
			(centre) (5, 5)		B1 must be a coordinate and not a vector	
						Total 5 marks

22	(a)		1	1	B1	cao
	(b)	eg $(5^9 \times 5^{-3} =) 5^6$ **or** $(5^9 \div 5^{-2} =) 5^{11}$ **or** $(5^{-3} \div 5^{-2} =) 5^{-1}$ **or** $(5^k \times 5^{-2} =) 5^{k-2}$ **or** $9 - 3 = k - 2$ oe **or** $9 - 3 - -2$ **or** $9 - 3 + 2$		2	M1	for one correct application of an index rule (must be seen in powers of 5) this could be after an initial mistake – working will need to be clearly seen **or** for forming a correct equation in the indices alone **or** for a complete method for the value of k
		Correct answer scores full marks (unless from obvious incorrect working)	8		A1	condone 5^8
	(c)		$8d^{12}e^{15}$	2	B2	for a correct answer (B1 for answer of the form $kd^m e^n$ where at least two of $k = 8$, $m = 12$ and $n = 15$ are correct)
						Total 5 marks

23		$10.5 = \frac{48.3}{v}$ **or** $10.5v = 48.3$ **or** $\left(v =\right) \frac{48.3}{10.5}$		2	M1	oe for substituting 10.5 and 48.3 correctly into a correct formula for density; may use any letter for the volume
		Correct answer scores full marks (unless from obvious incorrect working)	4.6		A1	allow $\frac{23}{5}$ **or** $4\frac{3}{5}$ oe
						Total 2 marks

24		60×7 (= 420) **or** 46×3 (= 138)		3	M1	may be embedded within an equation
		"420" – "138" (= 282)			M1	for a method to find the sum of the 4 numbers Allow this mark if they do further incorrect work using 282
		Correct answer scores full marks (unless from obvious incorrect working)	70.5		A1	allow $\frac{141}{2}$ oe eg $\frac{282}{4}$ or $70\frac{1}{2}$
						Total 3 marks

17	(a)		Correct **R** (5,6), (3,6), (3,5)	2	B2	fully correct If not B2 then B1 for correct orientation of **R** but in wrong position
	(b)		Correct **T** (2,−1), (2,−3), (1,−3)	1	B1	
	(c)	Enlargement	Correct description	2	M1	for enlargement oe
		Scale factor 3 and centre the origin			A1	allow SF (=) 3, allow O
					NB	Award 0 marks if more than transformation
						Total 5 marks

18	$1 \times 5 + 3 \times 9 + 5 \times 24 + 7 \times 40 + 9 \times 7$ (= 495) **or** 5 + 27 + 120 + 280 + 63 (= 495)	5.8	4	M2	for at least 4 correct products added (need not be evaluated) If not M2 then award M1 for consistent use of value within interval (including end points) for at least 4 products which must be added **OR** correct mid-points **used** for at least 4 products and not added
	"495" ÷ 85			M1	dep on at least M1 Allow division by their $\sum f$ provided addition or total under column seen
				A1	for 5.8 − 5.824
					Total 4 marks

13		95 × 8 + 105 × 12 + 115 × 15 + 125 × 10 + 135 × 3 (= 5400) **or** 760 + 1260 + 1725 + 1250 + 405 (= 5400)			M2 for at least **4** correct products added (need not be evaluated) **or** If not M2 then award: M1 for consistent use of value within interval (including end points) for at least **4** products which must be added or correct midpoints used for at least **4** products and not added
		'5400' ÷ '48'			M1 dep on at least M1 Allow division by their Σ*f* provided addition or total under column seen
			112.5	4	A1 oe accept 112 or 113 from correct working Accept 112.5 with no working Do not accept 112 or 113 with no working
					Total 4 marks

International GCSE Maths A January 2020 – Paper 2FR Mark scheme						
Apart from Questions 12d and 21, where the mark scheme states otherwise, the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method.						
Question		**Working**	**Answer**	**Mark**		**Notes**
1	(a)		70 216	1	B1	cao
	(b)		1, 2, 5 or 10	1	B1	Any of these values with no other incorrect value
	(c)		25 or 36	1	B1	One or both of 25 or 36 and no other incorrect value
	(d)		15	1	B1	
	(e)		$42 - 6 \div (6 - 3)$	1	B1	Allow $42 - (6 \div (6 - 3))$
						Total 5 marks
2	(a)		Frequencies and tallies of 2, 3, 8, 4, 5, 2	2	B2	All frequencies and tallies correct B1 for 3, 4 or 5 frequencies or tallies correct NB. Frequencies and tallies must be in the correct column. Accept 2/24 etc. in frequency column
	(b)		3	1	B1ft	Follow through from table
	(c)		Sensible statement	1	B1	Not enough 1's or 6's Too many 3's Rolled a 3 a third of the times Should expect to get 4 of each number
						Total 4 marks
3	(a)		An acute angle drawn at *A*	1	B1	
	(b)		Diameter drawn	1	B1	Diameter should not extend significantly beyond circumference.
						Total 2 marks

17	$\frac{x+10}{2} = 9$ **or** $x = 8$		4	M1 (indep)
	$\frac{4+7+x+10+y+y}{6} = 11$ oe **or** '66' – 4 – 7 – 10 (= 45)			M1 where x may be a number $7 < x < 10$
	(y =) (6 × 11 – 4 – 7 – 10 – '8') ÷ 2			M1 ft their ft their value of x provided $7 < x < 10$ for a fully correct method
		$x = 8$ and $y = 18.5$ oe		A1
				Total 4 marks

18	(a)		0.0057	1	B1
	(b)		8×10^5	1	B1
	(c)	$\frac{273000}{6\times10^{-2}}$		2	M1 for 273 000 **or** digits 455
			4 550 000		A1 for 4 550 000 or 4.55×10^6 oe
					Total 4 marks

19	100 ÷ 28 440 (= 0.0035…) **or** 28 440 ÷ (60 × 60) (= 7.9)		3 M1
	'0.0035...' × 60 × 60 **or** 100 ÷ '7.9'		M1
		13	A1 for 12.65 – 13
			Total 3 marks

20	e.g. 5 × 4 + 15 × 10 + 25 × 15 + 35 × 25 + 45 × 6 (= 1690) **or** 20 + 150 + 375 + 875 + 270 (= 1690)		4	M2	For correct products using midpoints (allowing one error) with intention to add. If not M2 then award M1 for products using frequency and a consistent value within the range (allowing one error) with intention to add or correct products using midpoint without addition.
	"1690" ÷ 60			M1	dep on M1
		28.2		A1	accept 28.1 – 28.2
					Total 4 marks

21	(a)	8265 – 7500 (= 765) **or** $\frac{8265}{7500}$ (=1.102)		3	M1	8265 – 7500 could be embedded in another calculation.
		$\frac{"765"}{7500}\times 100$ oe **or** "1.102" × 100 – 100 oe			M1	
			10.2		A1	oe
	(b)	e.g. 31.5(0) ÷ (1 – 0.3)		3	M2	for a complete method e.g. 31.5(0) ÷ (1 – 0.3)
					(M1)	for 31.5(0) ÷ (100 – 30) (= 0.45) **or** e.g. (1 – 0.3)x = 31.5(0)
			45		A1	
						Total 6 marks

International GCSE Maths						
Apart from question 6d, 9b, 15, 18, 21c (where the mark scheme states otherwise) the correct answer, unless clearly obtained from an incorrect method, should be taken to imply a correct method.						
Q		**Working**	**Answer**	**Mark**		**Notes**
1	a		26 or 64	1	B1	or both 26 and 64 with no others
	b		21 or 39	1	B1	or both 21 and 39 with no others
	c		17 or 31	1	B1	or both 17 and 31 with no others
	d		1 or 64	1	B1	or both 1 and 64 with no others
						Total 4 marks

2	a		3000	1	B1	
	b		6.5	1	B1	
						Total 2 marks

3	a			2	M1	for at least 2 correct tallies or frequencies
			2, 5, 4, 3, 2		A1	mark frequencies only – in either column
	b		1	1	B1	allow ft from (a)
	c		4	1	B1	
						Total 4 marks

4	a		New York	1	B1	accept −15
	b		25	1	B1	accept −25
	c		−28	1	B1	
						Total 3 marks

17	$a = 7$		4	B1
	$\frac{b + \text{their } a}{2} = 8.5$ oe **or** $b = 10$			M1 ft their value of a **or** for setting up an equation for b **or** $b = 10$
	$\frac{\text{their } a + \text{their } a + \text{their } b + c}{4} = 9$ oe or $(c =) 9 \times 4 - (2 \times \text{their } a + \text{their } b)$ oe			M1 for a calculation involving c using their values **or** for a calculation leading to c using their values
		7, 10, 12		A1
				Total 4 marks

18	a		Correct number line	2	B2 for a fully correct number line e.g. shaded circle at −2, unshaded circle at 1 and a line drawn between them B1 for a shaded circle at −2 **or** an unshaded circle at 1 **or** circles at −2 and 1 with line in between but shading incorrect
	b		−3, −2, −1, 0, 1, 2	2	B2 fully correct values with no extras B1 for 5 correct values and none incorrect **or** all 6 correct values with no more than one additional incorrect value
					Total 4 marks

21	(11 × 3) + (8 × 5) + (6 × 7) + (5 × 9) (= 160) (= 33 + 40 + 42 + 45 = 160)		4	M1	Correct numerical products using midpoints (allowing one error) with intention to add. May be seen in table.
	"160" + x = 4. 25 × (11 + 8 + 6 + 5 + x) oe or $\frac{\text{"160"}+x}{\text{"30"}+x} = 4.25$ or "160" + x = 4.25 × "30" + 4.25x			M1	dep M1 for correct equation ft *their* 160.
	"160" – "127.5" = 4.25x – x or 32.5 = 3.25x			M1	Isolating x and number terms
		10		A1	dep 1st M1
					Total 4 marks

Alternative Mark Scheme for question 21					
21	(11 × 3) + (8 × 5) + (6 × 7) + (5 × 9) (= 33 + 40 + 42 + 45 = 160)		4	M1	Correct numerical products using midpoints (allowing one error) with intention to add. May be seen in table.
	4.25y = "160" + [y – (11 + 8 + 6 + 5)] oe 4.25y = 160 + y – 30			M1	dep M1 for correct equation ft *their* 160, where y = total number of pupils
	4.25y – y = 160 – 30 or 3.25y = 130 or y = 40			M1	Isolating y and number terms **or** y = 40
		10		A1	dep 1st M1
					Total 4 marks
					TOTAL FOR PAPER 100 MARKS

18	(a)		15, 0, −1, 3	2	B2 for 4 correct values (B1 for 2 or 3 correct values)
	(b)	(−2, 15) (−1, 8) (0, 3) (2, −1) (3, 0) (4, 3)		2	M1 (dep on B1) ft from (a) for at least 5 points plotted correctly
			correct graph		A1 for a correct graph (clear intention to go through all the points and which must be curved at the bottom) **Note**: If a fully correct graph is shown, but an incomplete table is shown in (a), then award the marks for (a)
					Total 4 marks

19			4	B1 for 80
	for $\frac{a+75}{2} = 74$ oe **or** 73			M1 for setting up an equation using the median **or** for 73
	for 80 – 16 (= 64) oe			M1 for using the range correctly **or** for 64
		64, 73, 80		A1 answers can be in any order
				Total 4 marks

23	(a)	(231 776 – 228 314) ÷ 228 314 **or** 3462 ÷ 228 314 (= 0.01516…) **or** 231 776 ÷ 228 314 (= 1.01516…)		2	M1	
			1.5		A1	for 1.5 or better (1.516…) (be careful: 3462 ÷ 231 776 × 100 = 1.49….)
	(b)	231 776 ÷ 1.077 oe		3	M2	If not M2 then M1 for 1.077 or 107.7 or 1 + 0.077(=1.077) seen but not 1 + 7.7%
			215 000		A1	for 215 000 or better (215 205.19…) (if no marks awarded SCB1 for 212000 or better (211990.71…))
						Total 5 marks

