

GCSE Mathematics (1MA1) – Aiming for Grade 4 1F

Student-friendly mark scheme

Please note that this mark scheme is not the one used by examiners for marking scripts. It is intended more as a guide to good practice, indicating where marks are given for correct answers. As such, it doesn't show follow-through marks (marks that are awarded despite errors being made) or special cases.

It should also be noted that for many questions, there may be alternative methods of finding correct solutions that are not shown here – they will be covered in the formal mark scheme.

Some questions require all working to be shown; in such questions, no marks will be given for an answer with no working (even if it is a correct answer).

The following table shows the marks scored on average at certain grades on similar questions from live exams.

For example: A student who achieved a Grade 4 on similar questions from either the Summer 2023 or November 2023 exam sittings achieved on average 26.8 marks from these questions.

Grade	5	4	3	2	1
Mark	34.6	26.8	18.9	11.4	6.3

Answer all questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

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

3a

1 mark

(1)

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

$19 + 5b - 7b + 4c + c$

$19 - 2b + 5c$

$19 - 2b + 5c$

Final mark

(2)

(c) Factorise $8d - 6$ 1 mark for either of these

$4 \times 2 \quad 6 \times 2$

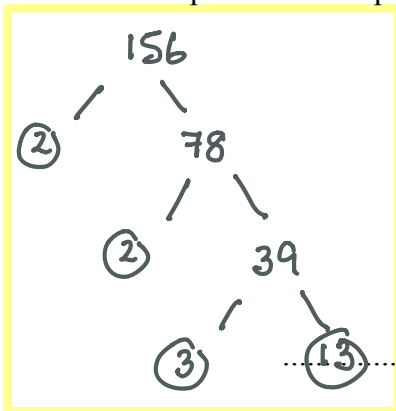
$2(4d - 3)$

1 mark

(1)

(Total for Question 1 is 4 marks)

*2 (a) Write 156 as a product of its prime factors.



1 mark

Final mark

$2 \times 2 \times 3 \times 13$ or $2^2 \times 3 \times 13$

(2)

(b) Find the highest common factor (HCF) of 156 and 130

$130 = 13 \times 10$
 $= 13 \times 2 \times 5$

$HCF = 2 \times 13$

$130 = 2 \times 5 \times 13$
 $156 = 2 \times 2 \times 3 \times 13$

1 mark

26

Final mark

(2)

(Total for Question 2 is 4 marks)

*3 Work out $7\frac{3}{8} - 2\frac{1}{2}$
 Give your answer as a mixed number.

$7 \times 8 = 56$ $56 + 3 = 59$ $2 \times 2 = 4$ $4 + 1 = 5$

$$\frac{59}{8} - \frac{5}{2}$$

1 mark

$$\frac{59}{8} - \frac{20}{8} = \frac{39}{8}$$

1 mark

$$\downarrow \times 4$$

$8, 16, 24, 32$

$\frac{39}{8} = 4\frac{7}{8}$

$4\frac{7}{8}$

Final mark

(Total for Question 3 is 3 marks)

4 Naomi has b bags of apples and c crates of apples.
 There are 5 apples in each bag.
 There are 28 apples in each crate.
 Naomi has a total of T apples.
 Write a formula for T in terms of b and c .

