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

## Equations & Inequalities (A2)

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

58 questions · 194 marks · Mark schemes included

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

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**HOW TO USE THIS BOOKLET**

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

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

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

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

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

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

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| <b>A2a LINEAR EQUATIONS</b> |                             | 34 Qs · 111 marks | <b>3</b>  |
| 1. <b>Q3</b>                | GCSE Paper 1F November 2017 | 1                 | <b>4</b>  |
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| QUESTION       | SOURCE                                   | MARKS            | PAGE      |
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| <b>A2e</b>     | <b>ITERATION &amp; NUMERICAL METHODS</b> |                  |           |

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



# QUESTIONS

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58 questions · 194 marks · 4 sub-topics

SUB-TOPIC A2a

## LINEAR EQUATIONS

Sub-topic A2a · 34 questions · 111 marks · lowest tariff first



**Answer ALL questions.**

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

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

- 1** (a) Change 365 cm into metres.

..... m  
(1)

- (b) Change 2.7 kg into grams.

..... g  
(1)

**(Total for Question 1 is 2 marks)**

- 2** Work out  $2 + 7 \times 10$

.....

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

- 3** Solve  $\frac{y}{4} = 10.5$

$y =$  .....

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

- 4** Here are four numbers.

−9                      −2                      2                      9

Write one of these numbers in each box to make a correct calculation.

$$\boxed{\text{.....}} + \boxed{\text{.....}} = -7$$

**(Total for Question 4 is 1 mark)**

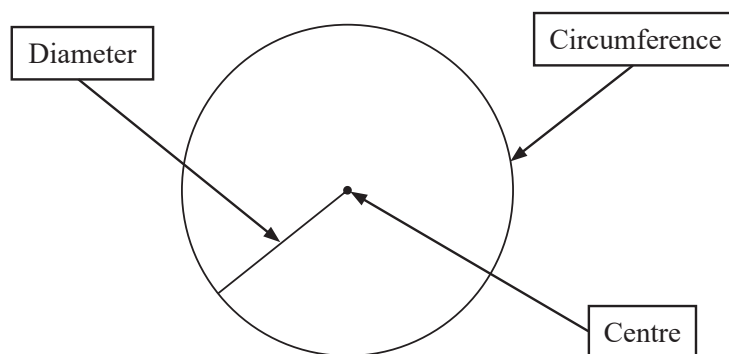


5 Solve  $p - 2 = 3$

$p = \dots\dots\dots$

(Total for Question 5 is 1 mark)

6 Freddie adds labels to this diagram of a circle.



Explain why one of the labels is wrong.

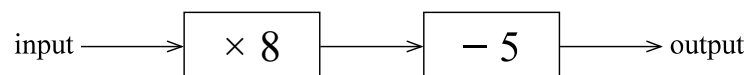
(Total for Question 6 is 1 mark)

- 7 Harry has 20 sweets.  
He gives 7 of the sweets to Nadia.

What fraction of the 20 sweets does Harry have now?

(Total for Question 7 is 2 marks)

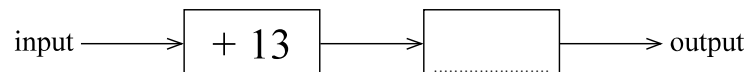
- 8 Here is a number machine.



- (a) Work out the output when the input is 6

(1)

Here is a different number machine.



When the input is 17, the output is 10

- (b) Complete the number machine.

(1)

(Total for Question 8 is 2 marks)



19 Solve  $4(x - 6) = 44$

$$x = \dots\dots\dots$$

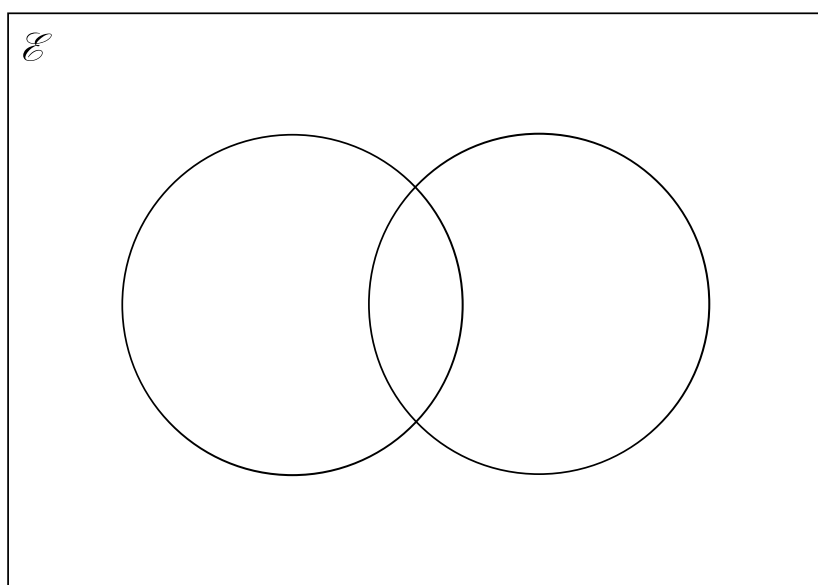
(Total for Question 19 is 2 marks)

20  $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13\}$

$$A = \{\text{multiples of 3}\}$$

$$B = \{\text{even numbers}\}$$

Complete the Venn diagram for this information.



(Total for Question 20 is 4 marks)

10 (a) Solve  $3m = 36$

$$m = \dots\dots\dots$$

(1)

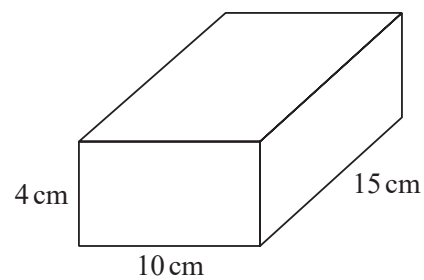
(b) Solve  $7 - x = 3$

$$x = \dots\dots\dots$$

(1)

(Total for Question 10 is 2 marks)

11 Here is a cuboid.



Work out the volume of the cuboid.

.....

(Total for Question 11 is 3 marks)

16 Solve  $\frac{x}{7} + 9 = 4$

$x = \dots\dots\dots$

(Total for Question 16 is 2 marks)

- 17 Blake works 32 hours a week in the UK.  
She is paid £473.28 per week.

Blake applies for a job in Australia.  
The rate of pay is 26.40 Australian dollars per hour.

£1 = 1.796 Australian dollars

Blake thinks the rate of pay in Australia is greater than the rate of pay in the UK.

Is Blake correct?

You must show how you get your answer.

(Total for Question 17 is 3 marks)



16 Solve  $5x - 6 = 3(x - 1)$

$x =$  .....

(Total for Question 16 is 3 marks)

17 Emily buys a pack of 12 bottles of water.  
The pack costs £5.64

Emily sells all 12 bottles for 50p each.

Work out Emily's percentage profit.  
Give your answer correct to 1 decimal place.

.....%

(Total for Question 17 is 3 marks)



11 (a) Solve  $x + x + x = 51$

$$x = \dots\dots\dots (1)$$

(b) Solve  $\frac{y}{4} = 3$

$$y = \dots\dots\dots (1)$$

(c) Solve  $2f + 7 = 18$

$$f = \dots\dots\dots (1)$$

(Total for Question 11 is 3 marks)



25 Solve  $\frac{5-x}{2} = 2x-7$

$x = \dots\dots\dots$

(Total for Question 25 is 3 marks)



- 9 (a) The  $n$ th term of a sequence is  $3n + 4$

Explain why 21 is not a term of this sequence.

.....

.....

(2)

- (b) Here are the first three terms of a different sequence.

1            2            4

Write down two numbers that could be the 4th term and the 5th term of this sequence.  
Give the rule you have used to get your numbers.

.....

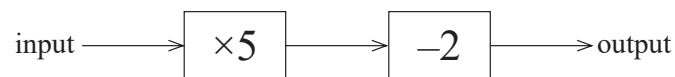
.....

.....

(2)

(Total for Question 9 is 4 marks)

- 10 Here is a number machine.



- (a) Work out the **output** when the input is 8

.....

(1)

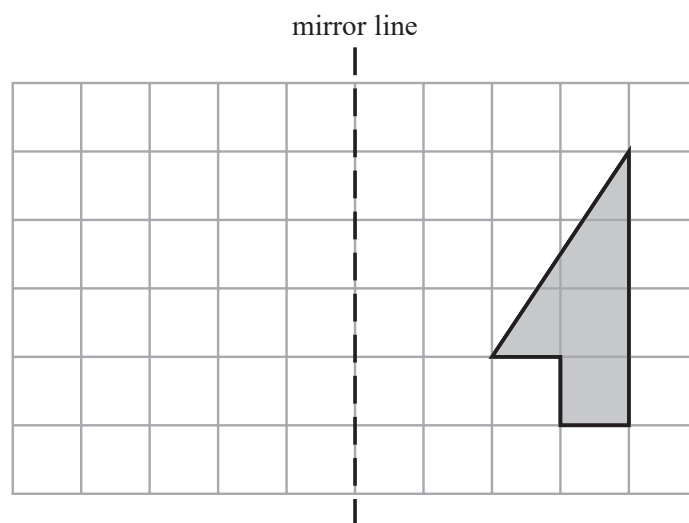
- (b) Work out the **input** when the output is 28

.....

(2)

(Total for Question 10 is 3 marks)

11



Reflect the shaded shape in the mirror line.

(Total for Question 11 is 2 marks)

12 The diagram shows a number machine.



(a) Find the output when the input is 7

.....  
(1)

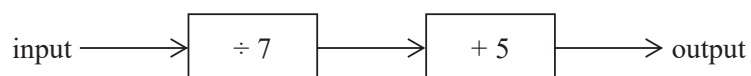
(b) Find the input when the output is 41

.....  
(2)

(Total for Question 12 is 3 marks)



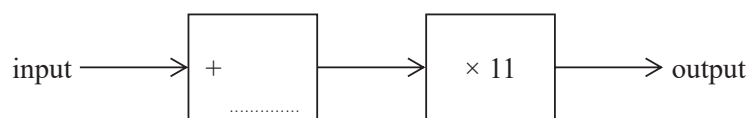
12 Here is a number machine.



(a) Work out the output when the input is 28

.....  
(1)

Here is a different number machine.  
The number machine is not complete.



When the input is 8, the output is 154

(b) Complete the number machine.

(2)

(Total for Question 12 is 3 marks)



7 Here is a list of 8 letters.

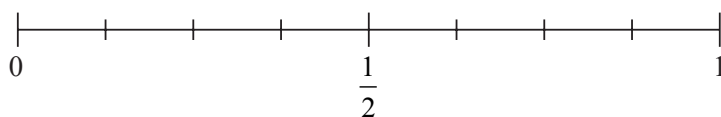
B C A A A A B A

(a) Write down the mode.

.....  
(1)

One of the 8 letters is going to be picked at random.

(b) (i) On the probability scale, mark with a cross (×) the probability that this letter will be B.



.....  
(1)

(ii) Find the probability that this letter will be C.

.....  
(1)

(Total for Question 7 is 3 marks)

8 (a) Solve  $m - 3 = 4$

$m =$  .....  
(1)

(b) Solve  $3n + n = 24$

$n =$  .....  
(2)

(Total for Question 8 is 3 marks)



**11** Gabriel thinks of a number.

He multiplies his number by 5 and then adds 7  
His answer is 72

What number did Gabriel think of?

(Total for Question 11 is 3 marks)



18 Solve  $4(2x - 3) = 20$

$x =$  .....

(Total for Question 18 is 3 marks)

19 Jenny invests £3000 for 6 years at  $y\%$  simple interest per year.

At the end of the 6 years, Jenny has received a total of £450 in interest.

Work out the value of  $y$ .

$y =$  .....

(Total for Question 19 is 3 marks)



- 24** Andrew invests £4500 in a savings account for 2 years.  
The account pays compound interest at a rate of 3.4% per year.

Calculate how much Andrew has in this savings account at the end of the 2 years.

£.....

(Total for Question 24 is 2 marks)

- 25** Solve  $5x - 14 = 52 - x$

$x =$  .....

(Total for Question 25 is 3 marks)



17 Solve  $2(4x - 5) = 18$

$x =$  .....

(Total for Question 17 is 3 marks)

18 Write down the value of  $10^0$

.....

(Total for Question 18 is 1 mark)



25 Make  $w$  the subject of the formula  $y = 3w - 10$

(Total for Question 25 is 2 marks)

26 Solve  $x^2 - 2x - 15 = 0$

(Total for Question 26 is 3 marks)

**TOTAL FOR PAPER IS 80 MARKS**



6 (a) Solve  $x + x + x + x = 20$

$$x = \dots\dots\dots (1)$$

(b) Solve  $y + 7 = 24$

$$y = \dots\dots\dots (1)$$

(c) Solve  $\frac{w}{2} = 4$

$$w = \dots\dots\dots (1)$$

(Total for Question 6 is 3 marks)



13 Here is a number machine.



(a) Find the output when the input is 6

.....  
(1)

(b) Find the input when the output is  $-11$

.....  
(2)

(Total for Question 13 is 3 marks)

5 Write down a sensible metric unit that could be used to measure

(i) the height of a mountain

.....  
(1)

(ii) the weight of a button.

.....  
(1)

(Total for Question 5 is 2 marks)

6 Four numbers add up to 76

One of the numbers is 13

The other three numbers are each the same number.

Work out the value of each of the other three numbers.

.....  
(Total for Question 6 is 3 marks)



- 5 Write down two factors of 32

..... , .....

**(Total for Question 5 is 1 mark)**

- 6 Abi has some £10 notes and some £20 notes.  
The notes have a total value of £400

Abi has six £20 notes.

Work out the number of £10 notes Abi has.

.....

**(Total for Question 6 is 3 marks)**



19 (a) Solve  $4(x - 5) = 18$

$$x = \dots\dots\dots (2)$$

$-3 < t \leq 2$   
 $t$  is an integer.

(b) Write down all the possible values of  $t$ .

$\dots\dots\dots (2)$

(Total for Question 19 is 4 marks)

20 Azmol is paid £1500 per month.

He is going to get a 3% increase in the amount of money he is paid.

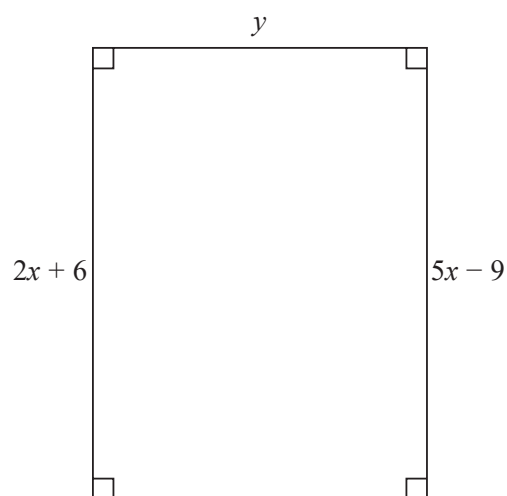
Work out how much money Azmol will be paid per month after the increase.

£ $\dots\dots\dots$

(Total for Question 20 is 2 marks)



28 Here is a rectangle.



All measurements are in centimetres.

The area of the rectangle is  $48 \text{ cm}^2$ .

Show that  $y = 3$

(Total for Question 28 is 4 marks)



10 (a) Solve  $t + t + t = 12$

$$t = \dots\dots\dots$$

(1)

(b) Solve  $x - 2 = 6$

$$x = \dots\dots\dots$$

(1)

(c) Solve  $6w + 2 = 20$

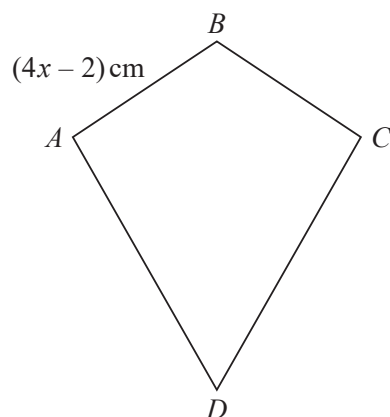
$$w = \dots\dots\dots$$

(2)

(Total for Question 10 is 4 marks)



16  $ABCD$  is a kite.



$$AB = (4x - 2) \text{ cm}$$

Jasper says that  $x$  could be 0.5

(a) Explain why Jasper cannot be correct.

.....

.....

.....

(1)

$$AD = 3AB$$

The kite has a perimeter of 64 cm.

(b) Find the value of  $x$ .

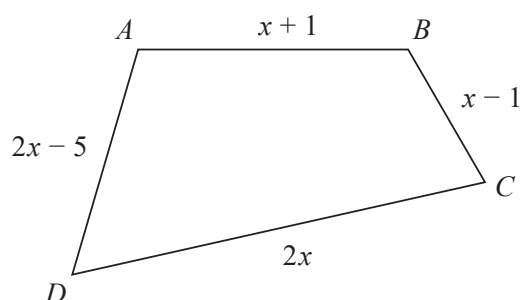
$$x = \text{.....}$$

(3)

(Total for Question 16 is 4 marks)



16 Here is a quadrilateral  $ABCD$ .



All the measurements are in centimetres.

The perimeter of  $ABCD$  is 52 centimetres.

