

GCSE Mathematics (1MA1) – Aiming for Grade 4 2F

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 28.9 marks from these questions.

Grade	5	4	3	2	1
Mark	37.0	28.9	19.6	11.3	4.9

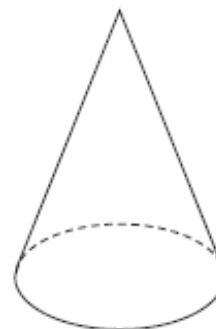
Answer all questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Here is a 3-D shape.

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

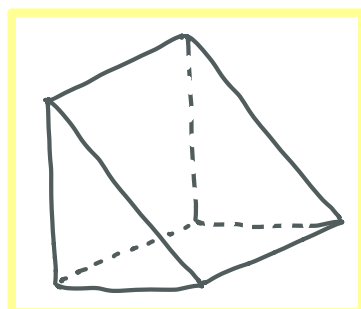


cone

1 mark

(1)

(b) In the space below, draw a sketch of a triangular prism.

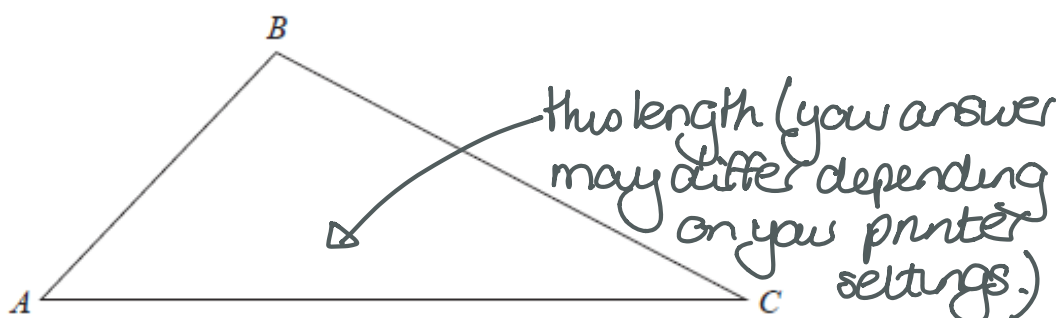


1 mark

(1)

(Total for Question 1 is 2 marks)

2 Here is a triangle.



(a) Measure the length of AC.

9.3

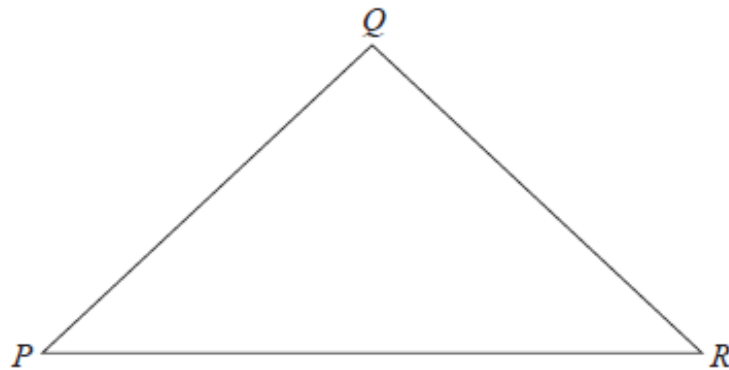
1 mark

cm

(1)

Range accepted 9.1 to 9.5

Here is a different triangle.



$$QP = QR$$

(b) Write down the mathematical name of this triangle.

isosceles

1 mark

(1)

(Total for Question 2 is 2 marks)

3 240 people work at a factory.