Bag
 5 apples
 b

$5b$

1 mark

Crate
 28 apples
 c

$28c$

1 mark

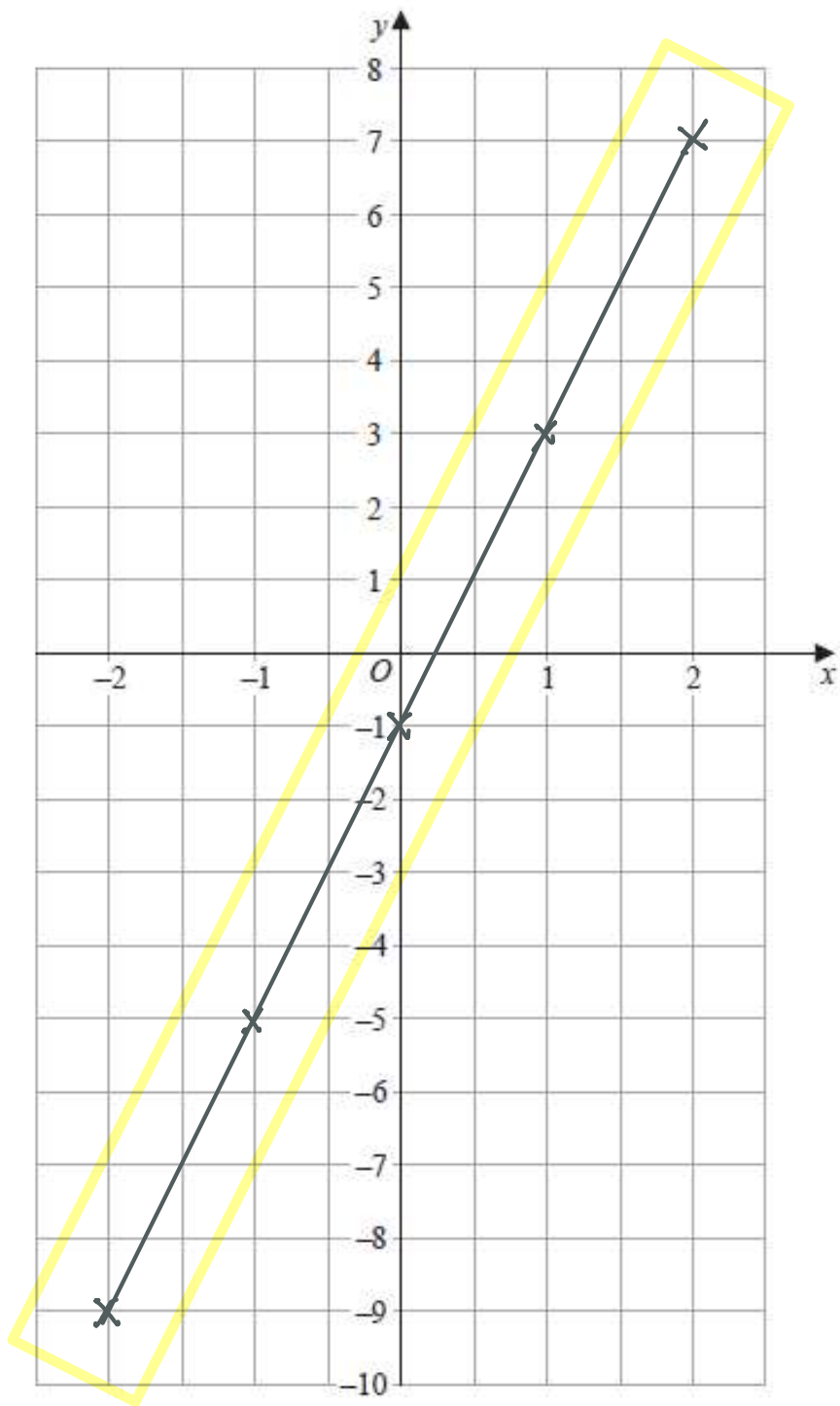
$T = 5b + 28c$

Final mark

(Total for Question 4 is 3 marks)

5 On the grid, draw the graph of $y = 4x - 1$ for values of x from -2 to 2

x	-2	-1	0	1	2
y	-9	-5	-1	3	7



3 marks for fully correct graph

2 marks for all points plotted but not joined

1 mark for at least two correct points plotted or stated

(Total for Question 5 is 3 marks)

6 Here are the first five terms of an arithmetic sequence.

$$\begin{array}{ccccccccc} & -5 & & 3 & & 11 & & 19 & & 27 \\ & & 8 & & & 8 & & & 8 & & 8 \end{array}$$

Find an expression, in terms of n , for the n th term of this sequence.

$$\begin{array}{ccccccccc} 8n & & 8 & & 16 & & 24 & & 32 & & 40 \\ & & -13 & & -13 & & -13 & & -13 & & -13 \end{array}$$

$8n - 13$

2 marks

(Total for Question 6 is 2 marks)

7 Chloe is making scrunchies.

Chloe has a large number of hair bands.