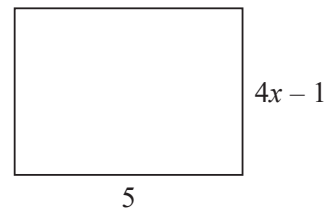
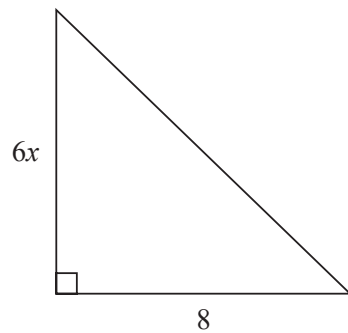
Work out the length of  $DC$ .

..... centimetres

(Total for Question 16 is 4 marks)



24 Here is a triangle and a rectangle.



All measurements are in centimetres.

The area of the triangle is  $10 \text{ cm}^2$  greater than the area of the rectangle.

Work out the value of  $x$ .

$x = \dots\dots\dots$

(Total for Question 24 is 4 marks)

12 Olly was asked to work out  $5 - 3 \times 4$

Olly wrote  $5 - 3 = 2$

He then worked out  $2 \times 4$

Explain what is wrong with Olly's method.

.....

.....

.....

(Total for Question 12 is 1 mark)

13 Here is a number machine.



(a) Find the output when the input is 11

.....  
(2)

Here is a different number machine.



When the input is 10, the output is 28

(b) Complete this number machine.

.....  
(2)

(Total for Question 13 is 4 marks)

24 Rick, Selma and Tony are playing a game with counters.

Rick has some counters.

Selma has twice as many counters as Rick.

Tony has 6 counters less than Selma.

In total they have 54 counters.

the number of counters Rick has : the number of counters Tony has =  $1 : p$

Work out the value of  $p$ .

$p = \dots\dots\dots$

(Total for Question 24 is 5 marks)



26 (a) Solve  $\frac{5x}{2} + 3 > 18$

.....  
(3)

(b) Factorise  $x^2 + 10x + 9$

.....  
(2)

(Total for Question 26 is 5 marks)

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**TOTAL FOR PAPER IS 80 MARKS**



24 Mano has three shelves of books.

There are  $x$  books on shelf **A**.

There are  $(3x + 1)$  books on shelf **B**.

There are  $(2x - 5)$  books on shelf **C**.

There is a total of 44 books on the three shelves.

All the books have the same mass.

The books on shelf **B** have a total mass of 7500 g.

Work out the total mass of the books on shelf **A**.

..... g

(Total for Question 24 is 5 marks)



9 Here is a number machine.



(a) Work out the output when the input is 13

.....  
(1)

(b) Work out the input when the output is 28

.....  
(2)

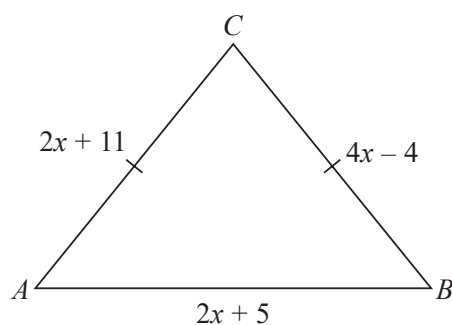
(c) Show that there is a number for which the output is the same as the input.

.....  
(2)

(Total for Question 9 is 5 marks)



26 The diagram shows triangle  $ABC$ .



In the diagram, all measurements are in centimetres.

$$AC = BC$$

The perimeter of the triangle is 72 cm.

Work out the area of the triangle.

.....  $\text{cm}^2$

(Total for Question 26 is 5 marks)



SUB-TOPIC A2b

# QUADRATIC EQUATIONS

Sub-topic A2b · 2 questions · 6 marks · lowest tariff first



24 Solve  $x^2 + 5x - 24 = 0$

(Total for Question 24 is 3 marks)



27 Solve  $x^2 - 7x - 18 = 0$

.....  
(Total for Question 27 is 3 marks)

- 28 In a sale, the normal price of a boat is reduced by 15%  
The sale price of the boat is £272 000

Work out the normal price of the boat.

£.....

(Total for Question 28 is 2 marks)

**TOTAL FOR PAPER IS 80 MARKS**



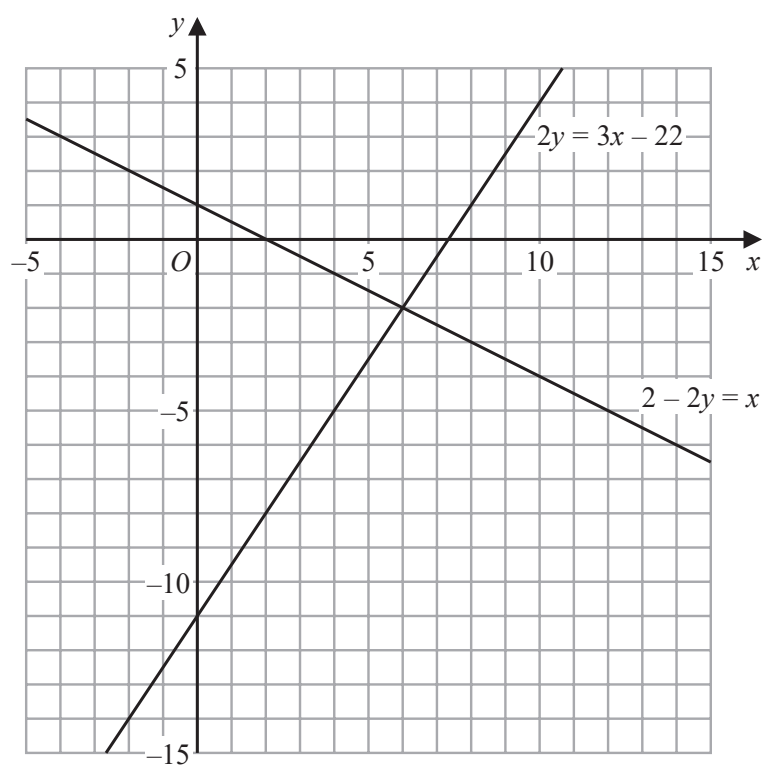
SUB-TOPIC A2c

# SIMULTANEOUS EQUATIONS

Sub-topic A2c · 12 questions · 38 marks · lowest tariff first



28



Use these graphs to solve the simultaneous equations

$$\begin{aligned}2 - 2y &= x \\ 2y &= 3x - 22\end{aligned}$$

$x =$  .....

$y =$  .....

(Total for Question 28 is 1 mark)



16 Solve the simultaneous equations

$$\begin{aligned}3x + y &= -4 \\ 3x - 4y &= 6\end{aligned}$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

(Total for Question 16 is 3 marks)



27 Solve the simultaneous equations

$$x + 3y = 12$$

$$5x - y = 4$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

(Total for Question 27 is 3 marks)

**TOTAL FOR PAPER IS 80 MARKS**



**25** Solve the simultaneous equations

$$\begin{aligned}5x + y &= 21 \\ x - 3y &= 9\end{aligned}$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

**(Total for Question 25 is 3 marks)**



**30** Solve the simultaneous equations

$$3x - 4y = 11$$

$$9x + 2y = 5$$

$$x = \dots\dots\dots$$

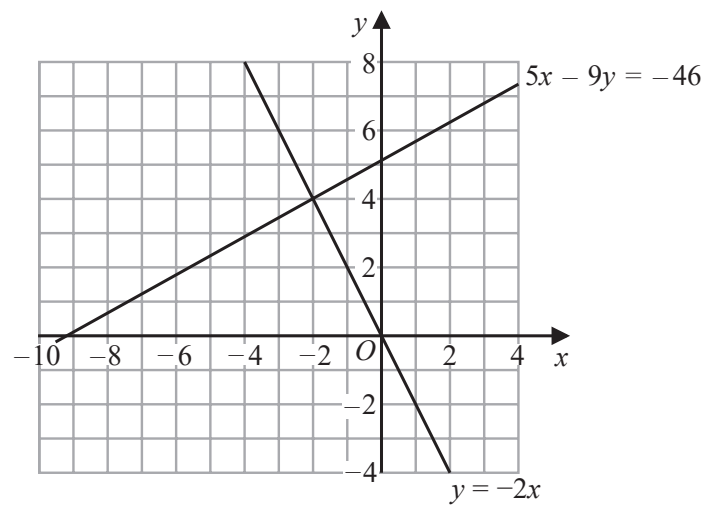
$$y = \dots\dots\dots$$

**(Total for Question 30 is 3 marks)**

---

**TOTAL FOR PAPER IS 80 MARKS**

28



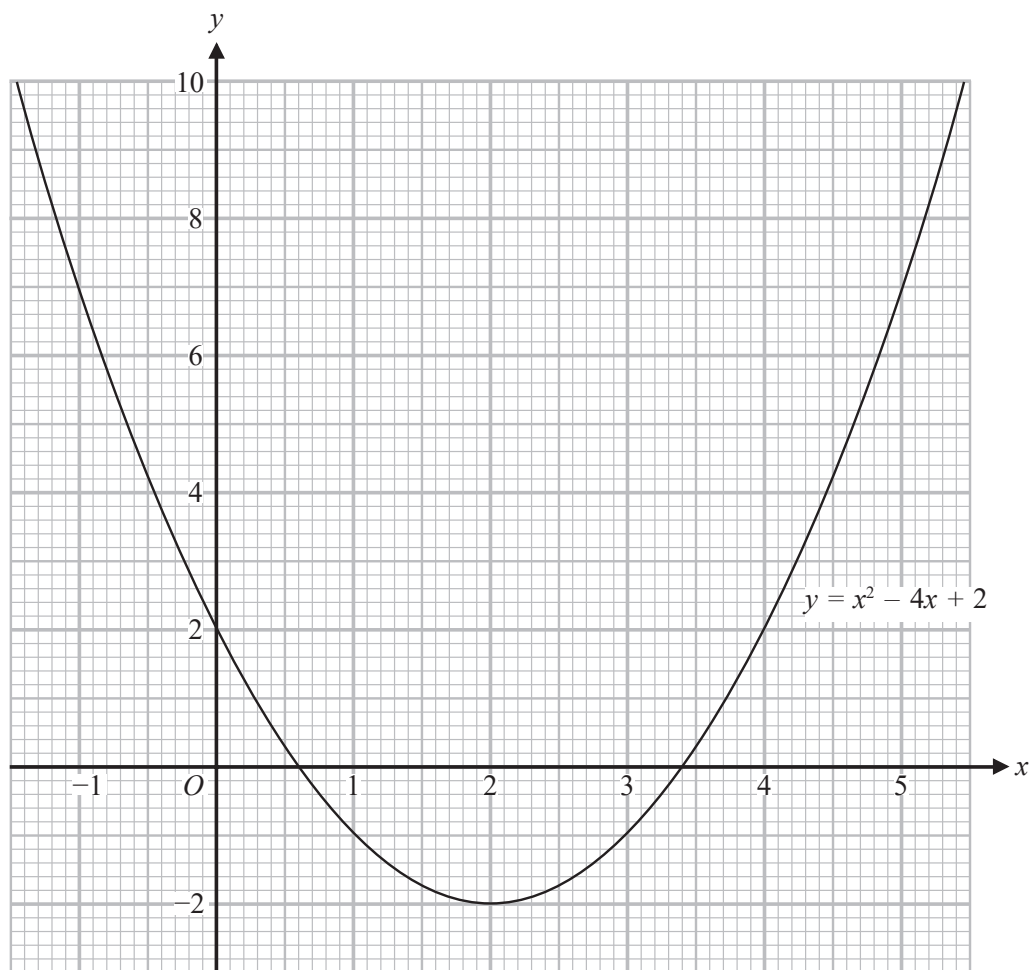
(a) Use these graphs to solve the simultaneous equations

$$\begin{aligned}5x - 9y &= -46 \\ y &= -2x\end{aligned}$$

$x =$  .....

$y =$  .....

(1)



(b) Use this graph to find estimates for the solutions of the quadratic equation  $x^2 - 4x + 2 = 0$

(2)

(Total for Question 28 is 3 marks)

**28** Solve the simultaneous equations

$$5x + 2y = 27$$

$$6x + 4y = 28$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

**(Total for Question 28 is 3 marks)**

---

**TOTAL FOR PAPER IS 80 MARKS**



**30** Solve the simultaneous equations

$$3x + y = -4.5$$

$$4x + 3y = -3.5$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

**(Total for Question 30 is 3 marks)**

---

**TOTAL FOR PAPER IS 80 MARKS**



**30** Solve algebraically the simultaneous equations

$$\begin{aligned}x + 7y &= 14 \\ 3x - y &= 9\end{aligned}$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

**(Total for Question 30 is 3 marks)**

---

**TOTAL FOR PAPER IS 80 MARKS**



- 17 5 tins of soup have a total weight of 1750 grams.  
4 tins of soup and 3 packets of soup have a total weight of 1490 grams.

Work out the total weight of 3 tins of soup and 2 packets of soup.

..... grams

(Total for Question 17 is 4 marks)



- 14 3 kg of flour costs £4.05  
5 kg of flour and 6 kg of sugar cost £11.85

Work out the cost of 2 kg of flour and 5 kg of sugar.

£.....

(Total for Question 14 is 4 marks)



15 (a) Factorise  $6a + 15$

.....  
(1)

(b) Solve  $4(3y + 1) = 28$

$y =$  .....  
(3)

(Total for Question 15 is 4 marks)

16 1 cup of tea and 1 cup of coffee cost £4.50  
3 cups of tea and 1 cup of coffee cost £8.50

Work out the total cost of 4 cups of tea and 3 cups of coffee.  
You must show all your working.

£.....

(Total for Question 16 is 5 marks)



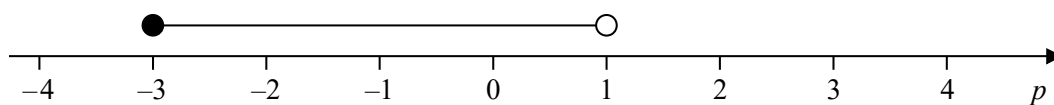
SUB-TOPIC A2d

# INEQUALITIES

Sub-topic A2d · 10 questions · 39 marks · lowest tariff first



19 Here is a number line.



Write down the inequality shown on the number line.

(Total for Question 19 is 2 marks)

20 Find the Lowest Common Multiple (LCM) of 108 and 120

(Total for Question 20 is 3 marks)



**23** Solve  $7x - 27 < 8$

.....  
(Total for Question 23 is 2 marks)

**24** Write 124 as a product of its prime factors.

.....  
(Total for Question 24 is 2 marks)



20 (a) Simplify  $c^5 \div c^2$

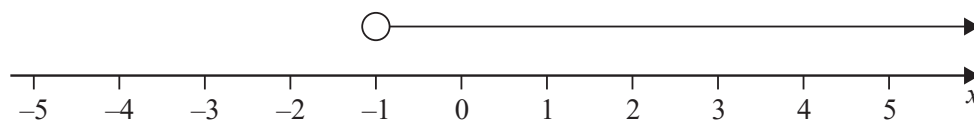
.....  
(1)

(b) Simplify  $(d^4)^3$

.....  
(1)

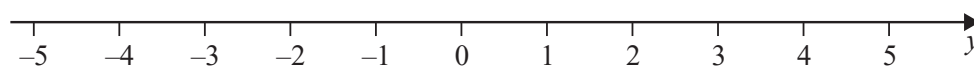
(Total for Question 20 is 2 marks)

21 (a) Write down the inequality shown on this number line.



.....  
(1)

(b) On the number line below, show the inequality  $-3 \leq y < 4$



(2)

(Total for Question 21 is 3 marks)

27 In a sale, normal prices are reduced by 30%

The sale price of a TV is £280

Work out the normal price of the TV.

£.....

(Total for Question 27 is 2 marks)

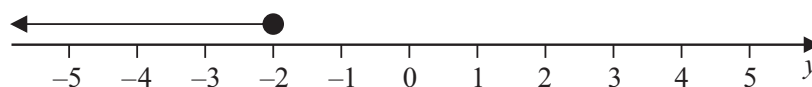
28 Solve  $x + 11 \leq 5 - \frac{1}{2}x$

(Total for Question 28 is 3 marks)

**TOTAL FOR PAPER IS 80 MARKS**



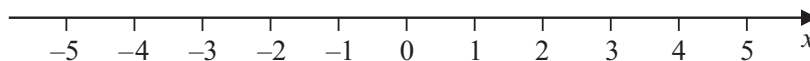
19 Here is an inequality in  $y$  shown on a number line.



(a) Write down the largest possible integer value for  $y$ .

.....  
(1)

(b) On the number line below, show the inequality  $-4 \leq x < 2$

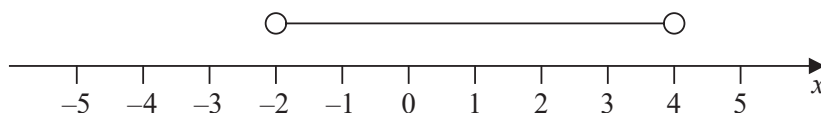


(2)

(Total for Question 19 is 3 marks)

23 Jenna is asked to show the inequality  $-3 < x \leq 4$  on a number line.

Here is her answer.



(a) Write down two mistakes Jenna has made.

1.....

.....

2.....

.....

(2)

(b) Work out the greatest integer that satisfies the inequality

$$5y - 7 < 16$$

.....