24	$0\times13+1\times17+2\times8+3x+4\times11$ or (0 +) 17 + 16 + 3x + 44 (= 77 + 3x)		4	M1	at least **3** correct products with intention to add. eg award for 77 seen as this is sum of 3 products
	$(13+17+8+x+11)$ oe eg 49 + x **or** $98+2x$			M1	Sum for total frequency or (frequency × 2)
	$\frac{"77+3x"}{"49+x"}=2$ oe e.g. $"77+3x"=2("49+x")$			M1	for use of mean in valid equation (ft their values for sum of products and their total frequency if M2 awarded previously)
		21		A1	
					Total 4 marks

12	(a)	(0 × 6) + (1 × 5) + (2 × 4) + (3 × 7) + (4 × 3) (= 46) or 0 + 5 + 8 + 21 + 12 (= 46)		3	M1 for at least 4 products added or intention to add (need not be evaluated)
		'46' ÷ 25			M1 dep on M1
			1.84		A1 SC B1 for answer only of 2.08 oe
	(b)		0.61	1	B1 oe 61% or $\frac{61}{100}$ oe
					Total 4 marks

13		***x***	−1	0	1	2	3	4	5
		y	5	3	1	−1	−3	−5	−7

(−1, 5) (0, 3) (1, 1) (2, −1) (3, −3) (4, −5) (5, −7)

Correct line between $x = -1$ and $x = 5$

3

B3 for a correct line between $x = -1$ and $x = 5$

(B2 for a correct straight line segment through at least 3 of (−1, 5) (0, 3) (1, 1) (2, −1) (3, −3) (4, −5) (5, −7)
or
for all of (−1, 5) (0, 3) (1, 1) (2, −1) (3, −3) (4, −5) (5, −7) plotted but not joined)

(B1 for at least 2 correct points stated (may be in a table) **or** plotted **or** for a line drawn with a negative gradient through (0, 3) **or** for a line with a gradient of −2)

Total 3 marks

16	(a)		2	1	B1	Do not allow 12
	(b)	e.g. 0 × 1 + 1 × 5 + 2 × 12 + 3 × 9 + 4 × 11 + 5 × 2 (= 110) **or** 0 + 5 + 24 + 27 + 44 + 10 (= 110)		3	M1	for at least 4 correct products with intention to add
		e.g. "110" ÷ 40			M1	
			2.75		A1	oe If no other marks awarded, award SC B1 for an answer of 2.775
						Total 4 marks

16	6 × 11 + 18 × 25 + 30 × 23 + 42 × 15 + 54 × 6 (= 2160) **or** 66 + 450 + 690 + 630 + 324 (= 2160) [lower bound products are: 0, 300, 552, 540, 288] [upper bound products are: 132, 600, 828, 720, 360]		4	M2 for at least **4** correct products added (need not be evaluated) **or** If not M2 then award: M1 for consistent use of value within interval (including end points) for at least **4** products which must be added or correct midpoints used for at least **4** products and not added
	"2160" ÷ "80"			M1 dep on at least M1 Allow division by their Σ*f* provided addition or total under column seen
	Correct answer scores full marks (unless from obvious incorrect working)	27		A1
				Total 4 marks

26	17 × 11 (= 187) **or** 18.5 × 12 (=222) **or** 18 × 9 (=162) **or** 18.5 × 10 (= 185)		4	M1 Expression for total of **A** or **B** either including or excluding last round	M2 for 1.5 × 11 + 18.5 (= 35) **or** 9 × 0.5 + 18.5 (= 23) OR 1.5 × 11 (= 16.5) **or** 0.5 × 9 (= 4.5)
	18.5 × 12 − 17 × 11 (“222” – “187”)(= 35) **or** 18.5 × 10 − 18 × 9 (“185” – “162”)(= 23) **or** $\frac{"187"+x}{12}=18.5$ (x = 35) **or** $\frac{"162"+y}{10}=18.5$ (y = 23) **or** Diff between **A** and **B** in first rounds “187” – “162” (= 25) **or** Diff between **A** and **B** after further round “222” – “185” (= 37) [or 2 ×18.5 (= 37) where 2 must come from correct working]			M1 expression for number of points gained by **A** or **B** in the last round or for an equation that could lead to the number of points gained by **A** or **B** in the last round	
	“35” – “23” or “37” – “25” or “16.5” – “4.5”			M1 calculation for difference between number of points scored in last round	
	Correct answer scores full marks (unless from obvious incorrect working)	12		A1	
					Total 4 marks

The 2 is 2 further rounds of 18.5 ie 37 comes from 18.5 ×12 – 18.5 × 10 so the 2 × 18.5 is (12 – 10)×18.5

Question	Working	Answer	Mark	Notes
17 (a)		$25 < m \leq 30$	1	B1 Allow $25 < m < 30$ or $25 – 30$ oe
(b)	$2.5 \times 8 + 7.5 \times 2 + 12.5 \times 6 + 17.5 \times 4 + 22.5 \times 12 + 27.5 \times 18$ $(= 20 + 15 + 75 + 70 + 270 + 495)$ [total using lower boundary = 820 (gains M1] [total using upper boundary = 1070 (gains M1)]		3	M2 For correct products using midpoints (allowing one error) with intention to add. (M1 for products using frequency and a consistent value within the range (allowing one error) with intention to add or correct products using midpoint without addition)
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	945		A1 An answer of 18.9 gains M2 only [mean from lower boundary = 16.4 (M1)] [mean from upper boundary = 21.4 (M1)]
				Total 4 marks

12 (a)	(0 × 2) + (1 × 5) + (2 × 11) + (3 × 7) + (4 × 4) + (5 × 1) (= 69) or 0 + 5 + 22 + 21 + 16 + 5 (= 69)		3	M1 for at least 4 products added (need not be evaluated) or for 71
	"69" ÷ 30			M1 dep on M1
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	2.3		A1
(b)		0.21	1	B1 oe
				Total 4 marks

13	x −2 −1 0 1 2 3 4 y −7 −5 −3 −1 1 3 5 (−2, −7) (−1, −5) (0, −3) (1, −1) (2, 1) (3, 3) (4, 5)	Correct line between $x = -2$ and $x = 4$	3	B3 for a correct line between $x = -2$ and $x = 4$ (B2 for a correct straight line segment through at least 3 of (−2, −7) (−1, −5) (0, −3) (1, −1) (2, 1) (3, 3) (4, 5) **or** for all of (−2, −7) (−1, −5) (0, −3) (1, −1) (2, 1) (3, 3) (4, 5) plotted but not joined) (B1 for at least 2 correct points stated (may be in a table) **or** plotted **or** for a line drawn with a positive gradient through (0, −3) **or** for a line with a gradient of 2)
				Total 3 marks

15 (a)		12	1	B1	
(b)	eg 11 × 7 + 12 × 8 + 13 × 7 + 14 × 5 + 15 × 1 + 16 × 2 (= 381) **or** 77 + 96 + 91 + 70 + 15 + 32 (= 381)		3	M1	for at least 4 correct products
	"381" ÷ 30 oe			M1	
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	12.7		A1	oe, allow 13 if M2 scored
					Total 4 marks

16	eg 375 × 8 oe or 3000		4	M1
	eg 375 × 8 × 1.2 (= 3600) or "3000" × $\left(1+\frac{20}{100}\right)$ (= 3600) oe or 1.2 × "3000" (= 3600) or (0.2 × "3000") + 3000 (= 3600) or 600 + "3000" (= 3600)			M1
	eg "3600" ÷ 300			M1
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	12		A1
				Total 4 marks

International GCSE Mathematics					
Values in quotation marks must come from a correct method previously seen unless clearly stated otherwise.					
Q		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		46 83 99 148 229	1	B1 cao
	(b)		0.08 0.25 0.417 0.46 0.5	1	B1 cao
	(c)		$\frac{81}{100}$	1	B1 oe fraction
	(d)		0.25	1	B1 allow $\frac{1}{4}$ oe
					Total 4 marks

2	(a)		9	1	B1 cao
	(b)	2 4 6 7 9 9 10 **or** 10 9 9 7 6 4 2		2	M1 for ordering the numbers allow one error or one omission
		Correct answer scores full marks (unless from obvious incorrect working)	7		A1
	(c)		8	1	B1 cao
					Total 4 marks

3	(a)(i)		Cube	1	B1 allow misspelling, allow cuboid Allow prism or square prism or rectangular prism
	(ii)		12	1	B1 cao
	(b)		B and D	1	B1 allow D and B (or b and d etc)
	(c)		C	1	B1 allow c
					Total 4 marks

Question		Working	Answer	Mark	Notes	
14	a		110	1	B1	for 108 – 112
	b		cross marked in correct position	3	M1	for arc drawn radius 7.8 cm – 8.2 cm centre *L* **or** *P* marked 7.8 cm – 8.2 cm from *L* **or** 40 ÷ 5 (= 8)
					M1	for bearing of 238 º – 242 º from *M*
					A1	Overlay (*P* 7.8 cm – 8.2 cm from *L* and on a bearing of 238 º – 242º from *M*)
15	a		$0 < p \leq 1$	1	B1	
	b	0.5 × 19 + 1.5 × 12 + 2.5 × 5 + 3.5 × 2 + 4.5 × 2 (=56) **or** 9.5 + 18 + 12.5 + 7 + 9 (=56)	1.4	4	M2	for at least 4 correct products added (need not be evaluated) If not M2 then award M1 for consistent use of value within interval (including end points) for at least 4 products which must be added **OR** correct mid-points used for at least 4 products and not added
		"56" ÷ 40			M1	dep on at least M1 Allow division by their $\sum f$ provided addition or total under column seen
					A1	for 1.4 or $1\frac{2}{5}$

Question		Working	Answer	Mark	Notes
7	(a)		(pentagonal) prism	1	B1
	(b)		7	1	B1
	(c)		15	1	B1
					Total 3 marks

8	(a)		6 45 am	1	B1	
	(b)		3 hr 45 mins	2	M1 A1	Attempt to count on from 0725to 0800 or to count from 0725 to 1025 oe
						Total 3 marks

9	(a)		2	1	B1	
	(b)	20 ÷ 2 (= 10^{th}) or (20 + 1) ÷ 2 (=10.5^{th})	1	2	M1 A1	Or evidence of correct working by table or listing numbers
	(c)	(6×0) + (5×1) + ((7×2) + (1×3) + (0×4) + (1×5) (0) + 5 + 14 + 3 + (0) +5	27	2	M1 A1	For at least 4 correct products with intention to add.
						Total 5 marks

Question		Working	Answer	Mark	Notes
5	(a)		37	1	B1
	(b)	Eg 9, 10, 12, 17, 19, 26, 27, 46 (may be in descending order)		M1	for all 8 numbers in order or 17 and 19 identified
			18	2 A1	
	(c)	$(26+10+17+27+12+19+9+46)\div 8$		M1	for a correct method (condone missing brackets)
			20.75	2 A1	Accept 21 if correct calculation shown

Question		Working	Answer	Mark	Notes
15			perpendicular bisector drawn	2	M1 Two pairs of relevant arcs drawn **or** line within guidelines without arcs A1 perpendicular bisector drawn within guidelines and with two pairs of relevant arcs present (overlay needed)
16	(a)		11 – 15	1	B1
	(b)	$3 \times 5 + 8 \times 10 + 13 \times 16 + 18 \times 9$ **or** $15 + 80 + 208 + 162$ **or** 465			M2 $f \times n$ for at least 3 products with correct mid-interval values **and** intention to add If not M2 then award M1 for n used consistently for at least 3 products within interval **and** intention to add **or** at least 3 products with correct mid-interval values with no intention to add
		$(3 \times 5 + 8 \times 10 + 13 \times 16 + 18 \times 9) \div 40$ **or** $(15 + 80 + 208 + 162) \div 40$ **or** $465 \div 40$			M1 dep on M1 NB: accept their 40 if addition shown
			11.625	4	A1 Accept 11.6 or 11.63 or 12 if correct working seen ($465 \div 40$ oe)