Each hair band costs 8p.

She buys 100 g of wool for £3

Chloe uses 1 hair band and 5 g of wool to make each scrunchy.

She makes as many scrunchies as she can.

Work out the total cost of each scrunchy that she makes.

Give your answer in pence.

1 mark

$100 \div 5 = 20$

$100 \text{ g wool} = \text{£}3$
 $\div 20$
 $= 15\text{p}$

$300 \div 20$
 $20 \overline{) 300} \begin{array}{r} 15 \\ \underline{300} \end{array}$

1 mark

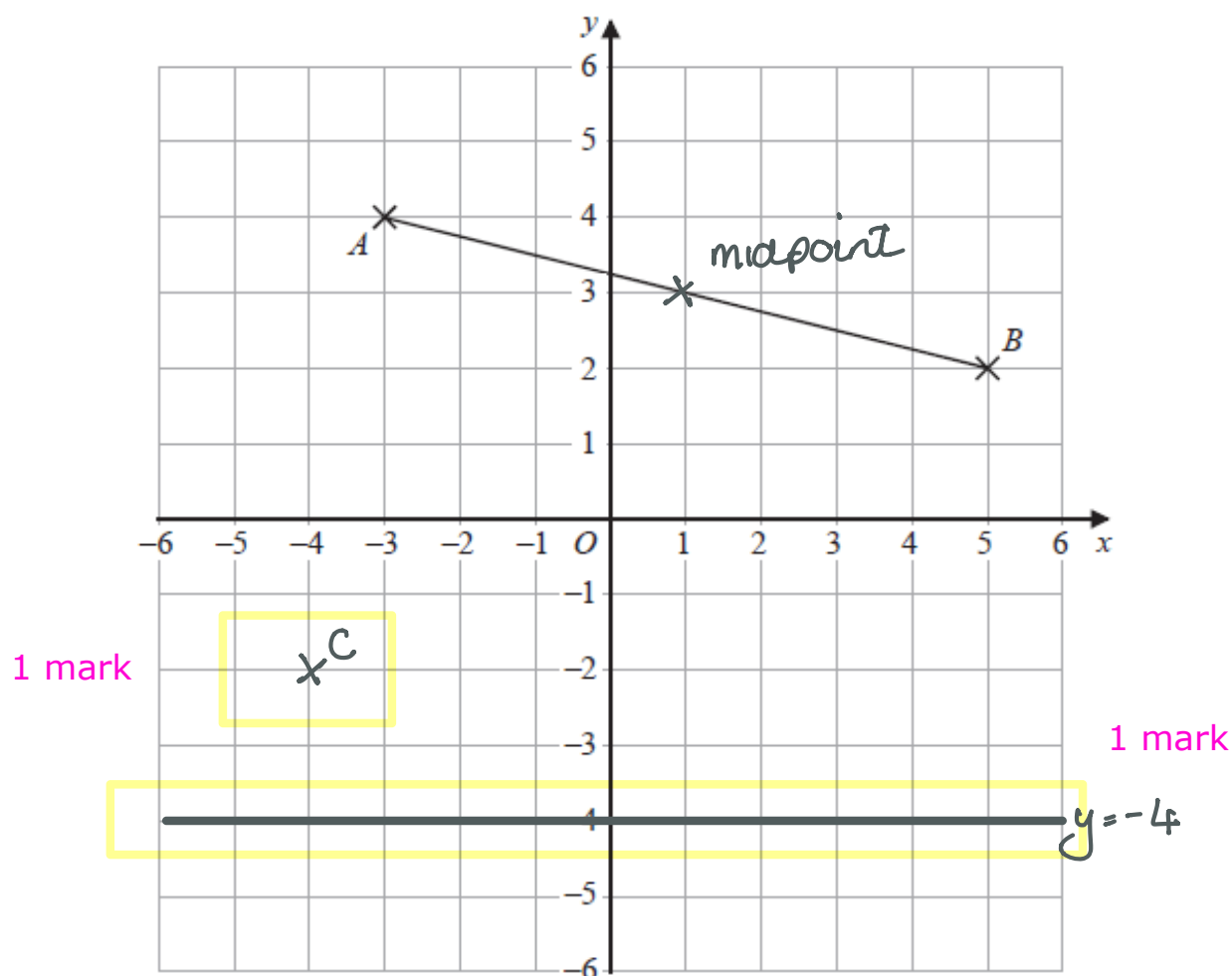
$\text{Total cost} = 8\text{p} + 15\text{p}$

1 mark

23

Final mark

(Total for Question 7 is 4 marks)



(a) Write down the coordinates of point B.