(2)

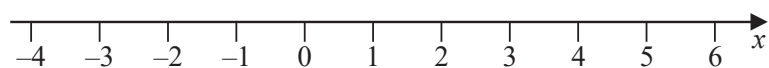
(Total for Question 23 is 4 marks)



19 (a) Factorise fully  $15w^2 - 5w$

.....  
(2)

(b) On the number line below, show the set of values of  $x$  for which  $-2 < x \leq 4$



(2)

(Total for Question 19 is 4 marks)

20 Use your calculator to work out the value of

$$\sqrt{\frac{208.3 - 15.7}{5.694 + 1.8^2}}$$

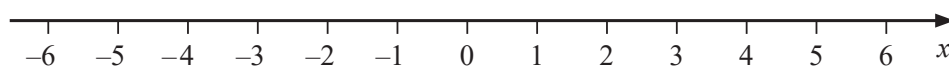
Write down all the digits on your calculator display.

.....  
(Total for Question 20 is 2 marks)

20 (a) Solve  $14n > 11n + 6$

(2)

(b) On the number line below, show the set of values of  $x$  for which  $-2 < x + 3 \leq 4$



(3)

(Total for Question 20 is 5 marks)

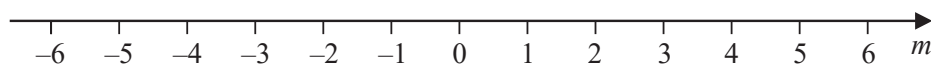
**23**  $-2 \leq n < 5$

$n$  is an integer.

(a) Write down the greatest possible value of  $n$ .

.....  
(1)

(b) On the number line below, show the inequality  $-4 \leq m < 1$



(2)

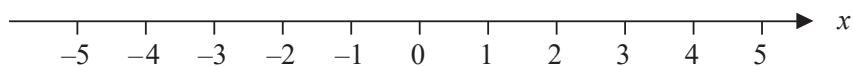
(c) Solve  $\frac{2}{5}g - 4 < 6$

.....  
(3)

(Total for Question 23 is 6 marks)



19 (a) On the number line, show the inequality  $x < 4$



(2)

$3 < y \leq 7$  where  $y$  is an integer.

(b) Write down all the possible values of  $y$ .

(2)

(c) Solve  $3x + 5 \geq x + 17$

(3)

(Total for Question 19 is 7 marks)

# MARK SCHEMES

official mark schemes, in the same order as the questions



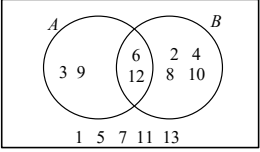
| Paper 1MA1: 1F |         |                    |                |                                                                                                                                                                  |
|----------------|---------|--------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer             | Mark           | Notes                                                                                                                                                            |
| 1 (a)          |         | 3.65               | B1             | cao                                                                                                                                                              |
| (b)            |         | 2700               | B1             | cao                                                                                                                                                              |
| 2              |         | 72                 | B1             | cao                                                                                                                                                              |
| 3              |         | 42                 | B1             | cao                                                                                                                                                              |
| 4              |         | -9 , 2             | B1             | cao accept either order.                                                                                                                                         |
| 5              |         | 47                 | B1             | cao                                                                                                                                                              |
| 6              |         | $L = 5a + 3$       | M1<br>M1<br>A1 | for expression $a - 1 + a + a + a + a + 4$ <b>or</b> $L =$ an expression in $a$<br>for $5a + 3$ <b>or</b> $L = a + a + a - 1 + a + a + 4$ oe<br>for $L = 5a + 3$ |
| 7 (a)          |         | (6 , - 2)          | B1             | cao                                                                                                                                                              |
| (b) i          |         | Correct point      | B1             | cao for point marked at (2, 9)                                                                                                                                   |
| (b) ii         |         | Yes with reasoning | B1             | Yes with correct substitution $4 \times 2 + 1 = 9$ <b>or</b> by drawing correct line on diagram                                                                  |
| (c)            |         | Correct line       | B1             | for drawing line $x = -2$ cao                                                                                                                                    |



| Paper: 1MA1/1F |                       |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                         |
|----------------|-----------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Additional guidance                                                                                                                                                     |
| 1              | 0.38                  | B1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                         |
| 2              | $\frac{3}{10}$        | B1   | or any equivalent fraction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3 : 10 or 0.3 or 30% get no marks                                                                                                                                       |
| 3              | 0.5                   | B1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                         |
| 4              | −4                    | B1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                         |
| 5              | 5                     | B1   | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                         |
| 6              | Explanation           | C1   | <p>for a correct explanation.</p> <p><b>Acceptable examples</b></p> <p>he has labelled the radius incorrectly</p> <p>the diameter (label) should read radius</p> <p>the diameter goes from one side (of the circle) to the other</p> <p>the radius is labelled diameter</p> <p><b>Not acceptable examples</b></p> <p>a label is wrong</p> <p>there is nothing wrong with his labels</p> <p>the radius is wrong</p> <p>the centre is wrong, it should be the radius</p> <p>he has incorrectly labelled the diameter</p> | Do not accept a statement that is ambiguous, where one aspect contradicts another, eg. “the radius goes from the centre whereas the diameter goes all round the circle” |
| 7              | Three correct factors | B2   | for at least <b>three</b> from 1, 2, 4, 5, 10, 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | No incorrect factors<br>No repeats (within the chosen 3)<br>Ignore extra correct factors.<br>Accept factor pairs,<br>eg. $1 \times 20$ as two factors                   |
|                |                       | (B1) | for <b>two</b> correct factors from 1, 2, 4, 5, 10, 20 and no more than one incorrect factor)                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                         |



| Paper: 1MA1/2F |                  |                        |                                                                                                                                                                                                                                                                                                                                                |                                      |
|----------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Question       | Answer           | Mark                   | Mark scheme                                                                                                                                                                                                                                                                                                                                    | Additional guidance                  |
| 1              | -7, -4, -2, 1, 8 | B1                     | for -7, -4, -2, 1, 8                                                                                                                                                                                                                                                                                                                           | Accept reverse order 8, 1 -2, -4, -7 |
| 2              | 8000             | B1                     | cao                                                                                                                                                                                                                                                                                                                                            |                                      |
| 3              | 23               | B1                     | cao                                                                                                                                                                                                                                                                                                                                            |                                      |
| 4              | 4.2              | B1                     | for 4.2 <b>or</b> $\frac{21}{5}$ oe                                                                                                                                                                                                                                                                                                            |                                      |
| 5              | 7776             | B1                     | cao                                                                                                                                                                                                                                                                                                                                            |                                      |
| 6              | 14               | P1<br><br>P1<br><br>A1 | for making a start to the process<br>eg $14 \times 15 (= 210)$ <b>or</b> $14 \times 15 \times 6.50 (= 1365)$ <b>or</b> $1274 \div 6.50 (= 196)$<br><b>or</b> $14 \times 15 \times 6.50 - 1274 (= 91)$<br><br>for a complete process<br>eg $(14 \times 15 \times 6.50 - 1274) \div 6.50$ <b>or</b> $14 \times 15 - (1274 \div 6.50)$<br><br>cao |                                      |
| 7              | $\frac{13}{20}$  | M1<br><br>A1           | for $20 - 7 (= 13)$ <b>or</b> $\frac{7}{20}$ oe <b>or</b> 0.65 <b>or</b> 65%<br><br>for $\frac{13}{20}$ or equivalent fraction                                                                                                                                                                                                                 |                                      |
| 8 (a)          | 43               | B1                     | cao                                                                                                                                                                                                                                                                                                                                            |                                      |
| (b)            | - 20 or $\div 3$ | B1                     | for $\div 3$ <b>or</b> - 20 <b>or</b> $\times \frac{1}{3}$ <b>or</b> + -20                                                                                                                                                                                                                                                                     |                                      |

| Paper: 1MA1/3F |              |                          |                                                                                                                                                                                                                    |                                                                                                                                                                        |
|----------------|--------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer       | Mark                     | Mark scheme                                                                                                                                                                                                        | Additional guidance                                                                                                                                                    |
| 19             | 17           | M1<br><br>A1             | for correctly expanding the bracket, as part of an equation to get $4x - 24 = 44$<br><b>or</b> for dividing both sides of the equation by 4 as a first step,<br>eg $\frac{4(x-6)}{4} = \frac{44}{4}$ oe<br><br>cao | Award M1 for an embedded value of 17 if not identified as the answer                                                                                                   |
| 20             | Venn Diagram | B1<br><br>M1<br>M1<br>A1 | for labelling diagram, accept “multiples of 3” and “even numbers” for labels<br><br>for correct numbers in at least one region<br>for correct numbers in at least two regions<br>for all regions correct           | Ignore all entries except the region you are marking for each method mark<br><br> |
| 21             | 8            | M1<br>M1<br>A1           | for $158220 - 146500 (=11720)$ <b>or</b> $158220 \div 146500 (=1.08)$<br><br>for complete method,<br>eg $(158220 - 146500) \div 146500 \times 100$ oe<br><b>or</b> $1.08 \times 100 - 100$<br><br>cao              | 0.08 as an answer implies M1                                                                                                                                           |



| Paper: 1MA1/2F |                 |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                     |
|----------------|-----------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Question       | Answer          | Mark     | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                             | Additional guidance |
| 8              | (a)(i) 30       | B1       | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                     |
|                | (ii) Reason     | C1       | reason, eg <u>angles</u> on a straight <u>line</u> add up to $180^\circ$                                                                                                                                                                                                                                                                                                                                                                                |                     |
|                | (b) Explanation | C1       | for explanation eg the two angles don't add up to 360<br><b>Acceptable examples</b><br>$90 + 280 = 370$<br>The two angles don't add up to 360<br>280 should be 270<br>Angles around a point equal $360^\circ$<br>It should be 360 (in a circle)<br>It should be 80<br>It should not be a right angle<br>It cannot be $280^\circ$<br><b>Not acceptable examples</b><br>They don't add up to 180<br>365 degrees in a circle<br>$\square$ means 90 degrees |                     |
| 9              | (a) 25          | B1       | for 25, accept answer in range 24 to 26                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |
|                | (b) 24          | M1       | for $40 \div 10 \times 6$                                                                                                                                                                                                                                                                                                                                                                                                                               |                     |
|                | (c) Comment     | A1<br>C1 | cao<br><br>(dep B1 or M1) ft for comment for their results, eg the two answers are quite close <b>or</b> answer to (b) is less than answer to (a) <b>or</b> the rule gives a smaller answer                                                                                                                                                                                                                                                             |                     |
| 10             | (a) 12          | B1       | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                     |
|                | (b) 4           | B1       | cao                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                     |

| Paper: 1MA1/3F |                   |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------|-------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer            | Mark                             | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Additional guidance                                                                                                                                                                                                                                                                                                                                                                 |
| 16             | -35               | M1<br><br>A1                     | for a correct first step, eg shows $\frac{x}{7} + 9 - 9 = 4 - 9$ or $\frac{x}{7} = 4 - 9$<br><br>or $\frac{7x}{7} + 9 \times 7 = 4 \times 7$ or $x + 63 = 28$<br><br>cao                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                     |
| 17             | No<br>(supported) | M1<br><br>M1<br><br>C1           | Working per week<br>for $26.4 \times 32$ (= \$844.80)<br><br>for “844.8” $\div 1.796$ (= £470.37...) or for $473.28 \times 1.796$ (= \$850....)<br><br>for No and correct figures (850... <b>and</b> 844.8) <b>or</b> 470.37...<br><br>Working per hour<br>for $473.28 \div 32$ (= £14.79)<br><br>for “14.79” $\times 1.796$ (= \$26.56....) or for $26.4 \div 1.796$ (= £14.699...)<br><br>for No and correct figures (14.79... <b>and</b> 14.699..) <b>or</b> 26.56...                                                        | Throughout units and trailing 0s need not be given.<br>Accept rounded or truncated figures throughout unless ambiguous.<br><br>“No” may be expressed in words eg “Australia pay is less”                                                                                                                                                                                            |
| 18             | 4.8               | P1<br><br>P1<br><br>P1<br><br>A1 | for finding missing length, eg $14 - 3.8 - 3.8$ (= 6.4)<br><br>for method to find area of triangle, eg [missing length] $\times 6 \div 2$ (= 19.2)<br><br>for method to find area of rectangle, eg [area of triangle] $\times 3.5$ (= 67.2) <b>or</b> writes an expression for the area of rectangle eg $14w$ or $14w \div 3.5$<br><br>for method to link both areas eg $14w = [\text{area of triangle}] \times 3.5$ or $[\text{area of triangle}] = 14w \div 3.5$ or $[\text{area of triangle}] \times 3.5 \div 14$<br><br>cao | Where [missing length] can be “6.4” or identified in working or on the diagram as the missing length<br><br>[area of triangle] must be identified as the area of the triangle OR come from:<br>[missing length] $\times 6 \div 2$ or<br>[missing length] $\times 6$ or<br>[decimal] $\times 6 \div 2$<br><br>Award 0 marks for a correct answer without correct supportive working. |

| Paper: 1MA1/2F |                                                                                                                |                |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------|----------------------------------------------------------------------------------------------------------------|----------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working                                                                                                        | Answer         | Mark                               | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 15             |                                                                                                                | 988            | P1<br><br>P1<br><br>P1<br>P1<br>A1 | for a process to find the amount of oil bought in November, eg $750 \div 0.5 (=1500)$ or $75000 \div 50 (=1500)$<br>for a process to find the amount of oil ordered in February, eg $"1500" + 1000 - 600 (=1900)$<br>(indep) for a process to calculate a 4% increase of their amount of oil, eg. or $"1900" \times 1.04 (=1976)$ or increase in price eg $1.04 \times 50 (=52 \text{ or } 0.52)$ or $1.04 \times 750 (=780)$<br>for a complete process to find the total cost of the calculated amount of oil eg $"52" \times "1900"$ or $"780" \times "1900" \div "1500"$<br>Cao |
| 16             |                                                                                                                | $1\frac{1}{2}$ | M1<br><br>M1<br>A1                 | for correct expansion of the bracket or dividing all terms by 3 as a first step eg $3x - 3$ or $(5x - 6)/3 = 3(x - 1)/3$<br>for isolating terms in $x$ on one side of an equation eg $5x - 6 - 3x = -3$ or both constants on one side of an equation, eg $5x = 3x - 3 + 6$ , ft $5x - 6 = 3x - 1$<br>for $1\frac{1}{2}$ oe                                                                                                                                                                                                                                                         |
| 17             | $\pounds 6 - \pounds 5.64 = 36\text{p}$ or<br>$50\text{p} - 47\text{p} = 3\text{p}$<br><br>$6.3829787\ldots\%$ | 6.4            | P1<br><br>P1<br><br>A1             | for a strategy to compare the same number of bottles e.g. $\pounds 5.64 \div 12$ ( $= 47$ or $0.47$ ) or $12 \times 50\text{p}$ ( $= 6$ or $600$ ) or $36$ or $0.36$ or $3$ or $0.03$<br>for start of process to find percentage profit e.g. $\frac{36}{564}$ or $\frac{3}{47}$ or $\frac{6}{5.64}$ or $\frac{50}{47}$<br>oe with consistent units<br>for answer in the range 6.3 to 6.4                                                                                                                                                                                           |