Question	Working	Answer	Mark	Notes
14	75 + (180 – 123) or 180 – (75 + (180 – 123))	132 and a full set of reasons for method used	4	M1 Correct method to find angle x
	132°			A1 Correct value for x
	e.g. Vertically opposite angles are equal. Angles on a straight line add up to 180° Angles in a triangle add up to 180° Or Vertically opposite angles are equal Angles on a straight line add up to 180° exterior angle of a triangle is equal to the sum of the opposite interior angles			B2 For a correct full set of reasons for the method used B1 for two correct reasons for a method used.
15 (a)		$12 < d \leq 16$	1	B1
(b)	$2 \times 16 + 6 \times 18 + 10 \times 19 + 14 \times 27 + 18 \times 20$ $= 32 + 108 + 190 + 378 + 360$ (=1068)	10.68	4	M2 $f \times d$ for at least 4 products with correct mid- interval values and intention to add. If not M2 then award M1 for d used consistently for at least 4 products within interval (including end points) and intention to add or for at least 4 correct products with correct mid-interval values with no intention to add
	'1068' ÷ 100			M1 dep on at least M1 Allow division by their $\sum f$ provided addition or total under column seen
				A1 Accept 10, 10.7 and 11

Question		Working	Answer	Mark	Notes	
12	(a)	$\frac{13+8+8+6+5}{2}$ or $\frac{(13+8+8+6+5)+1}{2}$ or $\frac{40}{2}$ or $\frac{41}{2}$ or 20 or 20.5	22	2	M1 A1	A clear attempt to list the 40 numbers in order and to find the middle number.
	(b)	(21 × 13) + (22 × 8) + (23 × 8) + (24 × 6) + (25 × 5) (= 273 + 176 + 184 + 144 + 125) (= 902) "902" ÷ 40	22.55	3	M1 M1 dep A1	At least 4 products correctly stated or evaluated Accept 22 or 23 if 22.55 seen
						Total 5 marks

13	(a)	$3f = 11 + 5$ or $3f = 16$	$\frac{16}{3}$ oe	2	M1 A1	A correct rearrangement of numbers on one side accept $5\frac{1}{3}$ or 5.3 with recurring symbol or 5.33 (at least 2 3's) NB. 16/3 in body of script then 5.3 on ans line = M1 A1 5.3 on ans line with no working = M1 A0
	(b)		$w^2 + 3w$	1	B1	
	(c)	$5(-3)^2 + 20$	65	2	M1 A1	Ans of -25 = M1 A0 if substitution seen
	(d)		$(x + 4)(x - 9)$	2	M1 A1	For $(x + a)(x + b)$ where $ab = -36$ and a and b are integers Ignore extension to roots $x = -4$ & 9
						Total 7 marks

15	$\frac{2}{5}\times\frac{20}{11}$ or eg $\frac{8}{20}\div\frac{11}{20}$		2	M1	For inverting $\frac{11}{20}$ and a clear intention to multiply or for writing both fractions correctly over the same common denominator
	$\frac{2}{5}\times\frac{20}{11}=\frac{40}{55}=\frac{8}{11}$ or $\frac{2}{\cancel{5}^{1}}\times\frac{\cancel{20}^{4}}{11}=\frac{8}{11}$ or $\frac{8}{20}\div\frac{11}{20}=\frac{8}{11}$	Clearly shown		A1	dep on M1 continued to clearly show given result
					Total 2 marks

16	a		$50 < L \leq 60$	1	B1	oe eg 50 - 60
	b	25 × 6 + 35 × 26 + 45 × 31 + 55 × 40 + 65 × 17 (150 + 910 + 1395 + 2200 + 1105)(= 5760)			M2	For correct products using midpoints (allow one error) with intention to add. M1 for products using frequency and a consistent value within the range (allow one error) with intention to add or correct products using midpoints (allow one error) without addition
		"5760" ÷ "120"			M1	dep on M1
			48	4	A1	
						Total 5 marks

18	(a)		$70 < s \leq 80$	1	B1	
	(b)	$10 \times 45 + 16 \times 55 + 19 \times 65 + 23 \times 75 + 12 \times 85$ **or** $450 + 880 + 1235 + 1725 + 1020$ (= 5310)		4	M2	$f \times d$ for at least 4 products with correct mid-interval values and intention to add. If not M2 then award M1 for d used consistently for at least 4 products within interval (including end points) and intention to add **or** for at least 4 correct products with correct mid-interval values with no intention to add
		"5310" ÷ 80			M1	dep on at least M1 allow division by their $\sum f$ provided addition or total under column seen
			66.4		A1	accept 66.37 – 66.4
						Total 5 marks

19 (a)			$\frac{31}{70}$	1	B1 31/70 Accept 0.44(28571…..) or 44.(2…)%
(b)	$4 \times 6 + 12 \times 14 + 20 \times 19 + 28 \times 25 + 36 \times 6$ (= 1488) **or** 24 + 168 + 380 + 700 + 216 (= 1488)			4	M2 for at least **4** correct products added (need not be evaluated) If not M2 then award: M1 for consistent use of value within interval (including end points) for at least **4** products which must be added or correct midpoints used for at least **4** products and not added
	$\frac{4 \times 6 + 12 \times 14 + 20 \times 19 + 28 \times 25 + 36 \times 6}{70}$ oe eg '1488' ÷ '70'				M1 dep on at least M1 Allow division by their Σf provided addition or total under column seen
	Correct answer scores full marks (unless from obvious incorrect working)		21.26		A1 awrt 21.26 accept 21.3
					Total 5 marks

15	(a)		$48 < S \leqslant 54$	1	B1	Allow $48 - 54$ oe
	(b)	$(33 \times 4) + (39 \times 14) + (45 \times 18) + (51 \times 19) + (57 \times 5)$ or $132 + 546 + 810 + 969 + 285$ (= 2742) [lower bound products are: 120, 504, 756, 912, 270] [upper bound products are: 144, 588, 864, 1026, 300]		4	M2	M2 for at least **4** correct products added (need not be evaluated) **or** If not M2 then award: M1 for consistent use of value within interval (including end points) for at least **4** products which must be added or correct midpoints used for at least **4** products and not added
		$\frac{"2742"}{60}$			M1	dep on M1 Allow division by their Σf provided addition or total under column seen
		Correct answer scores full marks (unless from obvious incorrect working)	45.7		A1oe	$45\frac{7}{10}$ or $\frac{457}{10}$ (accept 46 from correct working)
						Total 5 marks

9 (a)	<table><tr><th></th><th>Road</th><th>Mountain</th><th>Hybrid</th><th>Total</th></tr><tr><td>**Professional**</td><td>26</td><td>***22***</td><td>***19***</td><td>67</td></tr><tr><td>**Amateur**</td><td>***13***</td><td>32</td><td>***8***</td><td>***53***</td></tr><tr><td>**Total**</td><td>39</td><td>54</td><td>***27***</td><td>120</td></tr></table>		3	B3 for all 6 entries correct B2 for 4 or 5 correct entries B1 for 2 or 3 correct entries
(b)	$\frac{54}{120}\left(=\frac{9}{20}=0.45\right)$ oe or $\frac{54}{120}\times 100$ oe		2	M1
	Correct answer scores full marks (unless from obvious incorrect working)	45		A1 cao
(c)	$\frac{41}{120}\times 360$ oe eg $0.34(166\ldots)\times 360$ or 41×3 or $360\div\frac{120}{41}$ or $360\div 2.9(268\ldots)$		2	M1
	Correct answer scores full marks (unless from obvious incorrect working)	123		A1
				Total 7 marks

10 (a)		11	1	B1	
(b)	21 ÷ 2 (=10.5) or 11th oe or 10,11,11,11,,,,12,12,13… etc with no more than one error		2	M1	For a correct method to find position of median
		13		A1	
(c)	$10\times 1+11\times 7+12\times 2+13\times 5+14\times 4+15\times 2$ or 10 + 77 + 24 + 65 + 56 + 30 oe		2	M1	For at least 4 correct products
	Correct answer scores full marks (unless from obvious incorrect working)	262		A1	(NB: an answer of 12.476.. alone or with 262 ÷ 21 gains M1 only)
					Total 5 marks

12	(a)		13	1	B1	cao
	(b)		2.5	1	B1	oe
	(c)	8 × 5 (= 40) oe		3	M1	for a method to find the total number of goals scored
		8 × 5 – (1 + 1 + 2 + 2 + 3 + 6 + 14)			M1	for a complete method to work out the value of *x*
		Correct answer scores full marks (unless from obvious incorrect working)	11		A1	
						Total 5 marks

13	(a)	8 + 8 + 12 (= 28) oe **or** $\frac{8+8+12-2\times5}{2}$ (= 9) oe		3	M1	for a method to find the perimeter of the triangle **or** for a method to find the length of the rectangle (check the diagram)
		("28" – 5 – 5) ÷ 2 × 5 oe eg "9" × 5			M1	for a complete method to find the area of the rectangle
		Correct answer scores full marks (unless from obvious incorrect working)	45		A1	
	(b)	231 ÷ (7 × 6) **or** 7 × 6 × *w* = 231 oe		2	M1	for a complete method to find the value of *w* **or** for setting up an equation for the volume of the cuboid
		Correct answer scores full marks (unless from obvious incorrect working)	5.5		A1	oe $\frac{11}{2}$, $5\frac{1}{2}$
						Total 5 marks

10	*BCD* = 108		5	M1	for angle *BCD* = 108 can be seen on diagram
	eg 360 – ("108" + 135 + 54) (= 63) or 360 – 297 (= 63)			M1	for method to find angle *BAD* can be seen on diagram (63 or 297 implies the previous M1)
	Correct answer scores full marks (unless from obvious incorrect working)	117		A1	for 117 can be seen on diagram
	(i) Vertically opposite angles are equal Vertically opposite angles are equal (ii) Angles in a quadrilateral sum to 360º or angles in a quadrilateral sum to 360° Accept "4-sided shape" (iii) Angles on a straight line add to 180° or angles on a straight line add to 180°			B2 (B1	(dep on M1) for two correct reasons for their method (dep on M1) for 1 correct reason for their method)
					Total 5 marks

11	(a)		5	1	B1	
	(b)		3	1	B1	
	(c)	eg 0 × 3 + 1 × 7 + 2 × 6 + 3 × 11 + 4 × 1 + 5 × 2 (= 66) **or** 0 + 7 + 12 + 33 + 4 + 10 (= 66)		3	M1	for at least 5 correct products and intention to add
		"66" ÷ 30			M1	
		Correct answer scores full marks (unless from obvious incorrect working)	2.2		A1	oe
						Total 5 marks

18	(a)		$10 < p \square 15$	1	B1 allow $10 \square p \square 15$ or $10 < p < 15$ or $10 \square p < 15$ or $10 – 15$
	(b)	$12.5 \times 18 + 17.5 \times 16 + 22.5 \times 14 + 27.5 \times 8 + 32.5 \times 4$ (= 1170) or 225 + 280 + 315 + 220 + 130 (= 1170) [lower bound products are: 180, 240, 280, 200, 120] [upper bound products are: 270, 320, 350, 240, 140] Sum of lower bound products = 1020 Sum of upper bound products = 1320 Sum of products using 11, 16, 21, 26 and 31 = 1080 Sum of products using 12, 17, 22, 27 and 32 = 1140 Sum of products using 13, 18, 23, 28 and 33 = 1200 Sum of products using 14, 19, 24, 29 and 34 = 1260		4	M2 for at least **4** correct products added (need not be evaluated) **or** If not M2 then award: M1 for consistent use of value within interval (including end points) for at least **4** products which must be added or correct midpoints used for at least **4** products and not added
		"1170" ÷ 60			M1 dep on at least M1 Allow division by their Σf provided addition or total under column seen
		Correct answer scores full marks (unless from obvious incorrect working)	19.5		A1 oe
					Total 5 marks