1 mark

(5 , 2)

(1)

(b) Plot the point with coordinates (4, -2)
Label this point C.

see graph

(c) Write down the coordinates of the midpoint of AB.

1 mark

(1 , 3)

(1)

(d) Draw the line with equation $y = -4$

see graph

(1)

(Total for Question 8 is 4 marks)

- *9** The price of a holiday increases by 20%
 This 20% increase adds £240 to the price of the holiday.
 Work out the price of the holiday before the increase.

$$\boxed{100\%} \quad \boxed{20\%}$$

£240

$$\begin{array}{rcl} 20\% & = & \text{£}240 \\ \times 5 & & \times 5 \\ \hline 100\% & = & \text{£}1200 \end{array}$$

1 mark

£ 1200 Final mark

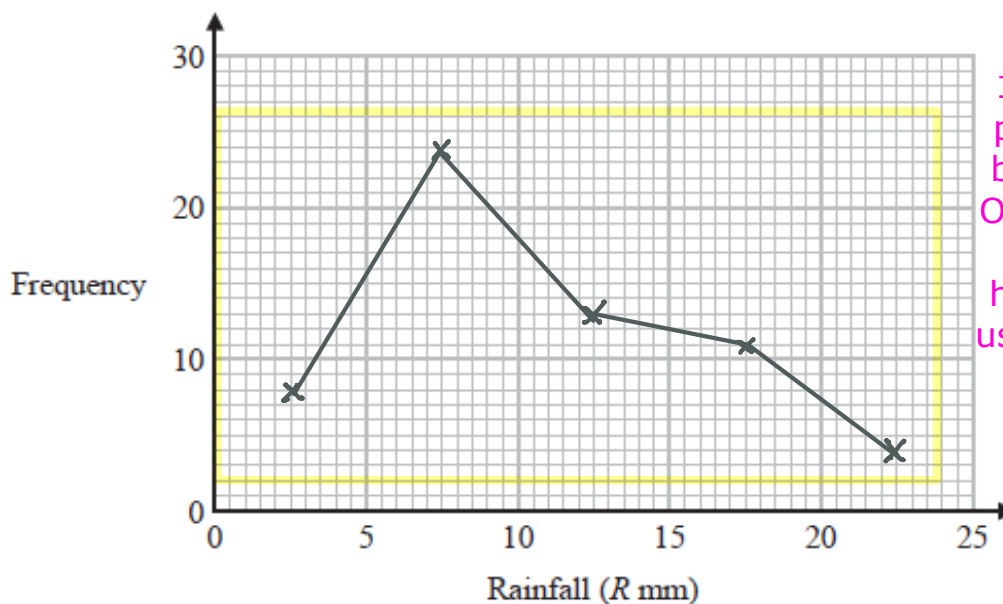
(Total for Question 9 is 2 marks)

- *10** The table shows information about the daily rainfall in a town for 60 days.

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

2 marks for fully correct frequency polygon

Draw a frequency polygon for this information.