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

| Paper: 1MA1/3F |        |      |                                                                                                                  |                                                                                                              |
|----------------|--------|------|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Question       | Answer | Mark | Mark scheme                                                                                                      | Additional guidance                                                                                          |
| 25             | 3.8    | M1   | for a correct first step,<br>eg $5 - x = 2(2x - 7)$ or $5 - x = 4x - 14$ or $\frac{5}{2} - \frac{x}{2} = 2x - 7$ | Method must show LHS $\times 2$ and both terms on RHS $\times 2$ or $5 - x$ and both terms on RHS $\times 2$ |
|                |        | M1   | (dep) for isolating terms in $x$<br>eg $4x + x = 14 + 5$ or $-\frac{x}{2} - 2x = -7 - \frac{5}{2}$               | eg $-4x$ both sides with $-5$ both sides<br>or $+x$ both sides with $+14$ both sides                         |
|                |        | A1   | oe                                                                                                               | Accept $\frac{19}{5}$ , $3\frac{4}{5}$ oe but not $\frac{-19}{-5}$ oe                                        |

| Paper: IMA1/2F |             |      |                                                                                                                                                                                                                                                                                                                                           |                                                                       |
|----------------|-------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Question       | Answer      | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                               | Additional guidance                                                   |
| 9 (b)          | terms given | B1   | states two terms eg 7,11 <b>or</b> 8,16 <b>or</b> 5, 7                                                                                                                                                                                                                                                                                    | May be indicated on the sequence with no contradictory statement made |
|                | explanation | C1   | explanation eg add one more each time, doubling<br><br><b>Acceptable examples</b><br>Add 3 and add 4<br>The difference goes up by one each time<br>It doubles<br>+1, +2, +1, +2 or indicates +1, +2 repeats itself<br><br><b>Not acceptable examples</b><br>It goes up by 1 each time<br>It doubles so $2n$<br>+1, +2, +3, +4 so $2n + 1$ |                                                                       |
| 10 (a)         | 38          | B1   | cao                                                                                                                                                                                                                                                                                                                                       | +2 ÷ 5 could be seen in a flow diagram                                |
|                | 6           | M1   | starts process to find input using inverse operations eg $28 + 2$ <b>or</b> sight of $+2 \div 5$                                                                                                                                                                                                                                          |                                                                       |
|                |             | A1   | <b>or</b> by forming an equation eg $x \times 5 - 2 = 28$<br>cao                                                                                                                                                                                                                                                                          |                                                                       |
| 11             | 4           | M1   | for $\frac{30}{100} \times 80 (=24)$ oe or for 104                                                                                                                                                                                                                                                                                        | Numbers in subtraction may be reversed                                |
|                |             | M1   | (dep) for $28 - "24"$ or $108 - 104$                                                                                                                                                                                                                                                                                                      |                                                                       |
|                |             | A1   | for 4 or -4                                                                                                                                                                                                                                                                                                                               |                                                                       |

| Paper: 1MA1/1F |        |      |                                                                                                                                                                                                                                                             |                                                                                                                                     |
|----------------|--------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer | Mark | Mark scheme                                                                                                                                                                                                                                                 | Additional guidance                                                                                                                 |
| 12 (a)         | 11     | B1   | cao                                                                                                                                                                                                                                                         | +3 and ÷2 could be seen in a flow diagram<br>Evidence could be provided by algebraic statement, numerical statements or by diagrams |
|                | 22     | M1   | Starts to find input using inverse operations, $41 + 3 (= 44)$<br><br><b>or</b> sight of +3 <b>and</b> ÷2<br><br><b>or</b> derivation of equation eg $2n - 3 = 41$                                                                                          |                                                                                                                                     |
|                |        | A1   | cao                                                                                                                                                                                                                                                         |                                                                                                                                     |
| 13 (a)         | 025    | B1   | for angle in the range 23 to 27                                                                                                                                                                                                                             | Accept without the initial 0, eg. 25                                                                                                |
|                | 1.25   | M1   | for measurement of $AB$ in the range 4.8 to 5.2 (cm) or 48 to 52 (mm)                                                                                                                                                                                       | Could be just seen on the diagram                                                                                                   |
|                |        | M1   | for “5” $\times$ 25000 (= 125000) <b>or</b> “50” $\times$ 25000 (= 1250000)<br><br><b>or</b> “5” $\div$ 100000 (= 0.00005) <b>or</b> “50” $\div$ 1000000 (= 0.00005)<br><br><b>or</b> 25000 $\div$ 100000 (= 0.25) <b>or</b> 25000 $\div$ 1000000 (= 0.025) | 125000 or 1250000 seen implies M1M1                                                                                                 |
|                |        | A1   | for answer in the range 1.2 to 1.3                                                                                                                                                                                                                          | For the award of this mark, “5” or “50” can be any value in the range 4 to 6 or 40 to 60                                            |



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

| Paper: 1MA1/1F |                           |          |                                                                |                                                                                                                                   |
|----------------|---------------------------|----------|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                    | Mark     | Mark scheme                                                    | Additional guidance                                                                                                               |
| 7 (a)          | A                         | B1       | cao                                                            |                                                                                                                                   |
| (b)(i)         | Cross at correct position | B1       | for cross at $\frac{1}{4}$                                     | Cross or other indication may be seen on or near line provided within tolerance                                                   |
| (b)(ii)        | $\frac{1}{8}$             | B1       | for $\frac{1}{8}$ oe                                           | Accept any equivalent fraction, decimal form 0.125 or percentage form 12.5%<br>Do <b>not</b> accept 1 : 8 or 1 to 8 or 1 out of 8 |
| 8 (a)          | 7                         | B1       | cao                                                            |                                                                                                                                   |
| (b)            | 6                         | M1<br>A1 | for $4n$ ( $= 24$ ) or $24 \div 4$<br>cao                      |                                                                                                                                   |
| 9 (a)          | 290                       | B1       | cao                                                            | Accept 290°. May be seen on diagram provided no ambiguity                                                                         |
| (b)            | reason                    | C1       | for correct reason: <u>Angles</u> at a <u>point</u> add to 360 | The key words underlined must be present with the 360 implied if not stated by use in part (a)                                    |

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



| Paper: 1MA1/3F |                                          |                |                                                                                                                                                                                          |                                                                                                                             |
|----------------|------------------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                   | Mark           | Mark scheme                                                                                                                                                                              | Additional guidance                                                                                                         |
| 15             | 175                                      | M1<br>A1       | for a complete method eg $35 \times (4 + 1)$ oe<br>cao                                                                                                                                   |                                                                                                                             |
| 16             | Rotation of $90^\circ$ ,<br>centre (0,0) | B2<br>(B1      | Rotation of 90 about (0,0)<br><b>or</b> Rotation of 270, clockwise about centre (0,0)<br><br>Rotation and 90<br><b>or</b> Rotation and 270, clockwise<br><b>or</b> Rotation about (0,0)) | Accept “origin” or “O” for (0,0)                                                                                            |
| 17             | Drawing                                  | B1<br>B1       | for drawing point <i>R</i> from <i>T</i> at a distance of 5.5 cm.<br><br>for drawing point <i>R</i> from <i>T</i> on a bearing of $65^\circ$                                             | Unless ambiguous point <i>R</i> can be indicated by a cross, dot, or interpreted as the end of a line drawn from <i>T</i> . |
| 18             | 4                                        | M1<br>M1<br>A1 | for a correct first step eg shows $4 \times 2x - 4 \times 3$ or $8x - 12$<br>or $2x - 3 = \frac{20}{4}$<br><br>for isolating terms in <i>x</i> eg $2x = 5 + 3$<br>cao                    |                                                                                                                             |

| Paper: 1MA1/2F |         |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                               |
|----------------|---------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer  | Mark                             | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                                                                     | Additional guidance                                                                                                                           |
| 23             | 35      | P1<br><br>P1<br><br>P1<br><br>A1 | for process to work out income and outgoings,<br>eg $7.5(0) \times 54 (= 405)$ <b>and</b> $100 + 120 + 80 (= 300)$<br><br>for process to find the profit, eg $"405" - "300" (= 105)$<br><b>OR</b> $"405" \div "300" (= 1.35)$ <b>or</b> $"405" \div "300" \times 100 (= 135)$<br><br>for a full process to find percentage profit, eg $("105" \div "300") \times 100$<br><b>or</b> $("1.35" - 1) \times 100$ <b>or</b> $"135" - 100$<br><br>cao |                                                                                                                                               |
| 24             | 4811.20 | M1<br><br>A1                     | for full method for one year, eg $4500 \times 1.034 (= 4653)$ oe<br><br>for 4811.2(0)                                                                                                                                                                                                                                                                                                                                                           | Can be implied by 4806 or 9306<br><br>Accept 4811.202 and 4811.21                                                                             |
| 25             | 11      | M1<br><br>M1<br><br>A1           | for one correct step to isolate $x$ term or constant term on one side,<br>eg adds $x$ to both sides to get $5x - 14 + x = 52 - x + x$<br><b>or</b> adds 14 to both sides to get $5x - 14 + 14 = 52 - x + 14$ oe<br><br>for both correct steps to isolate terms in $x$ on one side and constant term on one side,<br>eg $"6x" - 14 + 14 = 52 + 14$ , <b>or</b> $5x + x = "66" + x - x$<br><br>cao                                                | May be seen in different equivalent forms but must be carried out, not just intention seen.<br>Can be implied by<br>eg $4x = 66$ or $6x = 38$ |



| Paper: 1MA1/1F |                                                        |      |                                                                                                                                       |                                                                                                                                                                                                                                  |
|----------------|--------------------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                                 | Mark | Mark scheme                                                                                                                           | Additional guidance                                                                                                                                                                                                              |
| 17             | 3.5                                                    | M1   | for correct expansion of brackets, ie $8x - 10$<br><br>or dividing throughout by 2 as a first step to solve equation, eg $4x - 5 = 9$ | For M marks step must be carried out not just intention shown.<br><br>For example, if you see<br>$\begin{array}{r} 2(4x - 5) = 18 \\ \div 2 \qquad \qquad \div 2 \end{array}$ Award M1 for:<br>$4x - 5 = k$ with $k \neq 18, 36$ |
|                |                                                        | M1   | for isolating terms in x, eg $8x = 18 + 10$ or $4x = 9 + 5$                                                                           | ft their equation of the form $ax \pm b = c$<br><br>For example, if you see<br>$\begin{array}{r} 8x - 10 = 18 \\ +10 \qquad \qquad +10 \end{array}$ Award M1 for:<br>$8x = k$ with $k \neq 8, 18$                                |
|                |                                                        | A1   | for 3.5 or $3\frac{1}{2}$ oe or $\frac{7}{2}$ oe                                                                                      |                                                                                                                                                                                                                                  |
| 18             | 1                                                      | B1   | cao                                                                                                                                   |                                                                                                                                                                                                                                  |
| 19             | Translation<br>$\begin{pmatrix} 5 \\ -4 \end{pmatrix}$ | B1   | for translation<br><br>for $\begin{pmatrix} 5 \\ -4 \end{pmatrix}$<br><br>NB: award no marks if more than one transformation is given | Do not accept 5 across, 4 down or 5 right, 4 down.<br>Condone omission of brackets around vector. Do not accept vector given as coordinate.                                                                                      |
| 20             | $4n - 3$                                               | B2   | for $4n - 3$ oe                                                                                                                       | Accept a different variable eg $4x - 3$<br>Accept $u_n = 4n - 3$ , $T = 4n - 3$ etc                                                                                                                                              |
|                |                                                        | (B1  | for $4n + k$ where $k \neq -3$ or is absent unambiguously shown)                                                                      | $n = 4n - 3$ or $4n^{\text{th}} - 3$ gets B1 only                                                                                                                                                                                |



| Paper: 1MA1/1F |                        |      |                                                                                                                                                                                                                                         |                                                                |
|----------------|------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Question       | Answer                 | Mark | Mark scheme                                                                                                                                                                                                                             | Additional guidance                                            |
| 25             | $w = \frac{y + 10}{3}$ | M1   | for $y + 10 = 3w$ <b>or</b> $\frac{y}{3} = w - \frac{10}{3}$                                                                                                                                                                            | Accept $w = \frac{-y-10}{-3}$ for M1A1                         |
|                |                        | A1   | for $w = \frac{y+10}{3}$ oe                                                                                                                                                                                                             |                                                                |
| 26             | $x = 5, x = -3$        | M1   | for factorisation<br>eg $(x \pm 3)(x \pm 5)$ or $(x + a)(x + b)$ where $ab = -15$ or $a + b = -2$<br><br><b>or</b> for substitution into quadratic formula<br>eg $\frac{- -2 \pm \sqrt{(-2)^2 - 4 \times 1 \times -15}}{2 \times 1}$ oe | Condone one sign error in substitution into quadratic formula. |
|                |                        | M1   | for $(x + 3)(x - 5)$ or for $\frac{2 \pm \sqrt{64}}{2}$                                                                                                                                                                                 |                                                                |
|                |                        | A1   | cao                                                                                                                                                                                                                                     |                                                                |

| Paper: 1MA1/3F |                                   |      |                                            |                                                     |
|----------------|-----------------------------------|------|--------------------------------------------|-----------------------------------------------------|
| Question       | Answer                            | Mark | Mark scheme                                | Additional guidance                                 |
| 1              | 700                               | B1   |                                            | Accept 7 hundreds                                   |
| 2              | 16                                | B1   | cao                                        |                                                     |
| 3              | Any two correct<br>1, 2, 4, 8, 16 | B1   | two correct and no incorrect               | Allow more than two factors but all must be correct |
| 4              | -7, -3, 0, 4, 6                   | B1   | accept in reverse order eg 6, 4, 0, -3, -7 |                                                     |
| 5              | 1.5                               | B1   | oe eg $\frac{3}{2}$ , $1\frac{1}{2}$       |                                                     |
| 6              | (a) 5                             | B1   | cao                                        |                                                     |
|                | (b) 17                            | B1   | cao                                        |                                                     |
|                | (c) 8                             | B1   | cao                                        |                                                     |
| 7              | (a) Trapezium                     | B1   | cao                                        | Allow 88 – 92° for the right angle                  |
|                | (b) Drawn                         | B1   | for a right-angled triangle drawn          |                                                     |

| Paper: 1MA1/1F |                 |      |                                                                                                                                                                                  |                                                                                                                            |
|----------------|-----------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer          | Mark | Mark scheme                                                                                                                                                                      | Additional guidance                                                                                                        |
| 12 (a)         | 08 47 supported | M1   | for a method to find the time of one train from L to C,<br>eg $08\ 53 - 08\ 07 (= 46)$ <b>or</b> $09\ 22 - 08\ 47 (= 35)$<br><b>or</b> $09\ 55 - 09\ 07 (= 48)$                  | Subtraction must be written in the correct order or correctly evaluated for M marks.<br>Do not allow misread of timetable. |
|                |                 | M1   | for a complete method to find the time of all three trains from L to C<br>eg $08\ 53 - 08\ 07 (= 46)$ <b>and</b> $09\ 22 - 08\ 47 (= 35)$<br><b>and</b> $09\ 55 - 09\ 07 (= 48)$ |                                                                                                                            |
|                |                 | C1   | for 08 47 train with correct supporting journey times<br>eg 08 47 train with 46, 35, 48 seen                                                                                     |                                                                                                                            |
| (b)            | 40              | P1   | for a complete process to find the number of minutes to wait for the train<br>eg $35\ (\text{mins}) + (09\ 30 - 09\ 25)$<br>or $09\ 30 + 35 (= 10\ 05)$ and “10 05” – 09 25      | Accept any clear identification of the 08 47 train, eg the second one or the middle one or indicated on the table          |
|                |                 | A1   | cao                                                                                                                                                                              | Embedded answer $09\ 25 + 40 = 10\ 05$<br>scores P1A0                                                                      |
| 13 (a)         | 10              | B1   | cao                                                                                                                                                                              | May be seen by machine                                                                                                     |
| (b)            | - 1             | M1   | starts method to find input using inverse operations<br>eg $-11 + 8 (= -3)$ <b>or</b> sight of +8 and $\div 3$                                                                   | Allow $- - 8$ for +8<br>Allow $\times \frac{1}{3}$ for $\div 3$<br>Do not allow a misread of 11 for -11                    |
|                |                 | A1   | for - 1                                                                                                                                                                          | Embedded answer<br>eg $-1 \times 3 - 8 = -11$ scores M1A0                                                                  |

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



| Paper: 1MA1/3F |                          |                        |                                                                                                                                                                                                   |                                                                                                                                                                                            |
|----------------|--------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                   | Mark                   | Mark scheme                                                                                                                                                                                       | Additional guidance                                                                                                                                                                        |
| 1              | tenths or $\frac{7}{10}$ | B1                     | for (7) tenths <b>or</b> $\frac{7}{10}$ <b>or</b> 0.7                                                                                                                                             | Condone incorrect spelling provided the intention is clear                                                                                                                                 |
| 2              | 2.4                      | B1                     | oe eg $\frac{12}{5}$                                                                                                                                                                              |                                                                                                                                                                                            |
| 3              | $\frac{19}{100}$         | B1                     | oe eg $\frac{190}{1000}$                                                                                                                                                                          |                                                                                                                                                                                            |
| 4              | $\frac{4}{10}$           | B1                     | oe eg $\frac{2}{5}$ , 0.4, 40%                                                                                                                                                                    | Accept $\frac{4}{10}$ positively indicated in the list (as long as answer line is blank)                                                                                                   |
| 5              | Two correct factors      | B1                     | for 2 correct factors from 1, 2, 4, 8, 16, 32 and no incorrect factors                                                                                                                            | Accept one correct product                                                                                                                                                                 |
| 6              | 28                       | P1<br><br>P1<br><br>A1 | for a process to work out the value of the £20 notes,<br>eg $6 \times 20 (= 120)$ oe<br><br>for a process to work out the value of the £10 notes,<br>eg $400 - "120" (= 280)$ oe<br><br>allow £28 | Build up processes are allowed.<br>Condone one error in the build-up process.<br><br>If 28 seen but 10 or 280 on answer line award P2A0 eg '28 notes of £10' then 10 or 280 on answer line |
| 7 (a)          | Mark at $\frac{1}{6}$    | B1                     | for mark at $\frac{1}{6}$                                                                                                                                                                         | Accept indications other than a cross, eg an arrow pointing to the correct position.                                                                                                       |
| (b)            | Mark at $\frac{2}{6}$    | B1                     | for mark at $\frac{2}{6}$                                                                                                                                                                         |                                                                                                                                                                                            |

| Paper: 1MA1/1F |         |                 |                      |                                                                                                                                                                                                                                                                                                           |
|----------------|---------|-----------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer          | Mark                 | Notes                                                                                                                                                                                                                                                                                                     |
| 18 (a)         |         | 6 to 8          | M1<br>M1<br>M1<br>A1 | evidence of recall of area formula with correct radius e.g. $\pi \times 10^2$<br>calculation to find number of boxes, (area) $\div$ (coverage figure)<br>(indep) evidence of estimation, eg $\pi$ in range 3 to 3.2, or coverage figure of 40, 42, 45, 48 or 50<br>(dep on M3) answer in the range 6 to 8 |
| (b)            |         | underestimate   | C1                   | e.g. (ft from (a)) underestimate: true area greater so could need more boxes. Must relate to estimation, not rounding of answer.                                                                                                                                                                          |
| 19 (a)         |         | 9.5             | M1<br>A1             | expands brackets or divides by 4 as a first step<br>oe                                                                                                                                                                                                                                                    |
| (b)            |         | -2, -1, 0, 1, 2 | B2<br>(B1)           | cao<br>(for the numbers -2, -1, 0, 1 (accept with -3 and/or 2 only), or 4 correct with no incorrect)                                                                                                                                                                                                      |
| 20             |         | 1545            | M1<br>A1             | shows a method to find 3% eg $1500 \times 0.03 (=45)$<br>cao                                                                                                                                                                                                                                              |