18 (a)		$5 < d \leq 10$	1	B1	allow 5 – 10 or 5 to 10 or $5 < d < 10$ or $5 \leq d \leq 10$ or $5 \leq d < 10$
(b)	2.5 × 26 + 7.5 × 40 + 12.5 × 16 + 17.5 × 10 + 22.5 × 8 (= 920) or 65 + 300 + 200 + 175 + 180 (= 920) [lower bound products are: 0, 200, 160, 150, 160] [sum of lower bound products is: 670] [products using 3, 8, 13, 18, 23 are: 78, 320, 208, 180, 184] [sum of products using 3, 8, 13, 18, 23 is: 970] [upper bound products are: 130, 400, 240, 200, 200] [sum of upper bound products is: 1170]		4	M2	for at least **4** correct products added (need not be evaluated ie can be in the form 2.5 × 26 + 7.5 × 40 +…) If not M2 then award: M1 for consistent use of values within interval (including end points) for at least **4** products added (need not be evaluated ie can be in the form 5 × 26 + 10 × 40 +…) or correct midpoints used for at least **4** products and not added
	"920" ÷ "100"			M1	(dep on at least M1) Allow division by their Σf provided addition or total under column seen
	Correct answer scores full marks (unless from obvious incorrect working)	9.2		A1	oe eg $9\frac{1}{5}$ or $\frac{46}{5}$ SCB2 for answer of 6.7 or 9.7 or 11.7
					Total 5 marks

7	(a)		4	1	B1	
	(b)	10 – 4		2	M1	or for 10 and 4 selected
			6		A1	
	(c)	4, 4, 4, 4, 4, 5, 7, 7, 7, 8, 10		2	M1	allow one error or omission
			5		A1	
	(d)		more with reason	1	B1	e.g. mean of extra pairs of shoes is £40; £31 is £3 less than given mean and £49 is £15 more than given mean
						Total 6 marks

Question		Working	Answer	Mark	Notes
9	(a)	$7 - 3$		2	M1 or $3 - 7$
			4		A1
	(b)		6	1	B1
	(c)	$3\times4+4\times8+5\times10+6\times12+7\times4$ (=194) (12 + 32 + 50 + 72 + 28)		3	M1 for at least 4 correct products and intention to add. Products may be seen by the side of the table
		"194"÷(4+8+10+12+4)(=5.105....) "194" ÷ "38"			M1 dep on M1
		Working not required, so correct answer scores full marks (unless from obvious incorrect working)	5.1		A1 accept 5.1−5.106
					Total 6 marks

Question	Working	Answer	Mark	Notes
10	Line from *B* at 65° ± 2° **or** arc from *B* at 6.2 cm ± 0.2 cm		2	M1
		Correct triangle		A1 SCB1 if no marks scored, award if student has used point *A* for line **and** arc, rather than point *B*
				Total 2 marks

20	(a)		(5), 8, 8, 20, *x*, (24)	3	B3 for (5), 8, 8, 20, *x*, (24) where *x* = 21 **or** 22 **or** 23 (B2 for (5), 8, 8, 20, *x*, (24) where *x* is blank or **any** value other than 21, 22 or 23) (B1 for a list with a median of 14 **or** a mode of 8 **or** the 3rd and 4th cards having a sum of 28 (ignoring other cards))
	(b)	eg 5 × 21 (= 105) **or** 6 × 23 (= 138)		3	M1
		eg 6 × 23 – 5 × 21			M1
			33		A1
					Total 6 marks

10	(a)		3	1	B1
	(b)	$(0 \times 3) + (1 \times 9) + (2 \times 15) + (3 \times 18) +$ $(4 \times 4) + (5 \times 1)$ (= 114) or (0 +) + 9 + 30 +54 + 16 + 5 (= 114)		3	M1 for at least 5 correct products
		"114" ÷ 50			M1
			2.28		A1 oe SC B2 for 2.34
	(c)			2	M1 for $\frac{23}{a}$ where $a > 23$ or $\frac{b}{50}$ where $b < 50$
			$\frac{23}{50}$		A1 oe eg. 0.46 or 46%
					Total 6 marks

Question	Working	Answer	Mark	Notes
22 (a)	$(28+32)\times72.6$ (= 4356) **or** 28×75 (= 2100)		4	M1 Expression for total of both classes together **or** total of class A
	$(28+32)\times72.6-28\times75$ (= 2256)			M1 Expression for total of class B.
	$\frac{(28+32)\times72.6-28\times75}{32}$ (="2256" ÷ 32)			M1 Correct calculation for mean of class B
		70.5		A1
(b)	Highest in A = 39 + 57 (= 96) Highest in B = 33 + 60 (= 93)		3	M1 for 39 + 57 (=96) **or** 33 + 60(=93)
	(39 + 57) − 33			M1 or for 33 − "96" or 33 to "96" oe
		63		A1
				Total 7 marks

23	eg $7x + 7y = 105$ − $5x + 5y = 75$ + $7x - 5y = 3$ $7x - 5y = 3$ $7(15 - y) - 5y = 3$ **or** $7x - 5(15 - x) = 3$ oe		3	M1 Correct method to eliminate x or y: coefficients of x or y the same **and** correct operation to eliminate selected variable (condone any one arithmetic error in multiplication) **or** writing x or y in terms of the other variable and correctly substituting
	$6.5 + y = 15$ **or** $x + 8.5 = 15$ **or** $7 \times 6.5 - 5y = 3$ **or** $7x - 5 \times 8.5 = 3$			M1 dep Correct method to find second variable using their value from a correct method to find first variable or for repeating above method to find second variable
		$x = 6.5$, $y = 8.5$		A1oe dep on first M1
				Total 3 marks

17	(a)		$3 < w \leq 4$	1	B1
	(b)	$(12 \times 2.5) + (16 \times 3.5) + (9 \times 4.5) + (2 \times 5.5) + (1 \times 6.5)$ **or** $30 + 56 + 40.5 + 11 + 6.5$ (= 144)		4	M2 for at least **4** correct products added (need not be evaluated) **or** If not M2 then award M1 for consistent use of value within interval (including end points) for at least **4** products which must be added **or** correct midpoints used for at least **4** products and not added
		$[(12 \times 2.5) + (16 \times 3.5) + (9 \times 4.5) + (2 \times 5.5) + (1 \times 6.5)] \div 40$ **or** '144' ÷ 40			M1 dep on at least M1 Allow division by their Σf provided addition or total under column seen
			3.6		A1 oe
	(c)	$\frac{2}{40} + \frac{1}{40}$		2	M1 for $\frac{a}{40}$ where $0 < a < 40$ or $\frac{3}{b}$ where $b > 3$ where a and b are integers
			$\frac{3}{40}$		A1 0.075 oe
					Total 7 marks

Question		Working	Answer	Mark	Notes
3	(a)		11	1	B1
	(b)		18	1	B1
	(c)		Correctly completed pictogram	1	B1 1½ symbols oe
					Total 3 marks

4	(a)		40	1	B1
	(b)	$\frac{42}{80}\times 100$ oe, e.g. 42 × 1.25	52.5	2	M1 A1
	(c)	0.72 × 350 oe	252	2	M1 A1
					Total 5 marks

Question		Working	Answer	Mark	Notes
3	(a)		9 squares shaded	1	B1
	(b)		$7\frac{2}{3}$	1	B1
	(c)	60 ÷ 5 or 12 or 2 × 60 or 120		2	M1
			24		A1
	(d)	$\frac{1}{4}=\frac{4}{16}$ *and* $\frac{1}{8}=\frac{2}{16}$ oe or $\frac{1}{4}=\frac{6}{24}$ *and* $\frac{1}{8}=\frac{3}{24}$ *and* $\frac{1}{6}=\frac{4}{24}$ oe		2	M1 or use of decimals for 0.25 and 0.125
			Correct conclusion based on correct figures		A1 e.g. $\frac{3}{16}$ is halfway between $\frac{1}{4}$ *and* $\frac{1}{8}$ ($\frac{3}{16}\neq\frac{1}{6}$) oe or using second method above, 4 is not halfway between 3 and 6 or 0.1875, 0.16666… and No
4	(a)		22	1	B1
	(b)		10	1	B1
	(c)		Correctly completed pictogram	1	B1 2½ circles oe
5	(a)		−6, −5, −4, 8 10	1	B1
	(b)		15	1	B1 Allow −15
	(c)		1	1	B1
	(d)		−14	1	B1

13	65 × 35 × 45 (= 102 375) and 5 × 5 × 5 (= 125) or (65 ÷ 5) (= 13), (35 ÷ 5) (= 7) and (45 ÷ 5) (= 9)		3	M1
	'102 375' ÷ '125' or '13' × '7' × '9'			M1
		819		A1
				Total 3 marks

14	eg 360 – (160 + 90) (= 110)	eg $360\times\frac{400}{160}(=900)$ oe or $90\times\frac{400}{160}(=225)$ oe		3	M1 method to calculate angle for Sandeep **or** total number of votes **or** for number of votes for Anjali
	eg $\frac{400}{160}\times'110'$ oe	'900'–'225'–400			M1 complete method to calculate number of votes for Sandeep
			275		A1
					Total 3 marks

3	(a)(i)		37	1	B1	
	(ii)		+6	1	B1	oe eg 'added 6' or 'plus 6' or $6n + 1$ allow $31 + 6 = 37$ increase by 6 / goes up by 6
	(b)		169	1	B1	
	(c)		All the numbers in the sequence are odd numbers	1	B1	96 is not odd / 96 is even 96 is a multiple of 6 (and terms are not multiples of 6) or No numbers in the sequence end in 6 / all end in 1, 3, 5, 7, 9 or the sequence is $6n + 1$ or it goes ....91, 97, ... oe or it should be 97 They need to add 1
						Total 4 marks

4	(a)		B	1	B1	Accept b or 'Country B' allow incorrect spelling if meaning is clear
	(b)		bar at height of 7	1	B1	any width is acceptable
	(c)		11	1	B1	Allow 11 million or 11 000 000 in the answer space
						Total 3 marks

3	(a)		267	1	B1	cao
	(b)		2744	1	B1	cao
	(c)	eg selecting 987 and 139 **or** for 987 – *n* where *n* is a number from the list **or** m – 139 where *m* is a number from the list **or** for 987, 973, 393, 151, 139 **or** for 139, 151, 393, 973, 987		2	M1	for identifying 987 and 139, could be shown or circled **or** for 987 – *n* where *n* is a number from the list **or** m – 139 where *m* is a number from the list **or** for writing the numbers in order of size
		Correct answer scores full marks (unless from obvious incorrect working)	848		A1	cao
						Total 4 marks

4	(a)		28	1	B1	cao
	(b)		1 symbol and one small square from the symbol shown	1	B1	oe eg 5 small squares from the symbol 
	(c)		20	1	B1	cao
						Total 3 marks

5	(a)		–14, –8, –3, 12, 24	1	B1
	(b)		20	1	B1
	(c)		–16	1	B1
	(d)		11	1	B1
					Total 4 marks

International GCSE Maths

Apart from questions 20 and 26 the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method.
Values in quotation marks must come from a correct method previously seen unless clearly stated otherwise.