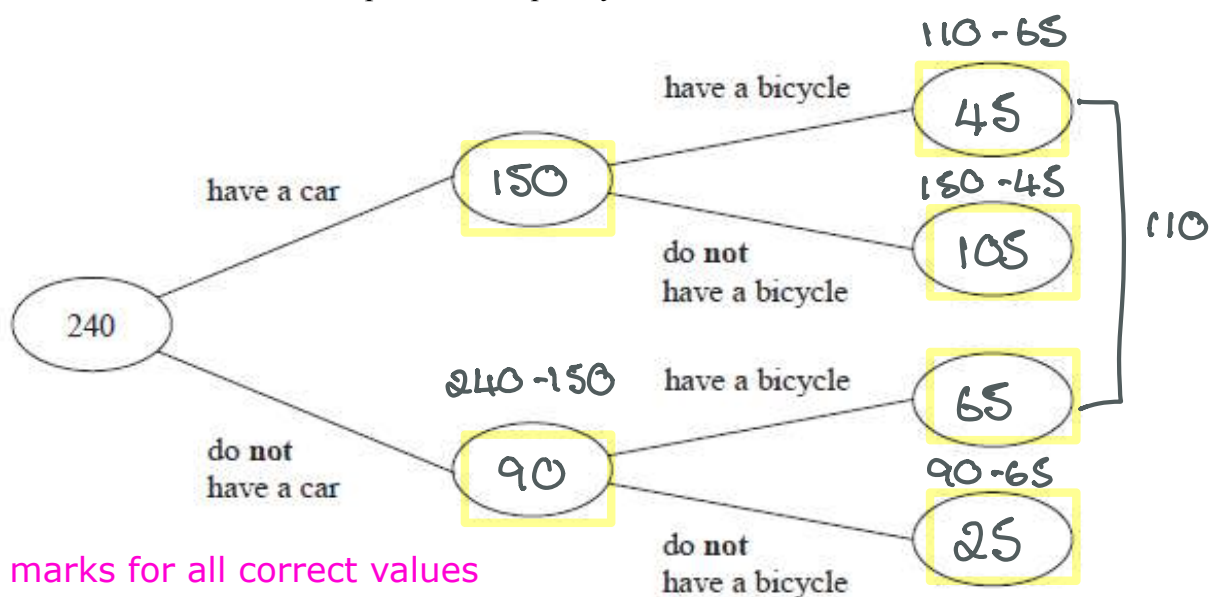
Of these people

150 have a car

110 have a bicycle

65 of the people who have a bicycle do **not** have a car.

(a) Use this information to complete the frequency tree.



(3)

3 marks for all correct values
2 marks for at least four correct values
1 mark for at least one correct value

(b) What percentage of the 150 people who have a car also have a bicycle?

$$\frac{45}{150} \times 100$$

1 mark

Final mark
30 %
(2)

(Total for Question 3 is 5 marks)

- *4 Last year a family recycled 800 kg of household waste.
57% of this waste was paper and glass.

weight of paper recycled : weight of glass recycled = 12 : 7

Calculate the weight of glass the family recycled.

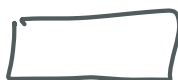
800 kg

$$P + G = 57\%$$

$$0.57 \times 800 = 456 \text{ kg}$$

1 mark

Paper	:	Glass	Total
12	:	7	19



456

$$456 \div 19 = 24$$

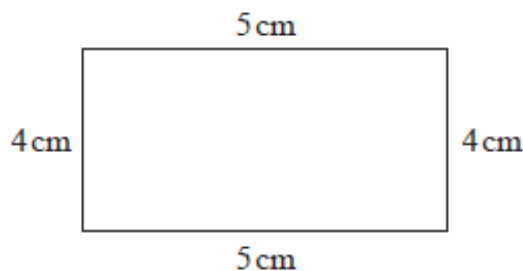
$$7 \times 24 = 168$$

1 mark

Final mark
168 kg

(Total for Question 4 is 3 marks)

5 Milo is trying to find the area of this rectangle.



He writes,

“The area is 400 cm^2 because $5 \times 4 \times 5 \times 4 = 400$ ”

(a) Explain what is wrong with Milo’s method.

he should have multiplied 5×4

1 mark

(1)

Anya works out the area of a shape.

Her answer is 86 cm.

(b) Explain why her answer cannot be fully correct.

The units should be cm^2 not cm

1 mark

(1)

(Total for Question 5 is 2 marks)

*6 (a) Expand and simplify $3(2y - 5) + 7(y + 2)$

1 mark for either of these

$6y - 15$

+

$7y + 14$

$= 6y + 7y - 15 + 14$

$13y - 1$

Final mark

(2)

(b) Factorise fully $6x^2 + 15x$

$$\begin{array}{|c|} \hline 3 \times 2 \\ \hline x \times x \\ \hline \end{array} \quad \begin{array}{|c|} \hline 3 \times 5 \\ \hline x \\ \hline \end{array}$$

$$3x(2x + 5) \quad 2 \text{ marks}$$

(2)

(Total for Question 6 is 4 marks)