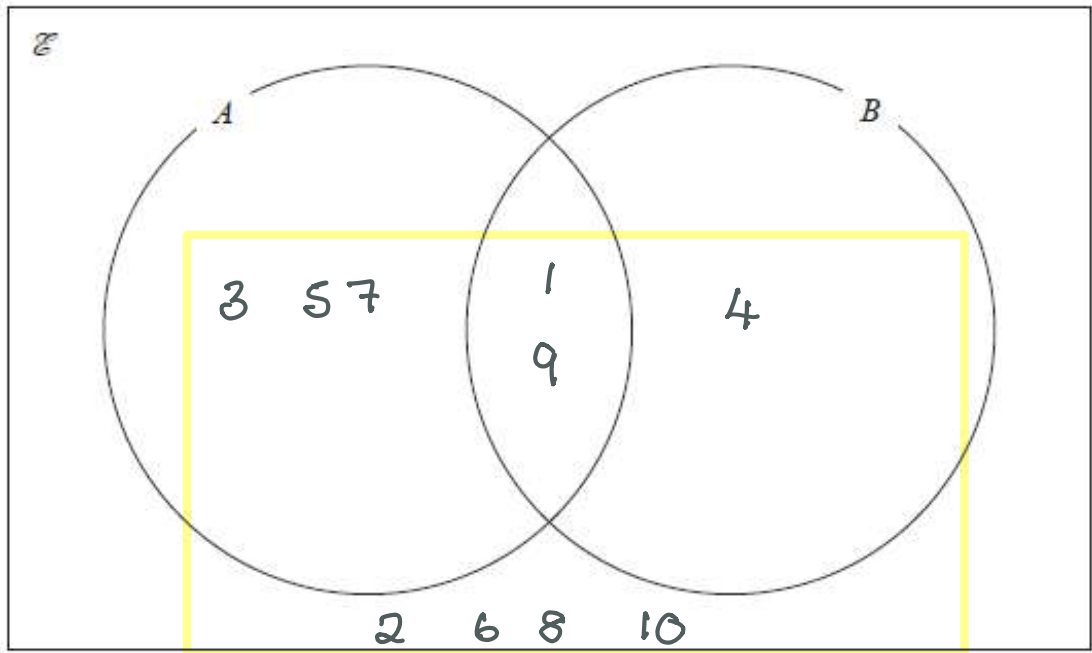


1 mark for all points plotted but not joined OR all points at the correct height but not using midpoints and joined

(Total for Question 10 is 2 marks)

*11 $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$
 $A = \{\text{odd numbers}\}$
 $B = \{\text{square numbers}\}$

(a) Complete the Venn diagram for this information.



3 marks for fully correct Venn

2 marks for two or three correct regions

1 mark for one correct region

(3)

A number is chosen at random from the universal set $\mathcal{E}$
 (b) Find the probability that this number is in the set B'

$$\frac{\quad}{10}$$

1 mark for denominator of 10

$$\frac{7}{10}$$

Final mark

(2)

(Total for Question 11 is 5 marks)

12 A piece of glass has a mass of 27 g and a volume of 10 cm³
 Work out the density of the piece of glass.

1 mark

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

$$D = \frac{27}{10}$$

$$27 \div 10$$

$$2.7$$

Final mark g/cm³

(Total for Question 12 is 2 marks)

*13 Write $\frac{2^5 \times 2^4}{2^3}$ in the form 2^n where n is an integer.

$$\frac{2^{5+4}}{2^3} = \frac{2^9}{2^3} \text{ 1 mark}$$

$$= 2^{9-3} = 2^6$$

2⁶ Final mark

(Total for Question 13 is 2 marks)

14 Work out an estimate for $\frac{5.7 \times 8.2}{0.26}$

0.3 could be used too so
a range is accepted of
160 to 200

$$\begin{aligned} 5.7 &\rightarrow 6 \\ 8.2 &\rightarrow 8 \\ 0.26 &\rightarrow 0.25 \end{aligned}$$

1 mark for
one of these

$$\frac{6 \times 8}{0.25} = \frac{48}{0.25}$$

$$48 \div \frac{1}{4} = 48 \times 4$$

1 mark

192 Final mark

(Total for Question 14 is 3 marks)

*15 Work out $8.46 \div 0.15$

$$\frac{8.46}{0.15} \times \frac{100}{100} = \frac{846}{15} \quad \boxed{846 \div 15} \text{ 1 mark}$$

$$\boxed{056.4} \text{ 1 mark for digits 564}$$

$$15 \overline{) 84.600}$$

- 15
- 30
- 45
- 60
- 75
- 90
- 105
- 120

56.4 Final mark

(Total for Question 15 is 3 marks)

TOTAL FOR PAPER IS 46 MARKS