Q	Working	Answer	Mark	Notes
1		A fully correct bar chart	3	B2 All bars of correct height according to their scale (B1 for 3, 4 or 5 bars of the correct height or B1 for all heights marked but no bars drawn) condone gaps or no gaps between bars and also bars of different widths B1 All labels correct (linear scale for numbers and individual labels for names)
				Total 3 marks

11		$\frac{14}{7}$ (= 2) **or** $\frac{5}{7}\times 14$ (=10) **or** $\frac{4}{7}\times 14$ (=8) **or** any correct value marked on the vertical axis		3	M1 for working with the scale
		"10" × 3 (=30) **or** 5 × 3 + 7 × 1 (= 15 + 7 = 22) **or** 5 × 3 + 14 (= 15 + 14 = 29)			M1 for a method to find the number of points won **or** for a method to work out the total number of points using a vertical scale of 1 game per cm Note: M0M1 is possible
		Correct answer scores full marks (unless from obvious incorrect working)	44		A1
					Total 3 marks

Apart from Questions 13(b) and 13(c) (where the mark scheme states otherwise), the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method.

Question		Working	Answer	Mark	Notes
1	(a)		36, 73, 89, 138, 219	1	B1
	(b)		2018	1	B1
	(c)		Four thousand three hundred and nine	1	B1
	(d)		700	1	B1 oe eg 100
	(e)		290	1	B1
	(f)	$\frac{4}{5} \times 185$ or 0.8×185 oe	148	2	M1 For a complete method A1
2	(a)		3	1	B1
	(b)(i)		4	1	B1
	(b)(ii)		12	1	B1 for 12 **or** ft from (i) for "4" × 3
	(b)(iii)		18	1	B1 for 18 **or** ft from (i) for "4" × 4.5

Question		Working	Answer	Mark	Notes
4	(a)		9.2	1	B1
	(b)	8.4 − 3.8	4.6	2	M1 At least one correct A1
	(c)		Bar correct height	1	B1 1.6 - 1.8 drawn
5	(a)		18	1	B1
	(b)		15 18	2	B1, B1
	(c)		Any correct pair	1	B1 14 and 15 or 15 and 16 or 15 and 22
6	(a)		(6, 2)	1	B1
	(b)		*D* plotted	1	B1
	(c)		Isosceles	1	B1
	(d)	$\frac{2+4}{2}, \frac{2+7}{2}$	(3, 4.5)	2	M1 or one coordinate correct or (4.5, 3) A1

Question	Working	Answer	Mark	Notes
5		correct graph	4	B1 for key or suitable labels to identify London and Cairo **or** temperature axis scaled (linear scale, allow 1 error for this mark) and labelled B1 for diagram showing data for at least 3 months for both cities (may not be accurate) (eg. dual bar chart, composite bar chart, time series) B1 for correct heights for at least 4 bars or at least 4 correct plots (ft from a scale with only 1 error) B1 fully correct diagram

10		3.5 + 5.75 + 6.5 + 6.25 + 8 (=30) **or** 3.5 × 8 (=28) **or** 5.75 × 8 (=46) **or** 6.5 × 8(=52) **or** 6.25 × 8 (=50) **or** 8 × 8 (=64)		4	M1	(allow one error in sum to 30)
		"30" ÷ 5 (=6) **or** "30" × 8 (=240) **or** "28" + "46" + "52" + "50" + "64" (=240)			M1	Dep on M1 and if adding values, must be 5 values with intention to add
		"6" × 8 **or** "240" ÷ 5			M1	dep
			48		A1	
						Total 4 marks

11	(a)		triangle with vertices (6, 4) (6, 1) (4, 1)	2	B2	if not B2 then award B1 for a rotation of 180° about a different centre
	(b)		Reflection in $x = -1$	2	B1 B1	Reflection $x = -1$ NB. No marks if more than one transformation is stated or suggested with column vector, coordinate, SF, angle etc
						Total 4 marks

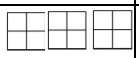
Question		Working	Answer	Mark	Notes
1	(a)		Tanzania	1	B1
	(b)		823 000	1	B1
	(c)		2410	1	B1 accept −2410
	(d)		ten thousand one hundred and twenty	1	B1
					Total 4 marks

2	(a)		correct bar	1	B1 for bar drawn at correct height of 13 Allow a line instead of a bar
	(b)		Brazil	1	B1
	(c)	29		2	M1 for $\frac{29}{k}$ with $k > 29$ **or** $\frac{n}{113}$ with $n < 113$ oe May work in millions Allow incorrect notation e.g. 29 out of 113 or 29:113 oe
			$\frac{29}{113}$		A1 oe Allow 0.26 or 0.256(6371…….)
					Total 4 marks

11	(a)	$\frac{16}{40}\times 360$ oe **or** $\left(\frac{16}{40}\times 100\right)\frac{40}{100}\times 360$ oe **or** $360 \div (40 \div 16)$		2	M1 Allow two stages e.g. $\left(\frac{16}{40}\times 100 \text{ and}\right)\frac{'40'}{100}\times 360$ oe
			144		A1 cao
	(b)	E.g. $48 \div 192 \times 56$ oe **or** $\left(\frac{48}{192}\times 100 = 25\right)\frac{'25'}{100}\times 56$ oe **or** $(192 \div 48\ (= 4)$ **and)** $56 \div$ '4' **or** $192 \div 56\ (= 3.4\ldots)$ **and** $48 \div$ '3.4…'		2	M1
			14		A1 cao
					Total 4 marks

12		A: $0.6 \times (2 \times 80)\ (= 96)$ B: $0.6 \times 80\ (= 48)$ C: $0.55 \times 80\ (= 44)$ D: $(0.6 - 0.55) \times 80\ (= 4)$		4	M2 for **two** compatible values: AC or BC or BD **or** $2 \times 60 - 55\ (= 65\%)$ If not M2 then award M1 for any **one** of A or B or C or D
		E.g. '96' – '44' **or** $48 + (48 - 44)$ **or** $48 +$ '4' **or** '0.65' $\times 80$			M1 for a complete method
			52		A1
					Total 4 marks

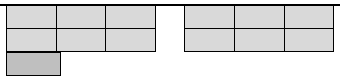
4	eg 1 × 6 + 2 × 3.50 + 4 × 4.20 (= 29.8(0)) 40 – 1 × 6 – 2 × 3.50 (= 27.(00))			M1	for working with at least three of hammer, nails, wood, money, gloves
	40 – (1 × 6 + 2 × 3.50 + 4 × 4.20) (= 10.2(0))			M1	complete method to find the remaining money
	"10.20" ÷ 1.80 (= 5.66...) **or** [their remaining money] ÷ 1.80 **or** 1.80 × 5 (= 9) **or** 1.80 × 6 (= 10.8(0))			M1	(dep on M1) method to find the number of pairs of gloves
		5	4	A1	SC B2 for an answer of 14
					Total 4 marks

5	eg 20 ÷ 2.5 (= 8) **or** 32 ÷ 4 (= 8) **or** 20 ÷ 10 (= 2) **or** 32 ÷ 16 (= 2)			M1	for a method to find a key
		8		A1	key completed correctly
	eg 24 ÷ [their 8] **or** 14 ÷ [their 8] **or** 24 ÷ [their 2] **or** 14 ÷ [their 2]			M1	complete method to find the picture for Miss Okoye **or** Dr Syed
		Miss Okoye  Dr Syed 	4	A1	
					Total 4 marks

International GCSE Maths A June 2020 – Paper 1FR Mark scheme

Apart from Questions 10, 13, 16b, 17, 19c, where the mark scheme states otherwise, the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method.

Q		Working	Answer	Mark	Notes
1	(a)		3 squares shaded	1	B1
	(b)		$3\frac{4}{5}$	1	B1 oe for an equivalent mixed number
	(c)		$\frac{4}{11}$	1	B1 oe
	(d)		$\frac{14}{18}$	1	B1 for any fraction equivalent to $\frac{7}{9}$
	(e)		$\frac{3}{100}$	1	B1 oe
					Total 5 marks

2	(a)		40	1	B1
	(b)	e.g. 9 × 4 or 68 – 32 oe		2	M1 May be seen by side of pictogram.
			36		A1
	(c)		2 rectangles of 6 sections and 1 small section	1	B1 oe
					Total 4 marks

9	a i		33	1	B1	accept 32 – 34
	ii		15	1	B1	accept 15 – 16
	b	e.g. 820 ÷ 10 × "33" (= 2706) **or** 2850 ÷ 50 × "15" (= 855)		2	M1	method to convert 820 metres to feet **or** 2850 feet to metres, allow ft from (ai) or (aii) **or** a value for 820 m to feet in range (2620 – 2740) **or** a value for 2850 feet to m in range (830 – 900)
			2850 feet supported by working		A1	2850 selected (could be unambiguously circled, underlined or stated) with correct working and figures as above to justify result, ft from part (ai) or (aii)
						Total 4 marks

10	e.g. 360 – (30 + 45 + 165) (= 120)		4	M1	method to calculate One Stop Shoes angle
	e.g. $\frac{30}{45}$, 18 (= 12) or $\frac{30}{120}$, 48 (= 12) oe			M1	method to calculate ABC Shoes frequency
	e.g. 165 ÷ 45 × 18 (= 66) oe **or** 165 ÷ 30 × "12" (= 66) oe **or** 165 ÷ "120" × 48 (= 66) oe **or** 18 + 48 having shown or implied that 120 + 45 = 165 and a clear intention that this is the method for Superfast Trainers (= 66)			M1	method to calculate Superfast Trainers frequency
		12, 120, 66		A1	fully correct table
					Total 4 marks

3	(a)		243	1	B1	cao
	(b)		Multiplying previous term by 3	1	B1	for multiplying previous term by 3 oe "×3" or 81×3
	(c)		19 683	1	B1	cao
						Total 3 marks

4	(a)		2.7	1	B1	condone 2.7 million
	(b)		Malaysia	1	B1	cao
	(c)		Correct bar drawn	1	B1	for correct bar at a height of 5.4 (within half small square) allow any bar width or location (no gap required) condone stick at correct height.
	(d)		Russia	1	B1	cao
						Total 4 marks

5	(a)		3.0 – 3.2	1	B1	for in the range 3.0 – 3.2
	(b)		Parallelogram	1	B1	allow trapezium
	(c)		2	1	B1	cao
	(d)		Correctly labelled	1	B1	Angle *DAB* or angle *DCB* or both labelled
	(e)	$\frac{1}{2}(6+10)\times 4$		2	M1	for correct application of formula allow triangle method
			32		A1	cao
						Total 6 marks

Question	Working	Answer	Mark	Notes
3	[small square =] 2 **or** [large square =] 8		4	B1 may be seen in a square on the pictogram or in working or implied by correct working
	eg 16 × "2" (= 32) **or** 4 × "8" (= 32) **or** 6 × "2" (= 12) **or** 1.5 × "8" (= 12) **or** 3 × "2" (= 6) **or** 0.75 × "8" (= 6) **or** 13 × "2" (= 26) **or** 3.25 × "8" (= 26) **or** for showing a method of adding the number of large squares (eg 2.5 + 4 + 1.5 + 0.75 + 3.25)(=12) *(at least 3 correct – may omit Monday)* **or** for showing a method of adding the number of small squares (10 + 16 + 6 + 3 + 13)(=48) *(at least 3 correct – may omit Monday)*			M1 for method to work out number of parcels for Tuesday or Wednesday or Thursday or Friday (may be written by the side of the pictogram). Allow use of *their* 2 or 8 **or** for a method to count the number of large squares or the number of small squares
	eg 20 + "32" + "12" + "6" + "26" **or** "12" × "8" oe eg "9.5" × "8" + 20 **or** "48" × "2" oe eg "38" × "2" + 20			M1 for a complete method to find the total number of parcels – a sum of 5 numbers with at least 3 correct. Allow use of *their* 2 or 8 **or** multiplying number of large squares by 8 **or** multiplying number of small squares by 2. Allow use of *their* 2 or 8
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	96		A1 cao
				Total 4 marks

International GCSE Maths					
Apart from question 9c, 13, 21b the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method					
Q		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Two thousand and fifty one	1	B1
	(b)		1700	1	B1
	(c)		1479	1	B1
	(d)		1150	1	B1
					Total 4 marks