| Paper 1MA1: 1F |         |                                |      |                                                                                                                                                                                                                                              |                                                                    |                                                                       |
|----------------|---------|--------------------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------------|
| Question       | Working | Answer                         | Mark | Notes                                                                                                                                                                                                                                        |                                                                    |                                                                       |
| 28             |         | Shows reasoning to reach $y=3$ | M1   | forms equation eg $2x + 6 = 5x - 9$                                                                                                                                                                                                          | $48 \div 3 (=16)$                                                  | $3(2x + 6) = 48$ <b>or</b> $3(5x - 9) = 48$ , condone missing bracket |
|                |         |                                | M1   | isolates $x$ and number terms<br>$3x = 15$                                                                                                                                                                                                   | forms equation $2x+6="16"$ <b>or</b> $5x - 9 = "16"$               | Isolates $x$ and number terms<br>$6x = "30"$ <b>or</b> $15x = "75"$   |
|                |         |                                | M1   | substitutes "5" into side length<br>eg $2 \times 5 + 6 (=16)$                                                                                                                                                                                | isolates $x$ and number terms<br>$2x = "10"$ <b>or</b> $5x = "25"$ | forms the second equation                                             |
|                |         |                                | A1   | $48 \div 16 = 3$ <b>or</b> $16 \times 3 = 48$                                                                                                                                                                                                | shows $x=5$ for both solutions                                     | $x=5$ from 2 different equations.                                     |
| 29             |         | Comment                        | B1   | for correct mathematical comment eg line segments not a curve <b>or</b> should draw freehand <b>or</b> should not use a ruler, <b>or</b> should be a curve<br><br>NB Do not accept statements about scale or plotting accuracy.              |                                                                    |                                                                       |
| 30             |         | 4                              | M1   | for a complete method eg $2.80 \times 100 \div (100-30)$ oe <b>or</b> $2.80 \div 0.7$ oe <b>or</b> for build up method but must show all intermediate steps unless all figures are correct eg $2.8 \div 7 = 0.4$ and $"0.40" \times 10 (=4)$ |                                                                    |                                                                       |
|                |         |                                | A1   | cao                                                                                                                                                                                                                                          |                                                                    |                                                                       |



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



| Paper: 1MA1/1F |             |      |                                                                                                                                                                                                                                                          |                                    |
|----------------|-------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| Question       | Answer      | Mark | Mark scheme                                                                                                                                                                                                                                              | Additional guidance                |
| 16 (a)         | Explanation | C1   | for explanation, eg $AB$ cannot be zero (cm)<br><b>or</b> shows $AB$ to be zero, eg $4 \times 0.5 - 2 = 0$                                                                                                                                               | Accept say ' $AB$ would then be 0' |
| (b)            | 2.5         | P1   | for a correct expression for $AD$ , eg $3(4x - 2)$ <b>or</b> $12x - 6$<br><b>OR</b> $2(3AB + AB) = 64$ <b>oe</b> <b>or</b> $3AB + AB = 32$ <b>oe</b> <b>or</b> $AB = 8$<br><b>OR</b> for an equation with mixed variables,<br>eg. $6AB + 2(4x - 2) = 64$ | May be seen on diagram             |
|                |             | P1   | for forming a correct equation in $x$ ,<br>eg $4x - 2 + 4x - 2 + 3(4x - 2) + 3(4x - 2) = 64$ <b>or</b> $4x - 2 = 8$<br><b>or</b> $4x - 2 + 3(4x - 2) = 32$                                                                                               |                                    |
|                |             | A1   | cao                                                                                                                                                                                                                                                      |                                    |



| Paper: 1MA1/1F |         |                                      |                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                           |
|----------------|---------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer  | Mark                                 | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                     | Additional guidance                                                                                                                                                                                                                                                                       |
| 15             | -0.5, 1 | M1<br><br><br><br>A1                 | for one correct coordinate<br><br><b>or</b> midpoint shown on diagram<br><br><b>or</b> correct method, eg $\frac{-3+2}{2}$ <b>or</b> $\frac{-2+4}{2}$<br><br><b>or</b> for the coordinates reversed, eg 1, -0.5<br><br>for -0.5, 1 oe                                                                                                                                                           |                                                                                                                                                                                                                                                                                           |
| 16             | 19      | P1<br><br>P1<br><br>P1<br><br><br>A1 | for process of finding perimeter in terms of $x$ ,<br>eg $2x - 5 + x + 1 + x - 1 + 2x$ oe<br><br>for process to form equation,<br>eg " $6x - 5$ " = 52<br><br>(dep on P2)<br>for a correct process to find $x$ , eg $(52 + 5) \div 6$ (= 9.5)<br><br><b>or</b> for a correct process to find $2x$ , eg $(52 + 5) \div 3$<br><br><b>or</b> fit an equation of the form $ax + b = c$ ,<br><br>cao | This mark may be awarded for a correct but unsimplified equation,<br>eg, $2x - 5 + x + 1 + x - 1 + 2x = 52$ oe<br><br>Trial & Improvement attempts must be fully correct giving $x = 9.5$ before any credit given<br><br>$a$ , $b$ and $c$ must be clearly stated but need not be correct |

| Paper: 1MA1/2F |        |      |                                                                                                                                                                                                                                                                                  |                                                                      |
|----------------|--------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| Question       | Answer | Mark | Mark scheme                                                                                                                                                                                                                                                                      | Additional guidance                                                  |
| 24             | 1.25   | P1   | for finding an expression for the area of one shape,<br>eg $\frac{1}{2} \times 8 \times 6x (= 24x)$ or $5(4x - 1) (= 20x - 5)$ oe                                                                                                                                                | Condone missing brackets for area of rectangle for all process marks |
|                |        | P1   | for finding an expression for the area of both shapes,<br>eg $\frac{1}{2} \times 8 \times 6x$ <b>and</b> $5(4x - 1)$ oe<br><b>or</b> [area of triangle] – 10 or [area of rectangle] + 10 oe<br>or [area of triangle] – [area of rectangle]                                       |                                                                      |
|                |        | P1   | for writing a correct equation, eg $\frac{1}{2} \times 8 \times 6x = 5(4x - 1) + 10$ oe<br><b>or</b> (dep on 1st P1)<br>eg [area of triangle] – 10 = [area of rectangle]<br>or [area of triangle] = [area of rectangle] + 10<br>or [area of triangle] – [area of rectangle] = 10 |                                                                      |
|                |        | A1   | for 1.25 oe                                                                                                                                                                                                                                                                      |                                                                      |



| Paper: 1MA1/1F |        |      |                                                                                                                         |                                                                                                                                                                                             |
|----------------|--------|------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer | Mark | Mark scheme                                                                                                             | Additional guidance                                                                                                                                                                         |
| 13 (a)         | 8      | M1   | for $11 + 5 (= 16)$                                                                                                     | 7 may be seen next to function machine or embedded within a calculation                                                                                                                     |
|                |        | A1   | cao                                                                                                                     |                                                                                                                                                                                             |
|                |        | P1   | for $28 \div 4 (= 7)$ or $10 - 3 (= 7)$ or $10 \times 0.7 (= 7)$                                                        |                                                                                                                                                                                             |
| 14 (a)         | 5      | A1   | cao                                                                                                                     | Accept $+$ $-$ $3$ or $\times \frac{7}{10}$                                                                                                                                                 |
|                |        | P1   | for a start of a method to find the height, eg $10 \times 4 (= 40)$ or $200 \div 10 (= 20)$ or $200 \div 4 (= 50)$      |                                                                                                                                                                                             |
|                |        |      | or for forming a correct equation<br>$10 \times 4 \times h = 200$                                                       |                                                                                                                                                                                             |
|                |        | A1   | cao                                                                                                                     |                                                                                                                                                                                             |
|                |        | M1   | for a start to find the area of at least one face, eg $6 \times 3 (= 18)$ or $5 \times 3 (= 15)$ or $6 \times 5 (= 30)$ |                                                                                                                                                                                             |
| (b)            | 126    | M1   | for combining the area of at least three of the correct faces eg "18" + "15" + "30" (= 63) or $2 \times$ "18" + "15"    | Do not award first M if multiplied by a third length (ie volume calculation)<br><br>May be part of a larger addition including incorrect areas.<br>Do not award if more than 6 areas added. |
|                |        | A1   | cao                                                                                                                     |                                                                                                                                                                                             |

| Paper: 1MA1/3F |        |      |                                                                                                                                                                                                                                     |                              |
|----------------|--------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| Question       | Answer | Mark | Mark scheme                                                                                                                                                                                                                         | Additional guidance          |
| 24             | 1.5    | P1   | for process to develop 3 algebraic expressions, eg. (R =) $n$ , (S =) $2n$ , (T =) $2n - 6$ , oe, at least two must be correct.<br><b>or</b> for selecting 3 values satisfying the given criteria, eg. (R =) 10, (S =) 20, (T =) 14 | Accept 1 : 1.5 etc as answer |
|                |        | P1   | for process to sum 3 algebraic expressions and equating to 54, eg. $n + "2n" + "2n - 6" = 54$<br><b>or</b> for finding the correct sum of their values eg. $"10" + "20" + "14" = 44$                                                |                              |
|                |        | P1   | for start of process to solve the correct linear equation, eg. $5n = 54 + 6$ ( $n = 12$ )<br><b>or</b> for 12, 24, 18                                                                                                               |                              |
|                |        | P1   | for $"12" : 2 \times "12" - 6$ oe eg 12 : 18 oe or 18 : 12 linked to T, R                                                                                                                                                           |                              |
|                |        | A1   | for 1.5 or $\frac{3}{2}$ or $1\frac{1}{2}$                                                                                                                                                                                          |                              |

| Paper: 1MA1/1F |                  |      |                                                                                                                                                                                   |                                                                                                                                                           |
|----------------|------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer           | Mark | Mark scheme                                                                                                                                                                       | Additional guidance                                                                                                                                       |
| 25             | 1250             | P1   | for process to use area of base in the formula, eg $\frac{10000}{2 \times 4}$                                                                                                     |                                                                                                                                                           |
|                |                  | A1   | cao                                                                                                                                                                               |                                                                                                                                                           |
| 26 (a)         | $x > 6$          | M1   | for a correct first step, eg subtracts 3 from both sides or multiplies all terms by 2                                                                                             | Could be seen as an equation for both method marks, eg $5x + 6 = 36$ or $5x = 30$<br><br>First 2 marks may be awarded for critical value of 6, eg $x = 6$ |
|                |                  | M1   | (dep M1) for a correct second step, eg multiplies both sides by 2<br>or divides both sides by 5<br>or gives the critical value, 6.                                                |                                                                                                                                                           |
|                |                  | A1   | for $x > 6$                                                                                                                                                                       |                                                                                                                                                           |
|                |                  | M1   | for $(x \pm 1)(x \pm 9)$                                                                                                                                                          |                                                                                                                                                           |
| (b)            | $(x + 9)(x + 1)$ | M1   | or for $(x + a)(x + b)$ where product of $a$ and $b = 9$ ,<br>eg $(x + 3)(x + 3)$ or $(x - 3)(x - 3)$<br>or the sum of $a$ and $b = 10$ , eg $(x + 5)(x + 5)$ or $(x + 6)(x + 4)$ |                                                                                                                                                           |
|                |                  | A1   | for $(x + 9)(x + 1)$                                                                                                                                                              |                                                                                                                                                           |

| Paper: 1MA1/1F |        |      |                                                                                                                                                                               |                                                                                             |
|----------------|--------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Question       | Answer | Mark | Mark scheme                                                                                                                                                                   | Additional guidance                                                                         |
| 23             | 144    | P1   | for using the ratio,<br>eg $x = 2y$ or $2y + 2y + y (= 180)$ or $2 + 2 + 1 (= 5 \text{ (parts)})$                                                                             | The first two marks may be awarded in either order<br><br>Award P2 for $x = 72$ or $y = 36$ |
|                |        | P1   | for using angle facts to give an equation,<br>eg $x + x + y = 180$ or $2y + 2y + y = 180$ or $y + w = 180$ or $5x \div 2 = 180$ or $w = 2x$<br><br>or for $180 \div 5 (= 36)$ |                                                                                             |
|                |        | P1   | for a complete process eg $180 - (180 \div 5)$                                                                                                                                |                                                                                             |
|                |        | A1   | cao                                                                                                                                                                           |                                                                                             |
| 24             | 2400   | P1   | for setting up an equation in $x$<br>eg $x + (3x + 1) + (2x - 5) = 44$ or $6x - 4 = 44$ or $x = 48 \div 6 (= 8)$                                                              |                                                                                             |
|                |        | P1   | for substituting "8" into either $(3x + 1)$ or $(2x - 5)$<br>eg $3 \times "8" + 1 (= 25)$ or $2 \times "8" - 5 (= 11)$                                                        |                                                                                             |
|                |        | P1   | for finding the mass of one book eg $7500 \div "25" (= 300)$                                                                                                                  |                                                                                             |
|                |        | P1   | for finding the mass of the books on shelf A eg $"300" \times "8"$                                                                                                            |                                                                                             |
|                |        | A1   | cao                                                                                                                                                                           |                                                                                             |
| 25             | 2.7    | M1   | for use of density = mass $\div$ volume eg $27 \div 10$                                                                                                                       |                                                                                             |
|                |        | A1   | oe                                                                                                                                                                            |                                                                                             |



| Paper: 1MA1/1F |                       |      |                                                                                                                              |                                                                                                                                                                                                                                               |
|----------------|-----------------------|------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                | Mark | Mark scheme                                                                                                                  | Additional guidance                                                                                                                                                                                                                           |
| 9 (a)          | 16                    | B1   | cao                                                                                                                          |                                                                                                                                                                                                                                               |
|                | 19                    | M1   | starts method to find input using inverse operations<br>eg $28 + 10 (=38)$ <b>or</b> sight of $+10$ and $\div 2$             | $+10$ and $\div 2$ could be seen in a flow diagram<br>Working may be next to number machine.                                                                                                                                                  |
|                |                       | A1   | cao                                                                                                                          |                                                                                                                                                                                                                                               |
|                | Shown                 | M1   | for carrying out at least one trial <b>or</b> for forming a suitable equation, eg $2x - 10 = x$ <b>or</b> for identifying 10 | Trial can be for any value, must be correctly evaluated.<br>Accept correct inverse function trial, correctly evaluated.<br>If working seen on the number machine provided in the question allow for a trial other than input 13 or output 28. |
| 10             | 2 : 3                 | C1   | for showing that an input of 10 gives an output of 10                                                                        | Allow $10 \times 2 = 20 - 10 = 10$ for M1C1                                                                                                                                                                                                   |
|                |                       | M1   | for 24 : 36 <b>oe</b> <b>or</b> 3 : 2 <b>or</b> 1.5 : 1                                                                      |                                                                                                                                                                                                                                               |
| 11 (a)         | 3                     | A1   | 2 : 3 or 1 : 1.5                                                                                                             | Do not ISW from 2:3                                                                                                                                                                                                                           |
|                | 32                    | B1   | cao                                                                                                                          |                                                                                                                                                                                                                                               |
|                | $30 \div (3 + 2) - 4$ | B1   | for brackets correctly placed                                                                                                |                                                                                                                                                                                                                                               |



| Paper: 1MA1/2F |        |      |                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------|--------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer | Mark | Mark scheme                                                                                                                                                                                                                         | Additional guidance                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 26             | 240    | P1   | for forming an appropriate equation,<br>eg $2x + 11 = 4x - 4$ <b>or</b> $2x + 11 + 4x - 4 + 2x + 5 = 72$ <b>or</b> $8x + 12 = 72$                                                                                                   | $8x = 60$ <b>or</b> $2x = 15$ implies P2<br>A correct length stated or shown on diagram implies P2,<br>eg $AB = 20$ , $AC = 26$ , $CB = 26$<br><br>$[AC] [BC] [AB] [ACB] [CAB]$ and $[BAC]$ must be clearly identified if incorrect. May be on diagram.<br>$AB = 2 \times "7.5" + 5 (= 20)$<br>$AC = 2 \times "7.5" + 11 (= 26)$<br>$CB = 4 \times "7.5" - 4 (= 26)$<br>Alternative scheme not expected on Foundation tier but may be seen. |
|                |        | P1   | (dep P1) for process to correctly isolate terms in $x$ ,<br>eg $4x - 2x = 11 + 4$ <b>or</b> $2x + 4x + 2x = 72 - 11 + 4 - 5$ <b>or</b> $x = 7.5$ oe                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                |        | P1   | for correct application of Pythagoras,<br>eg $(\text{"26"})^2 - \left(\frac{\text{"20"}}{2}\right)^2$ <b>or</b><br>$[AC]^2 - \left(\frac{[AB]}{2}\right)^2$ <b>or</b> height = 24<br><b>or</b> a complete method to find the height |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                |        | P1   | for process to find area of triangle,<br>eg $\text{"20"} \times \text{"24"} \div 2$<br><b>or</b> $[AB] \times [\text{height}] \div 2$                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                |        | A1   | cao                                                                                                                                                                                                                                 | ft incorrect figures providing at least one previous P1 awarded.<br>[height] is what they clearly think is the height of the triangle but not 26 or 20 or 10                                                                                                                                                                                                                                                                                |