2	(a)		20	1	B1
	(b)	32, "20", 18, 22		2	M1ft for at least 3 correct values **or** clear use of multiples of 8
			92		A1ft 72 + "answer to (a)"
	(c)		3 and ¼ symbols	1	B1
					Total 4 marks

International GCSE Maths					
Apart from question 22, the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method					
Q		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		7534	1	B1
	(b)	eg 3600 − 3574 **or** 3745 – 3600		2	M1 for 3600 – "number" or "number" – 3600 where "number" contains the digits 3,4,5,7. Must have attempted to evaluate this calculation
			26		A1 cao
					Total 3 marks

2	(a)		Pentagon	1	B1
	(b)		acute angle clearly indicated with '*A*'	1	B1 allow either angle or both acute angles indicated
	(c)		reflex angle clearly indicated with '*R*'	1	B1 accept either the interior reflex angle, or any of the exterior reflex angles, if labelled outside of the shape with an arc
					Total 3 marks

3	(a)		18	1	B1
	(b)(i)	eg 66 − 15 − 9 − 3 − "18" **or** 66 − (7.5 × "6") **or** 66 − 45		2	M1ft ft their 18 from part (a)
			21		A1ft ft their 18 from part (a) eg 66 – 15 – 9 – 3 – their answer to part (a)
	(ii)		$3\frac{1}{2}$ diagrams drawn	1	B1ft follow through their 21 from (b)(i)
					Total 4 marks

International GCSE Maths

Apart from Questions 5, 18, 20, 22 the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method

Q		Working	Answer	Mark	Notes
1	(a)		7, 58, 123, 180, 202	1	B1
	(b)		0.015, 0.15, 0.155, 1.15, 1.5	1	B1
	(c)		5203	1	B1
	(d)		tens	1	B1 oe eg 6 tens, 60, ten(s), sixty,
					Total 4 marks

2	(a)		Bar drawn of height 8	1	B1
	(b)		USA	1	B1
	(c)		France	1	B1
	(d)		13	1	B1 Allow 13 000 000
					Total 4 marks

3	(a)		3.76	1	B1
	(b)		Arrow pointing at 0.04	1	B1
	(c)		5.7	1	B1 Allow 5,7
					Total 3 marks

4	(a)		Parallelogram drawn	1	B1
	(b)(i)		Pyramid	1	B1 accept square based pyramid or rectangular based pyramid
	(ii)		5	1	B1 Allow five
					Total 3 marks

International GCSE Maths A January 2023– Paper 2F Mark scheme					
Apart from Questions 16, 17, 19, 20c, 22 where the mark scheme states otherwise, the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method.					
Q		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		3567	1	B1
	(b)		7536	1	B1
	(c)		37 or 53 or 73 or 67	1	B1
	(d)		56	1	B1
					Total 4 marks

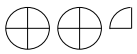
2	(a)		USA	1	B1
	(b)		Pictogram completed with 1 and a half symbols	1	B1
	(c)	11 + 7 oe eg (2.75 + 1.75) × 4		2	M1 For two numbers added together, one of which is correct
		Correct answer scores full marks (unless from obvious incorrect working)	18		A1
					Total 4 marks

International GCSE Maths					
Apart from Questions 13, 14d, 15, 25 the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method					
Q		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		84, 105, 171, 233, 490	1	B1
	(b)		5102	1	B1
	(c)		3 tens	1	B1 accept 30, tens
	(d)		700	1	B1
					Total 4 marks

2	(a)		40	1	B1
	(b)		USA	1	B1
	(c)		95	1	B1
	(d)		Bar drawn height 25	1	B1
					Total 4 marks

3	(a)		Octagon	1	B1
	(b)		Acute	1	B1
	(c)		Chord drawn	1	B1
	(d)		360	1	B1
					Total 4 marks

9	eg (8 + 8) + (8 + 4) + (8 + 8 + 6) + (8 + 8 + 2) (= 68) **or** 16 + 12 + 22 + 18 (= 68) **or** 8.5 × 8 (= 68)		4	M2 (M1 	for a method to find the total cars sold in April with at least 3 out of 4 correct and intention to add **or** sight of 68 for a method to find the totals for each employee with at least 3 out of 4 correct **OR** method to find the totals for 2 employees and intention to add)
	eg 60 × 0.15 (= 9) oe **or** 60 × 1.15 (= 69) oe			M1	(indep) for a method to increase 60 by 15% or 15% of 60 or sight of 69 or 9 Allow $\frac{"68"}{1.15}$ (= 59.1...)
	Working required	68 and 69 or 68 and 1 more needed		A1	Suitable conclusion e.g 59.1 v 60
					Total 4 marks

3	(a)		28	1	B1	
	(b)			1	B1	(quarter circle can be any quadrant)
	(c)	"28" + 10 + 14 + 20 + "18" (= 90) oe eg 8 × 11.25 (= 90) or "56" + 20 + 28 + 40 + "36" (= 180) oe		2	M1	ft their (a) and their (b) from diag 3 correct figures out of 5 seen (no need to add) allow figures doubled; 3 out of 5 seen (figures may be seen in or by table)
		Correct answer scores full marks (unless from obvious incorrect working)	180		A1	cao SCB1 if no other marks awarded for 360 or 90
						Total 4 marks

11	(a)	$\frac{55}{90} \times 360$ oe		2	M1	Allow 0.61… × 360
		Correct answer scores full marks (unless from obvious incorrect working)	220		A1	Accept 219.6 - 220
	(b)	$\frac{195}{39} (= 5)$ or 5 : 1 or $\frac{39}{195} (= \frac{1}{5} = 0.2)$ or 1 : 5 or $\frac{75}{195} \left(= \frac{5}{13} = 0.38... \right)$ or 5 : 13 or $\frac{195}{75} \left(= \frac{13}{5} = 2.6 \right)$ or 13 : 5		2	M1	starting to work with 195° and 39 people or starting to work with 195° and 75°
		Correct answer scores full marks (unless from obvious incorrect working)	15		A1	
						Total 4 marks

5	(a)		$\frac{2}{3}$	1	B1 allow 0.67 or better
	(b)		$\frac{4}{5}$ and $\frac{12}{15}$	1	B1
	(c)		0.7	1	B1 allow 0.7(000…)
					Total 3 marks

6	(a)		8	1	B1 cao
	(b)	40 – (“8” + 14 + 11) oe or 40 – 33 or or 18 – 11 or 21 – 14 or 15 – “8”		3	M1 for 40 minus their 3 readings (allow one incorrect reading from 8 or 14 or 11)
		7			A1(ft for 15 – “8” or 40 – (“8” + 14 + 11))
		Correct answer scores full marks (unless from obvious incorrect working)	Correct height of bar		A1 ft dep on M1 ± half square tolerance for height of bar Award 3 marks for a fully correct bar of height of 7
					Total 4 marks

International GCSE Maths					
Apart from questions 11, 13, 16b and 24 (where the mark scheme states otherwise) the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method					
Q		**Working**	**Answer**	**Mark**	**Notes**
1	(a)(i)		40	1	B1 cao
	(ii)		27	1	B1 allow 3^3
	(b)		–9	1	B1 cao
	(c)		21	1	B1 cao
	(d)		2 + odd prime number	1	B1 eg. 2 + 3, 2 + 5 etc
					Total 5 marks

2	(a)		Canada	1	B1
	(b)		420	1	B1 cao
	(c)		90	1	B1 cao
	(d)		Correct bar chart	1	B1 Allow ± half square tolerance for height of bar
					Total 4 marks

3	(a)		reflex	1	B1
	(b)		radius	1	B1
	(c)		pentagon	1	B1
	(d)		9	1	B1 cao
					Total 4 marks

6	(a)		8	1	B1	
	(b)		*R* marked at bottom left vertex	1	B1	accept a clear unambiguous right angle symbol instead of *R*
	(c)		*O* marked at bottom right vertex	1	B1	
	(d)		42	1	B1	Allow 40 – 44
						Total 4 marks

7	(a)	$72 \div 24\ (= 3)$ **or** $24 \div 72\ \left(= \frac{1}{3}\text{ oe}\right)$ **or** $24 \div \frac{72}{360}\ (=120)$ **or** $96 \div 72\ \left(= \frac{4}{3}\text{ oe}\right)$ **or** $72 \div 96\ \left(= \frac{3}{4}\text{ oe}\right)$		2	M1	for a method to find the number of degrees per person **or** the number of people per degree **or** the total number of people represented by the pie chart **or** the scale factor between mahjong and chess
		Correct answer scores full marks (unless from obvious incorrect working)	32		A1	cao
	(b)	$72 \div 24 \times 40$ oe eg 3×40 **or** $40 \div (24 \div 72)$ oe eg $40 \div \frac{1}{3}$ **or** $\frac{40}{24} \times 72$		2	M1ft	some working may be seen in part (a) eg $72 \div 24\ (= 3)$
		Correct answer scores full marks (unless from obvious incorrect working)	120		A1	accept 119.5 – 120.3
						Total 4 marks

International GCSE Maths

Apart from Questions 17 and 22a the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method

Values in quotation marks must come from a correct method previously seen unless clearly stated otherwise.

Q		Working	Answer	Mark	Notes
1	(a)		5, 39, 71, 122, 150	1	B1
	(b)		0.074, 0.13, 0.37, 0.7, 3.77	1	B1
	(c)		5084	1	B1
	(d)		3 hundreds	1	B1 accept 300, hundreds
					Total 4 marks

2	(a)		Bar drawn of height 44	1	B1
	(b)		North America	1	B1
	(c)		Asia	1	B1
	(d)		68	1	B1
					Total 4 marks

3	(a)		57.6	1	B1
	(b)		Arrow pointing at 240	1	B1
	(c)		0.79	1	B1
					Total 3 marks

4	(a)		kite	1	B1
	(b)(i)		Prism	1	B1 accept triangular prism
	(ii)		9	1	B1
					Total 3 marks

2	(a)(i)		Isosceles	1	B1 allow incorrect spelling
	(ii)		Square	1	B1 allow incorrect spelling
	(b)		Correct line	1	B1
	(c)		4	1	B1 cao
					Total 4 marks

3	(a)		16	1	B1 cao
	(b)	19 and 10 or –9 or 19 – x or y – 10		2	M1 Allow 19 and 10 seen on pictogram x and y are incorrect values
		Correct answer scores full marks (unless from obvious incorrect working)	9		A1 SC B1 for 3 or 6 with or without seeing the figures on the pictogram
	(c)		Three large squares and one small square	1	B1 oe eg 13 small squares
					Total 4 marks

4	(a)		70	1	B1 cao
	(b)		15	1	B1 cao
	(c)		7000	1	B1 allow −40
					Total 3 marks

International GCSE Mathematics					
Values in quotation marks must come from a correct method previously seen unless clearly stated otherwise.					
Q		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		725	1	B1 cao
	(b)		32	1	B1 cao
	(c) (i)		4578	1	B1 cao
	(ii)		8754	1	B1 cao
					Total 4 marks

2	(a)		24	1	B1 cao
	(b)	"24" + 32 + 42 + 28 or 15 × 8 + 4 + 2 oe		2	M1 ft their "24", allow one error or omission in adding values
			126		A1 cao
	(c)		2 and ¾ circles	1	B1 oe eg 2 and ½ and ¼ circles
					Total 4 marks

3	(a)		6	1	B1 cao
	(b)		8	1	B1 cao
	(c)		diameter	1	B1 accept chord, condone incorrect spelling
	(d)		tangent	1	B1 condone incorrect spelling
					Total 4 marks

4	(a)		20*e*	1	B1 allow *e*20
	(b)		15	1	B1 cao
					Total 2 marks

9	(a)	eg $72 \div 6$ (= 12) **or** $132 \div 72\left(=\frac{11}{6}\right)$ **or** $48 \div 72\left(=\frac{2}{3}\right)$ **or** 360 – (48 + 72 + 132) (= 108)		3	M1	for a correct first step **or** for one correct value Values may be seen on the pie chart
		eg (freq boiled =) 132 ÷ "12" (= 11) **or** $6 \times "\frac{11}{6}"(=11)$ **OR** (freq poached =) "108" ÷ "12" (= 9) **OR** (angle poached =) "9" × "12" (= 108) **or** 360 – (48 + 72 + 132) (= 108) **OR** (freq fried =) 48 ÷ "12" (= 4) **or** $6 \times "\frac{2}{3}"(=4)$			M1	for method to work out 3 of the values
		Correct answer scores full marks (unless from obvious incorrect working)	11, 9, 4, 108		A1	cao
	(b)		$\frac{72}{360}$	1	B1ft	oe eg $\frac{1}{5}$, $\frac{6}{30}$, 20%, 0.2 allow $\frac{6}{\text{their total frequency}}$ their total is dep on a complete frequency column in the table
						Total 4 marks

Question		Working	Answer	Mark	Notes
5	a		$x = -3$ drawn	1	B1 accept unlabelled
	b	$\frac{4+1}{2}$, $\frac{2+4}{2}$	(2.5, 3)	2	M1 or one coordinate correct A1
	c		(2, −1)	2	B2 (B1 *D* placed correctly on the grid)
6	a		64	1	B1
	b	20 + 8 = 28 28 ÷ 4	7	2	M1 for +8 or ÷ 4 A1
	c		10	2	M1 for 8 × 5 or 40 A1
7	a		4, 7, 5, 4	2	M1 attempt to find frequencies (at least 2 correct) A1 fully correct
	b		Completed bar chart	3	M1 for 4 bars + labels on bars A1 correct heights ft a completed table A1 fully correct ft a completed table inc label on *y* axis Allow different widths of bars, gaps or no gaps between bars

Question		Working	Answer	Mark	Notes
9		55 × 28 × (33 – 3) oe (=46 200) or 55 × 28 × 33 (=50820) "46 200" ÷ 1000 ÷ 4 "50820" ÷ 1000 ÷ 4 "46 200" ÷ (4 × 1000) "50820" ÷ (4 × 1000)	11	4	M1 correct method to find the volume of water in fish tank or volume of fish tank M2 For ÷ 1000 ÷ 4 (or ÷ by 4000) or for an answer of 11.55 (M1 for division of volume by one of these or for 4 × 1000 (= 4000)) A1 cao
10	(a)	150 : 75	2 : 1	2	M1 for any ratio equivalent to 150 : 75 eg 6 : 3 **or** 1 : 2 A1 Accept 1 : 0.5 oe
	(b)	75 ÷ 40 × 8 oe **or** 40 ÷ 8 (=5) **and** 75 ÷ "5"	15	2	M1 A1
	(c)		eg don't know with reason	1	B1 E.g. Can't be sure as pie chart shows proportions and not actual numbers, We don't know how many each degree represents, etc

International GCSE Maths					
Apart from question 2d, 18b, 23 (where the mark scheme states otherwise) the correct answer, unless clearly obtained from an incorrect method, should be taken to imply a correct method.					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a) (i)		129	1	B1
	(a)(ii)		80	1	B1
	(b)(i)		2457	1	B1
	(b)(ii)		_ _ _ 4 or _ _ _ 2	1	B1 4 cards arranged with the 4 or 2 at the end
					Total 4 marks

2	(a)		Vietnam	1	B1
	(b)		30	1	B1
	(c)		Correct bar	1	B1
	(d)	"43" – "3"		2	M1 (41 - 44) – (1 - 4)
			40		A1 dep on M1, ft answers in range given
					Total 5 marks

4	(a)		12	1	B1	
	(b)	'12' × 2.5	30	1	B1ft	Ft their 12
	(c)	One and a quarter rectangles	One and a quarter rectangles drawn oe	1	B1	ft their 12
	(d)	36 × 5000 (= 180 000) or 200 000 ÷ 5000 (=40)		2	M1	
			No and 180 000		A1	for no oe **and** 180 000 **or** no oe **and** 40 **or** no oe **and** 20 000 short or 20 000 **and** short/off
						Total 5 marks

5	(a)		10*ab*	1	B1	
	(b)		4	1	B1	
						Total 2 marks

6	(a)		cuboid	1	B1	Accept rectangular cuboid or rectangular prism. Do not accept cube
	(b)		6.5	1	B1	Accept 6.4 – 6.6
	(c)		A and F	1	B1	May be stated or could be circled in list
						Total 3 marks

International GCSE Maths					
Apart from questions 20(a) (where the mark scheme states otherwise) the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method					
Q		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Gabon	1	B1
	(b)		11 100	1	B1 accept −11 100
	(c)		248 000	1	B1
					Total 3 marks

2	(a)		100	1	B1
	(b)		1 ¾ pictures	1	B1
	(c)	$2\frac{1}{2}+3\frac{1}{4}+5+4\frac{1}{4}+'1\frac{3}{4}'(=16\frac{3}{4})$ oe **or** $2\frac{1}{2}\times 20+3\frac{1}{4}\times 20+5\times 20+4\frac{1}{4}\times 20+35\ (=335)$ **or** 50 + 65 + 100 + 85 + 35 (= 335)		3	M1 ft from (b) for adding up the number of squares or finding the total number of books – allow one error or omission
		$500 - '16\frac{3}{4}' \times 20$ oe **or** 500 – '335'			M1 ft
			165		A1
					Total 5 marks

3	(a)		cylinder	1	B1
	(b)(i)		6	1	B1
	(b)(ii)		8	1	B1
	(c)	20 × 8 × 11		2	M1
			1760		A1
					Total 5 marks

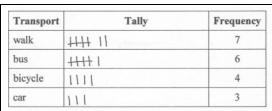
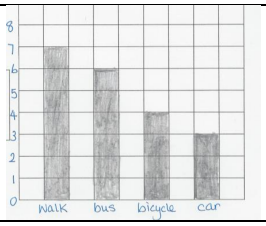
6	a		6 squares shaded	1	B1	
	b		$\frac{3}{10}$	1	B1	
	c	$\frac{1}{2} = \frac{30}{60} = 0.5$ or 50% $\frac{3}{4} = \frac{45}{60} = 0.75$ or 75% $\frac{4}{5} = \frac{48}{60} = 0.8$ or 80% $\frac{5}{6} = \frac{50}{60} = 0.83...$ or 83...%	$\frac{1}{2}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}$	2	B2	can be given as fraction, decimal or percentage equivalents B1 for 3 fractions in the correct order **or** for 4 in fractions in the correct reverse order **or** for 2 fractions correctly converted to decimals or percentages **or** 2 fractions written with a common denominator that is a multiple of 60
	d	$14 \div 5 \times 9$			M1	
			25.2	2	A1	oe
						Total 6 marks

7	a		3	1	B1	
	b	$\frac{12}{60} \times 360$ or $360 \div 60 \times 12$ or $360 \div (60 \div 12)$ oe or $\left(\frac{12}{60} \times 100\right) \frac{20}{100} \times 360$			M1	M1 Allow two stages e.g. $\left(\frac{12}{60} \times 100\right) \frac{20}{100} \times 360$
			72	2	A1	
	c	$\frac{35}{100} \times 60$ or 0.35×60 oe			M1	
			21	2	A1	
						Total 5 marks

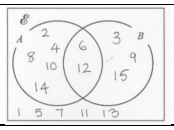
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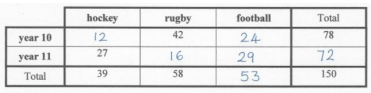
The correct answer, unless obtained from an incorrect method, should be taken to imply a correct method.

Question		Working	Answer	Mark	Notes
1	(a)		44	1	B1
	(b)		6	1	B1
	(c)		36	1	B1
	(d)		17	1	B1
	(e)		8, 76	1	B1 Must have both and no others
					Total 5 marks

2	(a)			2	B2	for all correct frequencies (B1 for 2 or 3 correct frequencies or 2, 3 or 4 correct tallies with no frequencies (or incorrect frequencies) or frequencies written as probabilities with 2, 3 or 4 correct numerators)
	(b)			3	B2 ft	For 4 correct bars ft from table (B1ft for 2 or 3 correct bars ft from table)
					B1	For clear labels for bars and linear scale starting at 0 oe Condone bars of different widths
						Total 5 marks

8	(a)	95 ÷ (30 ÷ 24) oe eg 95 ÷ 1.25 **or** 95 × (24 ÷ 30) oe eg 95 × 0.8		2	M1
		Working not required, so correct answer scores full marks (unless from obvious incorrect working)	76		A1 Answer may be in the table or clearly stated on the diagram
	(b)	French "76" Arabic 60° English 60 and 75° Spanish 100°	Correct "76" and 60, angles of $60^{[o]}$, $75^{[o]}$ and $100^{[o]}$ and correct pie chart	3	B3 B3 for fully correct pie chart (including labels) and 3 correct angles and *their* 76 (answer from (a)) for frequency for French and 60 for frequency for English in the table **OR** B2 for 3 or 4 numbers from *their* 76 or $60^{[o]}$ or 60 or $75^{[o]}$ or $100^{[o]}$ in the table **and** at least one angle in pie chart correct **or** 5 numbers: *their* 76, $60^{[o]}$, 60, $75^{[o]}$ and $100^{[o]}$ in the table with no pie chart (or incorrect pie chart) **OR** B1 for two numbers from *their* 76 or $60^{[o]}$ or 60 or $75^{[o]}$ or $100^{[o]}$ in the table NB Use their value from part (a) throughout their working
					Total 5 marks

14		Fully correct Venn diagram	3	B3 for all 4 correct regions B2 for 3 correct regions B1for 2 correct regions
				Total 3 marks

15	(a)			3	B3 for all 6 entries (B2 for 4 or 5 correct entries) (B1 for 2 or 3 correct entries)
	(b)	$\frac{78}{150} \times 100$ oe		2	M1
		Working not required, so correct answer scores full marks (unless from obvious incorrect working)	52		A1
					Total 5 marks

Question		Working	Answer	Mark	Notes	
3	(a)		Wednesday	1	B1	Accept Wed
	(b)		55	1	B1	
	(c)		Correct Bars	1	B1	Susan 1.5 cm, Philip 4 cm (and having the correct key)
	(d)	$\frac{25}{100}\times180$ or 0.25×180 or $180\div4$ oe		2	M1	
			45		A1	
						Total 5 marks

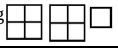
4	(a)		Chicago	1	B1	Accept misspellings
	(b)		16	1	B1	accept –16
	(c)	$-1+2\times3$		2	M1	for clearly adding 3 lots of 2 or the sequence – 1, 1, 3, 5
			5		A1	
						Total 4 marks

5	(a)	800×1.75		2	M1	
			1400		A1	
	(b)	$60 - (98 \div 1.75)$ oe	$60\times1.75-98$ (= 7) **and** "7"÷1.75	2	M1	accept $(98 \div 1.75) - 60$
			4		A1	accept – 4
						Total 4 marks

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Apart from Questions 12c, 18, 21 and 23, the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method						
Q		**Working**	**Answer**	**Mark**		**Notes**
1	(a)		25	1	B1	cao
	(b)		1 and ½ squares	1	B1	Oe the half symbol can be drawn in any direction.
	(c)		Monday	1	B1	M or Mon (allow incorrect spelling if meaning is clear)
	(d)	20 + 55 + 40 + '25' + 30		2	M1	check by side of pictogram for working – allow values without '+' signs if clear attempt to add (allow one error or omission)
			170		A1	cao
						Total 5 marks

2	(a)		2.001, 2.07, 2.1, 2.12, 2.19	1	B1	cao
	(b)		6 tenths	1	B1	oe eg tenths, six tenths, $\frac{6}{10}$ (do not allow 0.6 or .6)
	(c)		3.49	1	B1	cao
	(d)		60	1	B1	cao
						Total 4 marks