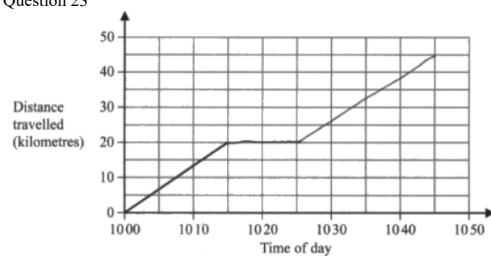


| Paper 1MA1: 2F |         |                         |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------|---------|-------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer                  | Mark                   | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 22             |         | Secure Bank (supported) | P1<br><br>P1<br><br>C1 | for a process to work out the interest after one year e.g. $0.02 \times 25000 (= 500)$ or $0.043 \times 25000 (= 1075)$ or for 1.02 or 25500 or 1.043 or 26075<br><br>for process to find value of the investment after 3 years or the multiplicative factor for 3 years at one of the banks, e.g. $25000 \times 1.02 \times 1.02 \times 1.02$ oe (= 26530...) or $1.02^3 (= 1.0612...)$ or $25000 \times 1.043 \times 1.009 \times 1.009$ oe (= 26546...) or $1.043 \times 1.009 \times 1.009 (= 1.0618.....)$<br>[accept total interest of 1530...or 1546...if final values of investment are not found]<br><br>for Secure Bank from correct figures<br>eg 26530.. and 26546..or 1530.. and 1546.. or 1.0612.. and 1.0618 |
| 23             |         | $4.755 \leq n < 4.765$  | B2<br><br>[B1]         | for $4.755 \leq n < 4.765$<br><br>for 4.755 or 4.765 or 4.7649]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 24             |         | $x = -8, x = 3$         | M1<br><br>M1<br>A1     | for factorisation or for substitution into quadratic formula<br>$(x \pm a)(x \pm b)$ where product of $a$ and $b = 24$ , eg $(x \pm 4)(x \pm 6)$<br>or difference of $a$ and $b = 5$ , eg $(x \pm 2)(x \pm 7)$<br><br>$\frac{-5 \pm \sqrt{5^2 - 4 \times 1 \times -24}}{2}$ oe (condone one sign error)<br><br>for $(x + 8)(x - 3)$ or for $\frac{-5 \pm \sqrt{121}}{2}$ oe<br>cao                                                                                                                                                                                                                                                                                                                                          |

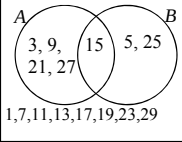


| Paper: 1MA1/2F |         |      |                                                                                                 |                                                                                           |
|----------------|---------|------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Question       | Answer  | Mark | Mark scheme                                                                                     | Additional guidance                                                                       |
| 27             | -2, 9   | M1   | for $(x \pm 2)(x \pm 9)$ <b>or</b> for $(x + a)(x + b)$ where either $ab = -18$ or $a + b = -7$ | Sight of one correct answer as the final answer can gain one mark with or without working |
|                |         | M1   | for $(x + 2)(x - 9)$                                                                            |                                                                                           |
|                |         | A1   | cao                                                                                             |                                                                                           |
| 28             | 320 000 | M1   | for a complete method eg $272\,000 \div (\frac{100-15}{100})$                                   |                                                                                           |
|                |         | A1   | cao                                                                                             |                                                                                           |

Question 23



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

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

| Paper: 1MA1/3F |         |                    |      |                                                                                                                                  |
|----------------|---------|--------------------|------|----------------------------------------------------------------------------------------------------------------------------------|
| Question       | Working | Answer             | Mark | Notes                                                                                                                            |
| 27             |         | $x = 1.5, y = 3.5$ | M1   | for correct method to eliminate one variable (condone one arithmetic error)                                                      |
|                |         |                    | M1   | (dep) for substituting found value in one of the equations or correct method after starting again (condone one arithmetic error) |
|                |         |                    | A1   | for both $x = 1.5$ and $y = 3.5$                                                                                                 |

Question 20

|          |                                                                                                                       |
|----------|-----------------------------------------------------------------------------------------------------------------------|
| London   | $1.089 \times 1.46 = \$1.58(9\ldots)$ per litre $\rightarrow$ $1.589\ldots \times 3.785 = \$6.01(7\ldots)$ per gallon |
|          | $1.089 \times 3.785 = £4.12(1\ldots)$ per gallon $\rightarrow$ $4.121\ldots \times 1.46 = \$6.01(7\ldots)$ per gallon |
| New York | $2.83 \div 1.46 = £1.93(8\ldots)$ per gallon $\rightarrow$ $1.938\ldots \div 3.785 = £0.51(2\ldots)$ per litre        |
|          | $2.83 \div 3.785 = \$0.74(7\ldots)$ per litre $\rightarrow$ $0.747\ldots \div 1.46 = £0.51(2\ldots)$ per litre        |

The table shows the most commonly used approaches. There are of course other approaches that can be used.



| Paper: IMA1/1F |                     |      |                                                                                                                                                        |                                                                                                                             |
|----------------|---------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer              | Mark | Mark scheme                                                                                                                                            | Additional guidance                                                                                                         |
| 25             | $x = 4.5, y = -1.5$ | M1   | correct process to eliminate one variable (condone one arithmetic error)                                                                               | Fractions do not need to be in simplest form                                                                                |
|                |                     | M1   | (dep) for substituting found value in one of the equations<br><b>OR</b> correct process after starting again (condone one arithmetic error)            |                                                                                                                             |
|                |                     | A1   | for $x = 4.5, y = -1.5$ oe                                                                                                                             |                                                                                                                             |
| 26             | shown               | C1   | for method to find area of semicircle,<br>eg $\pi \times 10^2 \div 2 (= 50\pi)$                                                                        | Can award first 3 marks if a value for $\pi$ is used<br><br>Working out to find the area of the shaded region must be shown |
|                |                     | C1   | for method to find area of quarter circle,<br>for $\pi \times 20^2 \div 4 (= 100\pi)$                                                                  |                                                                                                                             |
|                |                     | C1   | for a complete method to find area shaded <b>and</b> area of square,<br>eg $\pi \times 20^2 \div 4 - \pi \times 10^2 \div 2$ <b>and</b> $20 \times 20$ |                                                                                                                             |
|                |                     | C1   | fully correct working leading to $\frac{\pi}{8}$                                                                                                       |                                                                                                                             |
| 27             | (a)                 | B2   | for all probabilities correct (oe)                                                                                                                     | Accept any equivalent fraction, decimal form 0.16(6...) or 0.17 or percentage form 16(.6...) % or 17%                       |
|                |                     | (B1  | for 2 or 3 correct)                                                                                                                                    |                                                                                                                             |
|                | (b)                 | M1   | for $\frac{3}{10} \times \frac{5}{9}$ oe                                                                                                               |                                                                                                                             |
|                |                     | A1   | $\frac{15}{90}$ oe                                                                                                                                     |                                                                                                                             |



| Paper: 1MA1/3F |                 |      |                                                                                                                                               |                     |
|----------------|-----------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Question       | Answer          | Mark | Mark scheme                                                                                                                                   | Additional guidance |
| 30             | $x = 1, y = -2$ | M1   | for a correct method to eliminate either $x$ or $y$ or method leading to substitution (condone one arithmetic error)                          |                     |
|                |                 | M1   | (dep M1) for substituting found value in one of the equations<br><b>OR</b> correct method after starting again (condone one arithmetic error) |                     |
|                |                 | A1   | cao                                                                                                                                           |                     |



| Paper: 1MA1/3F |                                                                                |      |                                                                                                                                                        |                                                                                                                                    |
|----------------|--------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                                                                         | Mark | Mark scheme                                                                                                                                            | Additional guidance                                                                                                                |
| 27 (a)         | $\frac{1}{3}, \frac{2}{3}, \frac{1}{3}, \frac{2}{3}, \frac{1}{3}, \frac{2}{3}$ | B2   | six fully correct probabilities                                                                                                                        | Accept any equivalent fraction, decimal form 0.33(3...) and 0.66(6...) or 0.67 or percentage form 33(3...)%, 66(6...)%, 67% or 67% |
|                |                                                                                | (B1) | at least 2 correct probabilities)                                                                                                                      |                                                                                                                                    |
|                |                                                                                | M1   | for $\frac{1}{3} \times \frac{2}{3}$ oe or ft probabilities from diagram                                                                               |                                                                                                                                    |
| (b)            | $\frac{2}{9}$                                                                  | A1   | for $\frac{2}{9}$ oe                                                                                                                                   | Accept any equivalent fraction, decimal form 0.22(2...) or percentage form 22(2...)%                                               |
| 28 (a)         | -2, 4                                                                          | B1   | cao                                                                                                                                                    | If answers are stated as coordinates, award M1 for both coordinates and M0 for one coordinate. With no extras                      |
|                |                                                                                | M1   | for correct method, eg marking intercepts with x-axis or one correct answer or both solutions given as a coordinate eg (0.6, 3.4) or (0.6, 0) (3.4, 0) |                                                                                                                                    |
|                |                                                                                | A1   | for answers in the ranges 0.55 to 0.65 and 3.35 to 3.45                                                                                                |                                                                                                                                    |
| 29             | 96                                                                             | M1   | for a complete process to find the volume<br>eg $6 \times 4 \times 10 \div 2$ (= 120)                                                                  |                                                                                                                                    |
|                |                                                                                | M1   | for a complete process, eg $(6 \times 4 \times 10 \div 2) \times 0.8$                                                                                  |                                                                                                                                    |
|                |                                                                                | A1   | cao<br>SC B1 for 192                                                                                                                                   |                                                                                                                                    |



| Paper: 1MA1/2F |                           |      |                                                                                                                             |                                                                                                                                                                                                                                         |
|----------------|---------------------------|------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                    | Mark | Mark scheme                                                                                                                 | Additional guidance                                                                                                                                                                                                                     |
| 27             | No<br>(supported)         | P1   | for a conversion with litres and gallons,<br>eg $18 \div 4.5 (= 4)$ or $8 \times 4.5 (= 36)$                                | See page at end of mark scheme<br><br>May compare cost per gallon or cost in euros<br>May be seen in a calculation or given in a description<br>Accept comparative figures rounded or truncated<br>No is implied by eg Wales is cheaper |
|                |                           | P1   | for a conversion with £ and euros,<br>eg $27 \times 0.85 (= 22.95)$ or $40.8 \div 0.85 (= 48)$                              |                                                                                                                                                                                                                                         |
|                |                           | P1   | for finding the unit price, eg $27 \div 18 (= 1.5)$<br><b>OR</b> finding proportionality for fuel eg $(“36” \div 18) (= 2)$ |                                                                                                                                                                                                                                         |
|                |                           | C1   | for No with comparative figures,<br>eg No with 20.4 <b>and</b> 22.95 <b>or</b> No with 1.275 <b>and</b> 1.133..             |                                                                                                                                                                                                                                         |
| 28             | $x = 6.5,$<br>$y = -2.75$ | M1   | for a correct method to eliminate either x or y or method leading to substitution                                           | (condone one arithmetic error)                                                                                                                                                                                                          |
|                |                           | M1   | (dep) for substituting found value in one of the equations<br><b>OR</b> correct method after starting again                 | (condone one arithmetic error)                                                                                                                                                                                                          |
|                |                           | A1   | for $x = 6.5, y = -2.75$ oe                                                                                                 |                                                                                                                                                                                                                                         |



## QUESTION 27 - Additional information NOT Exhaustive

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Cost per litre in £:</b><br/> <math>27 \times 0.85 (=22.95)</math><br/> <math>"22.95" \div 18 (=1.275)</math><br/> <math>8 \times 4.5 (=36)</math><br/> No <b>and</b> <math>40.8 \div "36" = 1.133..</math> (cost per litre in £ in Wales) compared to 1.275 (cost per litre in £ in Spain).</p>                                                                                                                                                                                                                             | <p><b>Cost per litre in euros:</b><br/> <math>27 \div 18 (=1.5)</math><br/> <math>8 \times 4.5 (=36)</math><br/> <math>40.8 \div 0.85 (=48)</math><br/> No <b>and</b> <math>"48" \div "36" = 1.333..</math> (cost per litre in euros in Wales) compared to 1.5 (cost per litre in euros in Spain).</p>                                                                                                                                                                                                                                           |
| <p><b>Cost per gallon in £:</b><br/> <math>40.8 \div 8 (=5.1)</math><br/> <math>27 \times 0.85 (=22.95)</math><br/> <math>18 \div 4.5 (=4)</math><br/> No <b>and</b> <math>"22.95" \div "4" = 5.7375</math> (cost per gallon in £ in Spain) compared to 5.1(0) (cost per gallon in £ in Wales).</p>                                                                                                                                                                                                                                | <p><b>Cost per gallon in euros:</b><br/> <math>40.8 \div 0.85 (=48)</math><br/> <math>"48" \div 8 (=6)</math><br/> <math>18 \div 4.5 (=4)</math><br/> No <b>and</b> <math>27 \div "4" = 6.75</math> (cost per gallon in euros in Spain) compared to 6 (cost per gallon in euros in Wales).</p> <p><b>Note:</b><br/> <math>"2"</math> comes from <math>8 \div "4"</math> or <math>"36" \div 18</math></p>                                                                                                                                         |
| <p><b>Cost of 8 gallons in £:</b><br/> <math>18 \div 4.5 (=4)</math><br/> <math>27 \times 0.85 (=22.95)</math><br/> <math>"22.95" \times "2" (=45.90)</math><br/> No <b>and</b> 45.90 (total cost in £ in Spain) compared to 40.80 (total cost in £ in Wales given).</p>                                                                                                                                                                                                                                                           | <p><b>Cost of 8 gallons in euros:</b><br/> <math>18 \div 4.5 (=4)</math><br/> <math>40.8 \div 0.85 (=48)</math><br/> <math>27 \times "2" (=54)</math><br/> No <b>and</b> 54 (cost for 8 gallons in euros in Spain) compared to 48 (cost of 8 gallons in euros in Wales).</p>                                                                                                                                                                                                                                                                     |
| <p><b>Cost of 18 litres in £:</b><br/> <math>8 \times 4.5 (=36)</math><br/> <math>40.8 \div "2" (=20.4)</math><br/> <math>27 \times 0.85 (=22.95)</math><br/> No <b>and</b> 22.95 (cost for 18 litres in £ in Spain) compared to 20.40 (cost of 18 litres in £ in Wales).<br/> <b>OR</b><br/> <math>18 \div 4.5 (=4)</math><br/> <math>27 \times 0.85 (=22.95)</math><br/> <math>40.8 \div "2" (=20.4)</math><br/> No <b>and</b> 22.95 (cost for 18 litres in £ in Spain) compared to 20.40 (cost of 18 litres in £ in Wales).</p> | <p><b>Cost of 18 litres in euros:</b><br/> <math>18 \div 4.5 (=4)</math><br/> <math>40.8 \div 0.85 (=48)</math><br/> <math>"48" \div "2" (=24)</math><br/> No <b>and</b> 24 (cost for 18 litres in euros in Wales) compared to 27 (cost of 18 litres in euros in Spain given).<br/> <b>OR</b><br/> <math>8 \times 4.5 (=36)</math><br/> <math>40.8 \div "2" (=20.4)</math><br/> <math>"20.4" \div 0.85 (=24)</math><br/> No <b>and</b> 24 (cost for 18 litres in euros in Wales) compared to 27 (cost of 18 litres in euros in Spain given).</p> |

| Paper: 1MA1/2F |                       |      |                                                                                                         |                                                                                                                                                                                          |
|----------------|-----------------------|------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                | Mark | Mark scheme                                                                                             | Additional guidance                                                                                                                                                                      |
| 29             | 32.2                  | M1   | for a correct trig statement, eg $28 \times \tan 49$ or $\tan 49 = AB \div 28$                          | Can use a combination of skills but must have only one unknown in $x$ to score this mark<br>If an answer is given in the range in working and then rounded incorrectly award full marks. |
|                |                       | A1   | Answer in the range 32.2 to 32.22                                                                       |                                                                                                                                                                                          |
| 30             | $x = -2$<br>$y = 1.5$ | M1   | for correct method to eliminate either $x$ or $y$ or a method leading to substitution                   | condone one arithmetic error                                                                                                                                                             |
|                |                       | M1   | (dep M1) for substituting found value in one of the equations<br>or correct method after starting again | condone one arithmetic error                                                                                                                                                             |
|                |                       | A1   | for $x = -2$ and $y = 1.5$ oe                                                                           |                                                                                                                                                                                          |

| Paper: 1MA1/3F |                    |      |                                                                                                                                               |                                              |
|----------------|--------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| Question       | Answer             | Mark | Mark scheme                                                                                                                                   | Additional guidance                          |
| 30             | $x = 3.5, y = 1.5$ | M1   | for a correct method to eliminate either $x$ or $y$ or method leading to substitution (condone one arithmetic error)                          | Fractions do not need to be in simplest form |
|                |                    | M1   | (dep M1) for substituting found value in one of the equations<br><b>or</b> correct method after starting again (condone one arithmetic error) |                                              |
|                |                    | A1   | (dep M1) for $x = 3.5, y = 1.5$ oe<br>SCB1 for $x = 3.5, y = 1.5$ with no supportive working                                                  |                                              |



**QUESTION 25 – Additional information - NOT Exhaustive**

Final comparable values can be truncated or rounded and just need to be accurate enough to allow a comparison

|                                                                                                                                                                                                                         |                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Cost per lb in \$:</b><br>$2 \times 2.2 (= 4.4)$<br>$3.75 \times 1.2(0) (= 4.5)$<br>$"4.5" \div "4.4" (= 1.02\dots)$ and $4.9(0) \div 5 (= 0.98)$<br>New York <b>and</b> 1.02... <b>and</b> 0.98                     | <b>Cost per lb in £:</b><br>$2 \times 2.2 (= 4.4)$<br>$4.9(0) \div 1.2(0) (= 4.08\dots)$<br>$3.75 \div "4.4" (= 0.85\dots)$ and $"4.08\dots" \div 5 (= 0.81(6\dots))$<br>New York <b>and</b> 0.85... <b>and</b> 0.81(6...)             |
| <b>Cost per kg in \$:</b><br>$5 \div 2.2 (= 2.27\dots)$<br>$3.75 \times 1.2(0) (= 4.5)$<br>$"4.5" \div 2 (= 2.25)$ and $4.9(0) \div "2.27\dots" (= 2.15(6))$<br>New York <b>and</b> 2.25 <b>and</b> 2.15(6)             | <b>Cost per kg in £:</b><br>$5 \div 2.2 (= 2.27\dots)$<br>$4.9(0) \div 1.2(0) (= 4.08\dots)$<br>$3.75 \div 2 (= 1.87(5))$ and $"4.08\dots" \div "2.27\dots" (= 1.79(6\dots))$<br>New York <b>and</b> 1.87(5) <b>and</b> 1.79(6...)     |
| <b>Number of lbs per \$:</b><br>$2 \times 2.2 (= 4.4)$<br>$3.75 \times 1.2(0) (= 4.5)$<br>$"4.4" \div "4.5" (= 0.97(7\dots))$ and $5 \div 4.9(0) (= 1.02\dots)$<br>New York <b>and</b> 0.97(7...) <b>and</b> 1.02...    | <b>Number of lbs per £:</b><br>$2 \times 2.2 (= 4.4)$<br>$4.9(0) \div 1.2(0) (= 4.08\dots)$<br>$"4.4" \div 3.75 (= 1.17\dots)$ and $5 \div "4.08\dots" (= 1.22\dots)$<br>New York <b>and</b> 1.17... <b>and</b> 1.22...                |
| <b>Number of kg per \$:</b><br>$5 \div 2.2 (= 2.27\dots)$<br>$3.75 \times 1.2(0) (= 4.5)$<br>$2 \div "4.5" (= 0.44\dots)$ and $"2.27\dots" \div 4.9(0) (= 0.46\dots)$<br>New York <b>and</b> 0.44... <b>and</b> 0.46... | <b>Number of kg per £:</b><br>$5 \div 2.2 (= 2.27\dots)$<br>$4.9(0) \div 1.2(0) (= 4.08\dots)$<br>$2 \div 3.75 (= 0.53\dots)$ and $"2.27\dots" \div "4.08\dots" (= 0.55(6\dots))$<br>New York <b>and</b> 0.53... <b>and</b> 0.55(6...) |
| <b>Cost of 5 lb in \$:</b><br>$2 \times 2.2 (= 4.4)$<br>$3.75 \times 1.2(0) (= 4.5)$<br>$"4.5" \div "4.4" \times 5 (= 5.11\dots)$<br>New York <b>and</b> 5.11...                                                        | <b>Cost of 5 lb in £:</b><br>$2 \times 2.2 (= 4.4)$<br>$4.9(0) \div 1.2(0) (= 4.08\dots)$<br>$3.75 \div "4.4" \times 5 (= 4.26\dots)$<br>New York <b>and</b> 4.08... <b>and</b> 4.26...                                                |
| <b>Cost of 2 kg in \$:</b><br>$5 \div 2.2 (= 2.27\dots)$<br>$3.75 \times 1.2(0) (= 4.5)$<br>$4.9(0) \div "2.27\dots" \times 2 (= 4.31\dots)$<br>New York <b>and</b> 4.5 <b>and</b> 4.31...                              | <b>Cost of 2 kg in £:</b><br>$5 \div 2.2 (= 2.27\dots)$<br>$4.9(0) \div 1.2(0) (= 4.08\dots)$<br>$"4.08\dots" \div "2.27\dots" \times 2 (= 3.59\dots)$<br>New York <b>and</b> 3.59...                                                  |



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



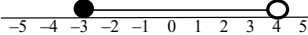
| Paper: 1MA1/2F |                                                                                                                                                                                                                                               |                                                     |                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                              |           |           |           |   |   |     |   |    |           |          |           |    |   |           |    |           |   |           |     |    |    |           |           |     |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|---|---|-----|---|----|-----------|----------|-----------|----|---|-----------|----|-----------|---|-----------|-----|----|----|-----------|-----------|-----|
| Question       | Answer                                                                                                                                                                                                                                        | Mark                                                | Mark scheme                                                                                                                                                                                                                                                                                        | Additional guidance                                                                                                                                                                                                                                                                                                                                                          |           |           |           |   |   |     |   |    |           |          |           |    |   |           |    |           |   |           |     |    |    |           |           |     |
| 14             | 6.95 <b>or</b><br>(2kg flour $\Rightarrow$ ) 2.70<br><b>and</b><br>(5 kg sugar $\Rightarrow$ ) 4.25                                                                                                                                           | P1                                                  | for process to find the cost of 1kg of flour, eg $4.05 \div 3 (= 1.35)$                                                                                                                                                                                                                            | May be implied by (2 kg $\Rightarrow$ ) 2.70                                                                                                                                                                                                                                                                                                                                 |           |           |           |   |   |     |   |    |           |          |           |    |   |           |    |           |   |           |     |    |    |           |           |     |
|                |                                                                                                                                                                                                                                               | P1                                                  | for process to work with cost of sugar, eg $11.85 - 5 \times "1.35" (= 5.10)$                                                                                                                                                                                                                      | May be implied by (1 kg $\Rightarrow$ ) 0.85 oe                                                                                                                                                                                                                                                                                                                              |           |           |           |   |   |     |   |    |           |          |           |    |   |           |    |           |   |           |     |    |    |           |           |     |
|                |                                                                                                                                                                                                                                               | P1                                                  | for process to find cost for 5kg of sugar, eg $"5.10" \div 6 \times 5(= 4.25)$                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                              |           |           |           |   |   |     |   |    |           |          |           |    |   |           |    |           |   |           |     |    |    |           |           |     |
|                |                                                                                                                                                                                                                                               | A1                                                  | for 6.95 <b>or</b> (2kg flour $\Rightarrow$ ) 2.70 <b>and</b> (5 kg sugar $\Rightarrow$ ) 4.25                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                              |           |           |           |   |   |     |   |    |           |          |           |    |   |           |    |           |   |           |     |    |    |           |           |     |
| 15             | 60.48                                                                                                                                                                                                                                         | P1                                                  | for a beginning process, eg $72 \div 100 \times 120 (= 86.4)$<br><b>OR</b> $72 \div 100 \times 30 \div 100 (= 0.216)$                                                                                                                                                                              | [86.4] must be a value less than 120                                                                                                                                                                                                                                                                                                                                         |           |           |           |   |   |     |   |    |           |          |           |    |   |           |    |           |   |           |     |    |    |           |           |     |
|                |                                                                                                                                                                                                                                               | P1                                                  | for process to use both percentages,<br>eg $[86.4] - ([86.4] \times 30 \div 100)$ <b>or</b> $[86.4] \times ((100 - 30) \div 100)$<br><b>or</b> $[86.4] \times 30 \div 100 (= 25.92)$<br><b>OR</b> $72 \div 100 \times ((100 - 30) \div 100) (= 0.504)$<br><b>OR</b> $120 \times "0.216" (= 25.92)$ |                                                                                                                                                                                                                                                                                                                                                                              |           |           |           |   |   |     |   |    |           |          |           |    |   |           |    |           |   |           |     |    |    |           |           |     |
|                |                                                                                                                                                                                                                                               | A1                                                  | cao                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                              |           |           |           |   |   |     |   |    |           |          |           |    |   |           |    |           |   |           |     |    |    |           |           |     |
| 16             | 24                                                                                                                                                                                                                                            | P1                                                  | for finding the total for adults, eg $160 - 85 (= 75)$<br><b>or</b> for finding adult romance, eg $33 - 19 (= 14)$<br><b>or</b> for finding children adventure, eg $76 - 34 (= 42)$                                                                                                                | <table><tr><td></td><td>R</td><td>A</td><td>H</td><td>T</td><td>Tot</td></tr><tr><td>C</td><td>19</td><td><b>42</b></td><td><b>4</b></td><td><b>20</b></td><td>85</td></tr><tr><td>A</td><td><b>14</b></td><td>34</td><td><b>20</b></td><td>7</td><td><b>75</b></td></tr><tr><td>Tot</td><td>33</td><td>76</td><td><b>24</b></td><td><b>27</b></td><td>160</td></tr></table> |           | R         | A         | H | T | Tot | C | 19 | <b>42</b> | <b>4</b> | <b>20</b> | 85 | A | <b>14</b> | 34 | <b>20</b> | 7 | <b>75</b> | Tot | 33 | 76 | <b>24</b> | <b>27</b> | 160 |
|                |                                                                                                                                                                                                                                               |                                                     | R                                                                                                                                                                                                                                                                                                  | A                                                                                                                                                                                                                                                                                                                                                                            | H         | T         | Tot       |   |   |     |   |    |           |          |           |    |   |           |    |           |   |           |     |    |    |           |           |     |
|                |                                                                                                                                                                                                                                               | C                                                   | 19                                                                                                                                                                                                                                                                                                 | <b>42</b>                                                                                                                                                                                                                                                                                                                                                                    | <b>4</b>  | <b>20</b> | 85        |   |   |     |   |    |           |          |           |    |   |           |    |           |   |           |     |    |    |           |           |     |
|                |                                                                                                                                                                                                                                               | A                                                   | <b>14</b>                                                                                                                                                                                                                                                                                          | 34                                                                                                                                                                                                                                                                                                                                                                           | <b>20</b> | 7         | <b>75</b> |   |   |     |   |    |           |          |           |    |   |           |    |           |   |           |     |    |    |           |           |     |
| Tot            | 33                                                                                                                                                                                                                                            | 76                                                  | <b>24</b>                                                                                                                                                                                                                                                                                          | <b>27</b>                                                                                                                                                                                                                                                                                                                                                                    | 160       |           |           |   |   |     |   |    |           |          |           |    |   |           |    |           |   |           |     |    |    |           |           |     |
| P1             | for finding adult horror, eg $"75" - 34 - "14" - 7 (= 20)$                                                                                                                                                                                    |                                                     |                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                              |           |           |           |   |   |     |   |    |           |          |           |    |   |           |    |           |   |           |     |    |    |           |           |     |
| P1             | for a process to find the number of children who chose horror,<br>eg $85 - 19 - "42" - "20" (= 4)$<br><b>or</b> for a complete process to find total horror,<br>eg $(85 - 19 - "42" - "20") + "20"$<br><b>or</b> $160 - 33 - 76 - ("20" + 7)$ |                                                     |                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                              |           |           |           |   |   |     |   |    |           |          |           |    |   |           |    |           |   |           |     |    |    |           |           |     |
| A1             | cao                                                                                                                                                                                                                                           | A correct answer unsupported will score 1 mark only |                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                              |           |           |           |   |   |     |   |    |           |          |           |    |   |           |    |           |   |           |     |    |    |           |           |     |

| Paper: 1MA1/1F |         |      |                                                                                                                                                                                     |                                                                                  |
|----------------|---------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Question       | Answer  | Mark | Mark scheme                                                                                                                                                                         | Additional guidance                                                              |
| 16             | 15.5(0) | P1   | for a correct process to find the cost of some teas only <b>or</b> some coffees only<br>eg (2 teas =) $8.50 - 4.50 (= 4)$<br><b>or</b> (2 coffees =) $3 \times 4.50 - 8.50 (= 5)$   | Use of simultaneous equations – marks awarded at the stages shown in the scheme. |
|                |         | P1   | for a process to find the cost of one tea or four teas,<br>eg (1 tea =) $"4" \div 2 (= 2)$ <b>or</b> (4 teas =) $"4" \times 2 (= 8)$                                                |                                                                                  |
|                |         | P1   | for a process to find cost of one coffee or three coffees,<br>eg (1 coffee =) $4.50 - "2" (= 2.50)$ <b>or</b> $8.50 - "2" \times 3 (= 2.50)$<br><b>or</b> $1.5 \times "5" (= 7.50)$ |                                                                                  |
|                |         | P1   | for a complete process,<br>eg $"2" \times 4 + "2.50" \times 3$                                                                                                                      |                                                                                  |
|                |         | A1   | cao                                                                                                                                                                                 |                                                                                  |

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

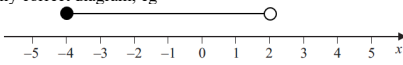


| Paper: 1MA1/1F |                        |              |                                                                                                                                                                                                                                                              |                                                                        |
|----------------|------------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Question       | Answer                 | Mark         | Mark scheme                                                                                                                                                                                                                                                  | Additional guidance                                                    |
| 23             | $x < 5$                | M1<br><br>A1 | for adding 27 to both sides or dividing throughout by 7 (in an inequality or an equation) as a first step<br><br><b>or</b> showing 5 as the critical value<br><br>cao                                                                                        | Can be written as $x = 5$                                              |
| 24             | $2 \times 2 \times 31$ | M1<br><br>A1 | for a complete method to find prime factors; could be shown on a complete factor tree with no more than one error <b>or</b> by division by prime factors with no more than one error<br><br><b>or</b> for 2, 2, 31, (1)<br><br>for $2 \times 2 \times 31$ oe | Condone the inclusion of 1 for this mark<br><br>Accept $2^2 \times 31$ |

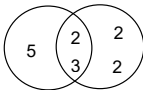
| Paper: 1MA1/2F |                   |                |                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                |
|----------------|-------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer            | Mark           | Mark scheme                                                                                                                                                                                                                                                                                          | Additional guidance                                                                                                                                                                                            |
| 20             | (a) $c^3$         | B1             | cao                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                |
|                | (b) $d^{12}$      | B1             | cao                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                |
| 21             | (a) $x > -1$      | B1             | cao                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                |
|                | (b) Diagram drawn | C2<br><br>(C1) | for a fully correct diagram,<br><br>eg <br><br>for drawing a line from -3 to 4<br>or (indep) for an open circle at 4<br>or (indep) for a closed circle at -3 )                                                     |                                                                                                                                                                                                                |
| 22             | (a) 12            | M1             | for a correct factor tree for either 60 or 84 with no more than one arithmetic error<br>or for listing factors of 60 or 84, at least 4 correct for either (with no more than 1 incorrect in either list), could be in factor pairs<br>or for the prime factors of 60 (2, 2, 3, 5) or 84 (2, 2, 3, 7) | Condone the use of 1 in any factor tree<br>60: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60<br>84: 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84                                                                        |
|                |                   | A1             | for 12 or $2 \times 2 \times 3$ oe<br>SC B1 for answer of 4 or 6, if M0 scored                                                                                                                                                                                                                       |                                                                                                                                                                                                                |
|                | (b) 120           | M1             | for a correct factor tree for either 24 or 40 with no more than one arithmetic error<br>or for at least 3 multiples of both 24 and 40 (can include 24 and 40)<br>or for the prime factors of either 24 (2, 2, 2, 3) or 40 (2, 2, 2, 5) or for a common multiple from their lists ( $\neq 120$ )      | Condone the use of 1 in any factor tree<br>24: 24, 48, 72, 96, 120, ...<br>40: 40, 80, 120, ...<br>For the list not containing 120, accept the first 3 correct multiples or one error in the first 4 multiples |
|                |                   | A1             | for 120 or $2 \times 2 \times 2 \times 3 \times 5$ oe                                                                                                                                                                                                                                                |                                                                                                                                                                                                                |

| Paper: 1MA1/1F |             |      |                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------|-------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer      | Mark | Mark scheme                                                                                                                                                                                                                                                | Additional guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 27             | 400         | M1   | for $280 \div 0.7$ oe                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                |             | A1   | cao                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 28             | $x \leq -4$ | M1   | for a correct first step working with an equation or inequality<br>eg $x + 11 - 11 \leq 5 - \frac{1}{2}x - 11$<br>or $x + 11 + \frac{1}{2}x \leq 5 - \frac{1}{2}x + \frac{1}{2}x$<br>or $2 \times x + 2 \times 11 \leq 2 \times 5 - 2 \times \frac{1}{2}x$ | Can work with an equation or incorrect inequality symbol for both M marks<br>Allow for subtracting 5 from both sides or subtracting $x$ from both sides.<br>For M marks step must be carried out not just intention shown.<br><br>For example, if you see<br>$\begin{array}{rcl} x + 11 & \leq & 5 - \frac{1}{2}x \\ -11 & & -11 \end{array}$ Award M1 for:<br>$x \leq 5 - \frac{1}{2}x - 11$ with $k \neq 5, k \neq 16$<br>or indicating $+\frac{1}{2}x$ reaching<br>$kx + 11 \leq 5$ with $k \neq \frac{1}{2}, k \neq 1$<br>or indicating multiplying by 2 obtaining an equation or inequality with three of four terms correct and no term unchanged.<br><br>Award 2 marks for answer of $x \leq -4$ where ? is an = or any incorrect inequality symbol, or for answer shown as just $-4$ |
|                |             | M1   | for a full method to solve the inequality<br>or for a critical value of $-4$                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                |             | A1   | for $x \leq -4$ oe as final answer                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |



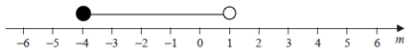
| Paper: 1MA1/2F |                                |                          |                                                                                                                                                                                                                                                               |                                                                                                                      |
|----------------|--------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Question       | Answer                         | Mark                     | Mark scheme                                                                                                                                                                                                                                                   | Additional guidance                                                                                                  |
| 18             | 384                            | P1<br><br>P1<br><br>A1   | for $\sqrt[3]{512} (= 8)$<br>or $512 \div 8 (= 64)$<br><br>for $"8" \times 6$<br>$"\sqrt[3]{512}" \times "\sqrt[3]{512}" \times 6$<br><br>cao                                                                                                                 | A correct answer coming from an incorrect method, eg $512 \div 4 = 128$ and $128 \times 3 = 384$ will score no marks |
| 19             | (a) -2<br>(b) Inequality shown | B1<br><br>C2<br><br>(C1) | cao<br><br>for a fully correct diagram, eg<br><br><br>for drawing a line from -4 to 2<br>or (indep) for an open circle at 2<br>or (indep) for a closed circle at -4       | Condone arrow heads or line ending to denote the 'end' of the line                                                   |
| 20             | (a) $2 \times 5^3$             | M1<br><br>A1             | for a complete method to find prime factors; could be shown on a complete factor tree with no more than one arithmetic error or by division by prime factors with no more than one error<br>or for 2, 5, 5, 5<br><br>accept $2 \times 5 \times 5 \times 5$ oe | Condone the inclusion of 1s for this mark                                                                            |

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

| Paper: 1MA1/3F |                      |      |                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                            |
|----------------|----------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer               | Mark | Mark scheme                                                                                                                                                                                                                                                                         | Additional guidance                                                                                                                                                                                                                                                        |
| (b)            | 4                    | M1   | for a correct first step,<br>eg for adding 7 to both sides $5y - 7 + 7 < 16 + 7$<br>or for dividing throughout by 5 eg $\frac{5y}{5} - \frac{7}{5} < \frac{16}{5}$<br><b>or</b> for showing 4.6 (oe) as the critical value<br><b>or</b> for $5 \times 4 - 7$ with 13 seen as answer | Allow use of any inequality or as an equation for the first mark<br><br>Award 1 mark for 4.6 oe,<br>eg $y = \frac{23}{5}$ or $y < 4.6$                                                                                                                                     |
|                |                      | A1   | for 4 or $y = 4$ with no incorrect working                                                                                                                                                                                                                                          | An answer of 4 from incorrect working can score 1 mark at most.                                                                                                                                                                                                            |
| 24             | 4 packs and 5 boxes, | P1   | for start of a process to find common multiples of 30 and 24,<br>eg writes down at least 3 multiples of 30 and at least 3 multiples of 24<br><b>or</b><br>draws factor trees for both 30 and 24 with no more than 1 error in total<br><b>or</b><br>draws a correct Venn diagram     | 30, 60, 90, 120, 150, 180, 210, 240 ...<br><br>24, 48, 72, 96, 120, 144, 168, 192, 216, 240, ...<br>Condone the inclusion of 1 in factor trees or Venn diagrams for this mark<br><br> |
|                | or any multiple      | P1   | for identifying a common multiple<br>eg 120 or 240 or $5 \times 3 \times 2 \times 2 \times 2$ oe                                                                                                                                                                                    | May use any common multiple, 120, 240, 360...                                                                                                                                                                                                                              |
|                |                      | A1   | for 4 packs and 5 boxes or any multiple of this pairing eg 8, 10                                                                                                                                                                                                                    | Award 0 marks for a correct answer without correct supportive working.                                                                                                                                                                                                     |
| 25             | 20                   | M1   | for $30 \times 4 \div 6$ oe                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                            |
|                |                      | A1   | cao                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                            |

| Paper: 1MA1/2F |                                                                                     |      |                                                                                                                                                                                     |                                                         |
|----------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| Question       | Answer                                                                              | Mark | Mark scheme                                                                                                                                                                         | Additional guidance                                     |
| 17 (a)         | 265.05                                                                              | M1   | for $285 \times (7 \div 100) (= 19.95)$ oe<br><b>or</b> $(100 - 7) \div 100 (= 0.93)$                                                                                               | Accept £265.05p                                         |
|                |                                                                                     | M1   | for $285 - "19.95"$ <b>or</b> $285 \times "0.93"$ oe                                                                                                                                |                                                         |
|                |                                                                                     | A1   | cao                                                                                                                                                                                 |                                                         |
|                | 8000                                                                                | P1   | for start of process,<br>eg $2100 - 1700 (= 400)$                                                                                                                                   |                                                         |
|                |                                                                                     | P1   | for using $"400" = 5\%$ ,<br>eg $(1\% =) "400" \div 5 (= 80)$ or $(10\% =) "400" \times 2 (= 800)$<br>or $(50\% =) "400" \times 10 (= 4000)$<br><b>or</b> $"400" \div 5 \times 100$ |                                                         |
|                |                                                                                     | A1   | cao                                                                                                                                                                                 |                                                         |
| 18             | enlargement,<br>scale factor 2,<br>centre (0, 0)                                    | B2   | enlargement, scale factor 2, centre (0, 0)                                                                                                                                          | Award no marks if more than one transformation is given |
|                |                                                                                     | (B1) | for 2 correct aspects)                                                                                                                                                              |                                                         |
| 19 (a)         | $5w(3w - 1)$                                                                        | B2   | for $5w(3w - 1)$                                                                                                                                                                    |                                                         |
|                |                                                                                     | (B1) | for $5(3w^2 - w)$ <b>or</b> $w(15w - 5)$<br><b>or</b> $5w(aw - b)$ where $a$ and $b$ are integers or $(3w - 1)$ as a factor)                                                        |                                                         |
|                |  | M1   | for drawing a line from $-2$ to $4$ or for an open circle at $-2$ or for a closed circle at $4$                                                                                     |                                                         |
|                |                                                                                     | A1   | cao                                                                                                                                                                                 |                                                         |
|                |                                                                                     |      |                                                                                                                                                                                     |                                                         |

| Paper: 1MA1/2F |                                                                                                                                                                       |      |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                   |                                                                            |    |    |   |   |   |   |   |     |    |    |    |    |   |   |   |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----|----|---|---|---|---|---|-----|----|----|----|----|---|---|---|
| Question       | Answer                                                                                                                                                                | Mark | Mark scheme                                                                                                                                                                                                                                                                                                                                                                                             | Additional guidance                                                                                                                                                                                                                                                                                                                                               |                                                                            |    |    |   |   |   |   |   |     |    |    |    |    |   |   |   |
| 20 (a)         | $n > 2$                                                                                                                                                               | M1   | for a method to isolate terms in $n$ in any inequality or equation<br>eg. $14n - 11n > 6$ or $n = 2$                                                                                                                                                                                                                                                                                                    | Ignore incorrect inequality sign and accept “=” sign                                                                                                                                                                                                                                                                                                              |                                                                            |    |    |   |   |   |   |   |     |    |    |    |    |   |   |   |
|                |                                                                                                                                                                       | A1   | cao                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                   |                                                                            |    |    |   |   |   |   |   |     |    |    |    |    |   |   |   |
|                |                                                                                                                                                                       | M1   | for $-2 - 3 < x \leq 4 - 3$ ( $-5 < x \leq 1$ )                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                   |                                                                            |    |    |   |   |   |   |   |     |    |    |    |    |   |   |   |
|                |                                                                                                                                                                       | M1   | for drawing a line from $-5$ to $1$<br><b>or</b> (indep) for an open circle at either $-2$ or $-5$<br><b>or</b> (indep) for a closed circle at $4$ or $1$                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                   |                                                                            |    |    |   |   |   |   |   |     |    |    |    |    |   |   |   |
|                |                                                                                                                                                                       | A1   | cao                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                   |                                                                            |    |    |   |   |   |   |   |     |    |    |    |    |   |   |   |
| 20 (b)         |                                                                                      | M1   | for $-2 - 3 < x \leq 4 - 3$ ( $-5 < x \leq 1$ )                                                                                                                                                                                                                                                                                                                                                         | A circle around $-5$ and $1$ implies M1                                                                                                                                                                                                                                                                                                                           |                                                                            |    |    |   |   |   |   |   |     |    |    |    |    |   |   |   |
|                |                                                                                                                                                                       | M1   | for drawing a line from $-5$ to $1$<br><b>or</b> (indep) for an open circle at either $-2$ or $-5$<br><b>or</b> (indep) for a closed circle at $4$ or $1$                                                                                                                                                                                                                                               | A line from $-5$ to $1$ implies M2 if no working shown                                                                                                                                                                                                                                                                                                            |                                                                            |    |    |   |   |   |   |   |     |    |    |    |    |   |   |   |
|                |                                                                                                                                                                       | M1   | for drawing a line from $-5$ to $1$<br><b>or</b> (indep) for an open circle at either $-2$ or $-5$<br><b>or</b> (indep) for a closed circle at $4$ or $1$                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                   |                                                                            |    |    |   |   |   |   |   |     |    |    |    |    |   |   |   |
|                |                                                                                                                                                                       | M1   | for drawing a line from $-5$ to $1$<br><b>or</b> (indep) for an open circle at either $-2$ or $-5$<br><b>or</b> (indep) for a closed circle at $4$ or $1$                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                   |                                                                            |    |    |   |   |   |   |   |     |    |    |    |    |   |   |   |
|                |                                                                                                                                                                       | M1   | for drawing a line from $-5$ to $1$<br><b>or</b> (indep) for an open circle at either $-2$ or $-5$<br><b>or</b> (indep) for a closed circle at $4$ or $1$                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                   |                                                                            |    |    |   |   |   |   |   |     |    |    |    |    |   |   |   |
| 21             | Graph                                                                                                                                                                 | B3   | for a correct line between $x = -2$ and $x = 4$                                                                                                                                                                                                                                                                                                                                                         | Ignore any incorrect points. Points need not be plotted for a correct line (segment) drawn<br><br>Table of values<br><table border="1"><tr><td><math>x</math></td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td><math>y</math></td><td>-7</td><td>-5</td><td>-3</td><td>-1</td><td>1</td><td>3</td><td>5</td></tr></table> | $x$                                                                        | -2 | -1 | 0 | 1 | 2 | 3 | 4 | $y$ | -7 | -5 | -3 | -1 | 1 | 3 | 5 |
|                |                                                                                                                                                                       | $x$  | -2                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                   | -1                                                                         | 0  | 1  | 2 | 3 | 4 |   |   |     |    |    |    |    |   |   |   |
|                |                                                                                                                                                                       | $y$  | -7                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                   | -5                                                                         | -3 | -1 | 1 | 3 | 5 |   |   |     |    |    |    |    |   |   |   |
|                |                                                                                                                                                                       | (B2) | for a correct straight line segment through at least 3 of $(-2, -7)$ , $(-1, -5)$ , $(0, -3)$ , $(1, -1)$ , $(2, 1)$ , $(3, 3)$ , $(4, 5)$<br><br><b>or</b> for all of these points plotted but not joined<br><br><b>OR</b> for a line drawn with a positive gradient through $(0, -3)$ and clear intention to use a gradient of 2, eg line through $(0, -3)$ going across 2 squares and up 4 squares ) |                                                                                                                                                                                                                                                                                                                                                                   |                                                                            |    |    |   |   |   |   |   |     |    |    |    |    |   |   |   |
|                |                                                                                                                                                                       | (B1) | for at least 2 correct points stated or plotted<br><br><b>OR</b> for a line drawn with a positive gradient through $(0, -3)$<br><br><b>OR</b> a line with gradient 2)                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                   | Ignore any incorrect points<br>Coordinates may be in a table or in working |    |    |   |   |   |   |   |     |    |    |    |    |   |   |   |
| (B1)           | for at least 2 correct points stated or plotted<br><br><b>OR</b> for a line drawn with a positive gradient through $(0, -3)$<br><br><b>OR</b> a line with gradient 2) |      |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                   |                                                                            |    |    |   |   |   |   |   |     |    |    |    |    |   |   |   |
| (B1)           | for at least 2 correct points stated or plotted<br><br><b>OR</b> for a line drawn with a positive gradient through $(0, -3)$<br><br><b>OR</b> a line with gradient 2) |      |                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                   |                                                                            |    |    |   |   |   |   |   |     |    |    |    |    |   |   |   |

| Paper: 1MA1/2F |                 |      |                                                                                                                                                                                                                                                                                 |                                                                                                                                       |
|----------------|-----------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer          | Mark | Mark scheme                                                                                                                                                                                                                                                                     | Additional guidance                                                                                                                   |
| 23 (a)         | 4               | B1   | cao                                                                                                                                                                                                                                                                             |                                                                                                                                       |
| (b)            | correct diagram | C2   | for a fully correct diagram, eg<br>                                                                                                                                                           |                                                                                                                                       |
|                |                 | (C1) | for drawing a line from -4 to 1<br><b>or</b> (indep) for an open circle at 1<br><b>or</b> (indep) for a closed circle at -4                                                                                                                                                     | Condone arrow heads or line ending to denote the 'end' of the line                                                                    |
| (c)            | $g < 25$        | M1   | for a correct first step,<br>eg adding 4 to both sides, eg $\frac{2}{5}g < 6 + 4$<br>or multiplying throughout by 5, eg $2g - 4 \times 5 < 6 \times 5$<br><b>or</b> dividing throughout by 2, eg $\frac{1}{5}g - 4 \div 2 < 6 \div 2$                                           | Allow use of any inequality or as an equation for both method marks<br>$\frac{2}{5}g < 10$<br>$2g - 20 < 30$<br>$\frac{g}{5} - 2 < 3$ |
|                |                 | M1   | for a correct second step, eg $2g < "10" \times 5$ or $\frac{1}{5}g < "10" \div 2$<br><b>or</b> $2g < "30" + "20"$ or $g - "20" \div 2 < "30" \div 2$<br><b>or</b> $\frac{g}{5} < "3" + "2"$ or $g - "2" \times 5 < "3" \times 5$<br><b>or</b> showing 25 as the critical value | $2g < 50$<br>$\frac{g}{5} < 5$<br>$g - 10 < 15$                                                                                       |
|                |                 | A1   | for $g < 25$ oe                                                                                                                                                                                                                                                                 | Can be written as $g = 25$                                                                                                            |



| Paper: 1MA1/3F |                  |                                                                      |                                                                                                                                                                                                                                                  |                                                                                                                                                                                   |
|----------------|------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question       | Answer           | Mark                                                                 | Mark scheme                                                                                                                                                                                                                                      | Additional guidance                                                                                                                                                               |
| 18             | 1204             | P2<br><br>(P1<br>P1<br>A1<br><br>SCB1 for answer of 920 if P0 scored | for a full process to find 120% of 14200<br>eg, $1.2 \times 14200 (=17040)$ <b>or</b> $(0.2 \times 14200) + 14200 (=17040)$<br><br>for process to find 20% of 14200 eg, $0.2 \times 14200 (=2840)$ oe)<br><br>for [cost] – 5000<br><br>cao       | [cost] must be greater than 14200                                                                                                                                                 |
| 19 (a)         | Inequality shown | B2<br><br>(B1                                                        | for fully correct solution with all three aspects with no ambiguity<br>Aspect 1: circle at 4<br>Aspect 2: circle not shaded<br>Aspect 3: arrow pointing left or line extending beyond –5, starting from their circle<br><br>for any two aspects) | Circling the number 4 alone scores B0<br>Aspect 1 and Aspect 2 must relate to the same circle.                                                                                    |
| (b)            | 4,5,6,7          | B2<br><br>(B1                                                        | for all four numbers in any order<br><br>for 2 or 3 correct values with no errors<br><b>or</b> 4 correct values with one extra)                                                                                                                  |                                                                                                                                                                                   |
| (c)            | $x \geq 6$       | M1<br><br>M1<br><br>A1                                               | for a correct intention to subtract 5 from both sides<br><b>or</b> a correct intention to subtract x from both sides<br><br>for a full method to solve the inequality <b>or</b> showing a critical value of 6<br><br>cao                         | Can work with an equation for both M marks<br><br>Award 2 marks for an answer of $x \geq 6$ where ? is an = or any incorrect inequality symbol, or for an answer shown as just 6. |