3	(a)		600	1	B1
	(b)		4.5	1	B1
	(c)	3 × 1000 (= 3000) **or** 225 ÷ 1000 (= 0.225)		4	M1
		"3000" ÷ 225 (= 13.3...) oe **or** 3 ÷ 0.225 (= 13.3...) oe			M1
		"3000" – ("13" × 225) **or** [3 – (13 × "0.225")] × 1000			M1 for a complete method
			75		A1
					Total 6 marks

4	(a)		14	1	B1
	(b)		Cruise  Skiing 	2	B1 correct symbol for Cruise B1 correct symbols for Skiing
	(c)			2	M1 $\frac{7}{a}$ where $a \geq 7$ **or** $\frac{b}{40}$ where $b \leq 40$
			$\frac{7}{40}$		A1 oe
					Total 5 marks

11	$9.2\times\frac{500}{1000}$ **or** 9.2 ÷ 2 (= 4.6) oe		4	M1	for a method to find the cost of 500g of Cheddar
	6.3 – "4.6" (= 1.7)			M1	for a method to find the cost of 200g of Stilton
	"1.7"$\times\frac{1000}{200}$ **or** "1.7" × 5 oe			M1	for a complete method to find the cost of 1kg of Stilton
		8.5(0)		A1	
					Total 4 marks

12	eg $3x - 24 + 102 - x = 180$ oe **or** $90 + 90 + 3x - 24 + 102 - x = 360$ oe		3	M1	for setting up a correct equation
	eg $2x = 180 - 78$ oe **or** $2x = 360 - 258$ oe **or** eg (180 + 24 – 102) ÷ 2 **or** 360 – (90 + 90 – 24 +102) ÷ 2			M1	for simplifying and isolating the x term **or** for a complete calculation to find the value of x
		51		A1	
					Total 3 marks

13	(a)	150 ÷ (90 ÷ 18) oe eg 150 ÷ 5			2	M1 for a complete method to find the number of people for running
				30		A1 if answer line is blank, check the table for answer
	(b)	eg 360 − (90 + 150 + 15 × "5") (= 45) oe	eg 360 ÷ "5" (= 72)		3	M1 for working out the angle for swimming **or** the total number of people check the table for answers ft their "5" from 90 ÷ 18
		"45" ÷ "5"	"72" – (18 + 15 + "30")			M1 for a complete method to work out the number of people for swimming ft their "5" from 90 ÷ 18 ft their "30" from (a)
				9		A1 if answer line is blank, check the table for answer
						Total 5 marks

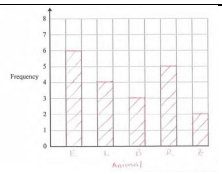
3	(a)			2	M1	for at least 2 correct tallies or frequencies
		Correct answer scores full marks (unless from obvious incorrect working)	Frequencies of 5, 2, 4, 3, 6		A1	mark frequencies only – in either column If no other marks awarded, award SCB1 for answers of $7\times\left(\frac{14.5-9y}{2}\right)+3y=8$
	(b)		Correct bar chart (ft (a))	3	B3	B1 for labelling the bars (can be abbreviations) B2ft for 5 column heights correct (B1ft for 3 or 4 column heights correct)
						Total 5 marks

4	(a)		16 15	1	B1	oe eg 16:15, 16.15
	(b)		5 (hours) 25 (minutes)	2	B2	(B1 for 5 (hours) **or** 25 (minutes) **or** 325 (minutes) **or** a time equivalent to 5 (hours) 25 (minutes))
						Total 3 marks

15	(a)	$138 \div \frac{72}{12}$ oe or $138 \div$ "6"		2	M1
		Correct answer scores full marks (unless from obvious incorrect working)	23		A1
	(b)	$18 + x + 2x = 90$ oe or $90 - 18$ (= 72)		3	M1
		$x = \frac{90-18}{3} = 24$ or "72" ÷ 3 (= 24)			M1
		Correct answer scores full marks (unless from obvious incorrect working)	$\frac{24}{90}$		A1 oe or 0.26(666…) or 26(.666…)% truncated or rounded
					Total 5 marks

Question		Working	Answer	Mark	Notes
2	(a)		52	1	B1 Allow 'fifty two'
	(b)		1 full symbol and a half symbol	1	B1 The half symbol can be made of 2 quarter symbols. The half symbol can be the top 2 parts, the bottom 2 parts, the two left parts etc
	(c)		20	1	B1 Allow 'twenty'
	(d)			2	M1 for 56 : 48 **or** other correct ratio that is not in simplest form eg 14 : 12 or 3.5 : 3 **or** for 6 : 7 or $\frac{6}{7}$:1 or 0.85 : 1 or 0.86 : 1 or 1 : 1.16 or 1 : 1.17 oe or $\frac{7}{6}$
			7 : 6		A1 allow $1:\frac{6}{7}$ or 1 : 0.85 or 1 : 0.86 or 1 : 0.857… or $\frac{7}{6}$:1 or 1.16 : 1 or 1.17 : 1 or $1.166(...)$: 1 oe
					Total 5 marks

26	$3x+6+5x+8+7x-9=320$ oe eg $15x + 5 = 320$ Could be implied by $(320 - 5) \div 15$ oe		5	M1	a correct method to find the correct value of x for year 11 students eg an equation
	$(x =) 21$ or $(3x =) 63$ *Correct answer of 21 or 63 scores 2 marks (unless from obvious incorrect working)*			A1	For the correct value for x or $3x$
	$3 \times$ "their 21" + 6 (= 69) or "their 63" + 6 (= 69) **Look for 69 by the side of the table**			M1ft	dep on M1 a correct method to find the number for year 11 Biology ft their value of x as long as only one value of x is offered and it is a clear intention to be x
	$\frac{126}{360}\times 300 (=105)$ oe eg $\frac{300}{360} (=\frac{5}{6})$ **and** $\frac{5}{6}\times 126 (=105)$ or $\frac{360}{300}=1.2$ **and** $126 \div 1.2$ (= 105) oe			M1	indep for a correct method to find the number of year 10 whose favourite is Biology $\frac{300}{360}=0.8\dot{3}$ (so allow 0.83)
	dependent on a seeing 21 or 63	36		A1	cao dep on A1 previously scored
					Total 5 marks

Question		Working	Answer	Mark	Notes
2*	(a)	elephant – 6 lion – 4 buffalo – 3 rhinoceros – 5 zebra - 2	Correct list of frequencies 6, 4, 3, 5, 2	2	B2 for all correct frequencies (ignore tally column) (B1 for 3 or 4 correct frequencies or for 4 or 5 tallies correct but not totalled or for frequencies written as probabilities with 3 or 4 or 5 correct numerators)
	(b)		A correctly labelled bar chart	3	B2 B2ft for all 5 correct bars, ft their figures (Do not follow through 0) (B1ft for 3 or 4 correct bars, ft their figures, (Do not follow through 0) or for 5 correct indications of heights, eg, cross, dot, etc. (Do not follow through 0)) NB Condone gaps of different widths or no gaps between bars and also bars of different widths B1 for all 5 bars labelled – use of initials or a key is acceptable
					Total 5 marks

Question		Working	Answer	Mark	Notes
3	(a)		$4d$	1	B1 allow $d4$
	(b)		w^5	1	B1 cao
	(c)		7	1	B1 cao
	(d)		$10r + 5y$	2	B2 for $10r + 5y$ (B1 for $10r$ or for $(+)5y$)
					Total 5 marks

Question		Working	Answer	Mark	Notes
1	(a)		−8, −5, 0, 1, 3	1	B1
	(b)		2.082, 2.28, 2.5, 2.805, 2.85	1	B1
	(c) (i)		14	1	B1
	(ii)		19	1	B1
					Total 4 marks

2	(a)		Bar drawn to 12	1	B1
	(b)		Bogota, Lima	1	B1
	(c)		Manila	1	B1
	(d)		11	1	B1
	(e)	90 : 60 oe			M1 or for an answer of 2 : 3
			3 : 2	2	A1 cao
					Total 6 marks

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Apart from Q2 (where the mark scheme states otherwise) the correct answer, unless obtained from an incorrect method, should be taken to imply a correct method.						
Question		**Working**	**Answer**	**Mark**	**Notes**	
1	(a)		Nine thousand two hundred and eighty	1	B1	
	(b)		New York	1	B1	
	(c)		700	1	B1	
	(d)		Kolkata	1	B1	
	(e)		17 000	1	B1	
						Total 5 marks
2	(a)		24	1	B1	
	(b)	26 – 16 (= 10)	10	2	M1 A1	
	(c)		One and half naan breads drawn	1	B1	
	(d)	24 + 20 + 16 + 26 + 12 (= 98) or 12 × 8 + 2 (= 98)	No and 98 seen	2	M1 A1	Must see "No" or "Not correct", "Wrong" etc.
						Total 6 marks
3	(a)		Obtuse	1	B1	
	(b)		Octagon	1	B1	
						Total 2 marks
4	(a)		Marked at 0	1	B1	
	(b)		Marked at 0.5	1	B1	
						Total 2 marks

8	(a)	2 + 4 + 6 + 5		2	M1	
			17		A1	
	(b)	8 + 5 + 6		2	M1	
			19		A1	
	(c)	3 + 4 + 2 + 5		2	M1	
			14		A1	If no marks awarded, SC B1 for 6 + 4 + 2 + 2 + 1 (=15)
						Total 6 marks

9	(0.5 × 4 × 6) – (0.5 × 2 × 3) or 2 × 3 + 0.5 × 2 × 3 or (0.5 × 4 × 6) – (0.25 × "0.5 × 4 × 6") oe		3	M2	if not M2 then M1 for either 0.5 × 4 × 6 (= 12) or 0.5 × 2 × 3 (= 3) if not M2 then M1 for either area of 1 large parallelogram (2 × 3) or 1 triangle (0.5 × 3 × 2) Allow M1 for consistent use of incorrect side lengths, eg 0.5 × 5 × 7
		9		A1	
					Total 3 marks

Question	Working	Answer	Mark	Notes
2 a		Kenya	1	B1
b	67 – 27 (may be seen on bar chart)	40	2	M1 for $x - 27$ (can be implied by an answer of 39, 41) A1 cao
c	56 : 42 oe **or** 3 : 4 **or** 1 : $\frac{4}{3}$ oe	4 : 3	2	M1 **or** for an unsimplified ratio with one value correct e.g. 56 : 41, 66 : 42 **or** for 53 : 41 **or** for 3 and 4 in incorrect notation E.g. $\frac{3}{4}$ or $\frac{4}{3}$ A1 allow 1 : $\frac{3}{4}$ **or** 1 : 0.75
d	46 + 37 + 38 (=121) **or** $\frac{46}{m}$, $m > 46$	$\frac{46}{121}$	2	M1 A1 cao

International GCSE Maths					
Apart from Q13, 20 & 21 (where the mark scheme states otherwise) the correct answer, unless obtained from an incorrect method, should be taken to imply a correct method.					
Q		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		12 348	1	B1
	(b)		84 312	1	B1
	(c)		1,3	2	B2 for both correct values -1 eeoo
	(d)		2,3	2	B2 for both correct values -1 eeoo
					Total 6 marks

2	(a)		Wednesday	1	B1	
	(b)	4 : 2.5 or 16 : 10 oe		2	M1	
			8 : 5		A1	M1 A0 for 5 : 8
	(c)		3.5 "envelopes"	1	B1	Accept  for half an envelope
	(d)	$\frac{6}{14}$		2	M1	
			$\frac{3}{7}$		A1	
	(e)	eg Heights of bars (cms): 7, 5.5, 3 or heights of 3.5, 2.75, 1.5 cms	bars at correct heights and correct scale	2	B2	B2 for all bars at correct heights with a correct scale (at least one value, not contradicted. 0 implied) If not B2 then B1 for 1 error on heights **or** no scale, but with heights in correct proportion eg 7, 5.5, 3 cms
						Total 8 marks