*7 $-2 \leq n < 5$

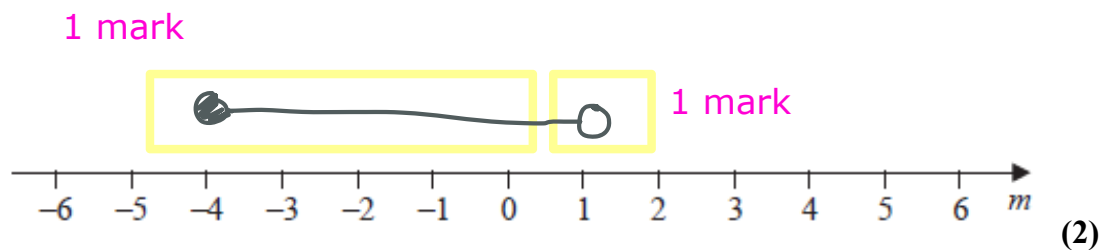
n is an integer.

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

$$4 \quad 1 \text{ mark}$$

(1)

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



(Total for Question 7 is 3 marks)

- *8 Tamsin buys a house with a value of £150 000
The value of Tamsin's house increases by 4% each year.
Rachel buys a house with a value of £160 000
The value of Rachel's house increases by 1.5% each year.
At the end of 2 years, whose house has the greater value?
You must show how you get your answer.

Tamsin

$$150\,000 \times 1.04 = 156\,000 \quad 1 \text{ mark}$$

$$156\,000 \times 1.04 = 162\,240 \quad 1 \text{ mark}$$

Rachel

$$160\,000 \times 1.015 = 162\,400 \quad 1 \text{ mark}$$

$$162\,400 \times 1.015 = 164\,836$$

Rachel $164\,836 > 162\,240$ Final mark

(Total for Question 8 is 4 marks)

- 9 Paulo drives at an average speed of 56 km / h for 1 hour 45 minutes.
Work out the distance Paulo drives.

$$1 \text{ hour } 45 \text{ mins} = 1 \frac{3}{4} \text{ hours} = 1.75 \text{ hours} \quad 1 \text{ mark}$$

1 mark

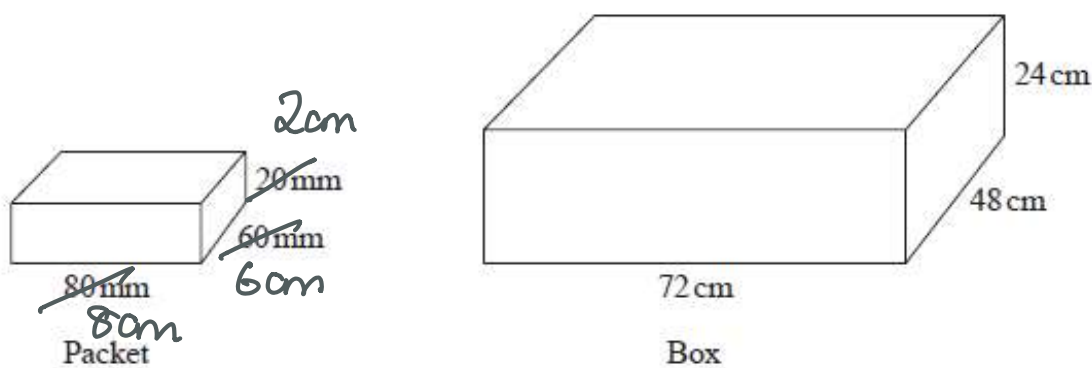
$$56 \text{ miles} = 1 \text{ hour} \times 1.75$$

$$98 \text{ miles} = 1.75 \text{ hours}$$

98 Final mark km

(Total for Question 9 is 3 marks)

- 10 Packets of sweets are put into boxes.



Each packet is a cuboid, 80 mm by 60 mm by 20 mm.

Each box is a cuboid, 72 cm by 48 cm by 24 cm.

Work out the greatest number of packets that can be put into each box.

$$\text{Packet volume} = 2 \times 6 \times 8 = 96 \text{ cm}^3 \quad 1 \text{ mark}$$

$$\text{Box volume} = 72 \times 48 \times 24 = 82944 \text{ cm}^3 \quad 1 \text{ mark}$$

$$\begin{aligned} \text{greatest number} &= 82944 \div 96 \\ &= 864 \end{aligned} \quad 1 \text{ mark}$$

864 Final mark

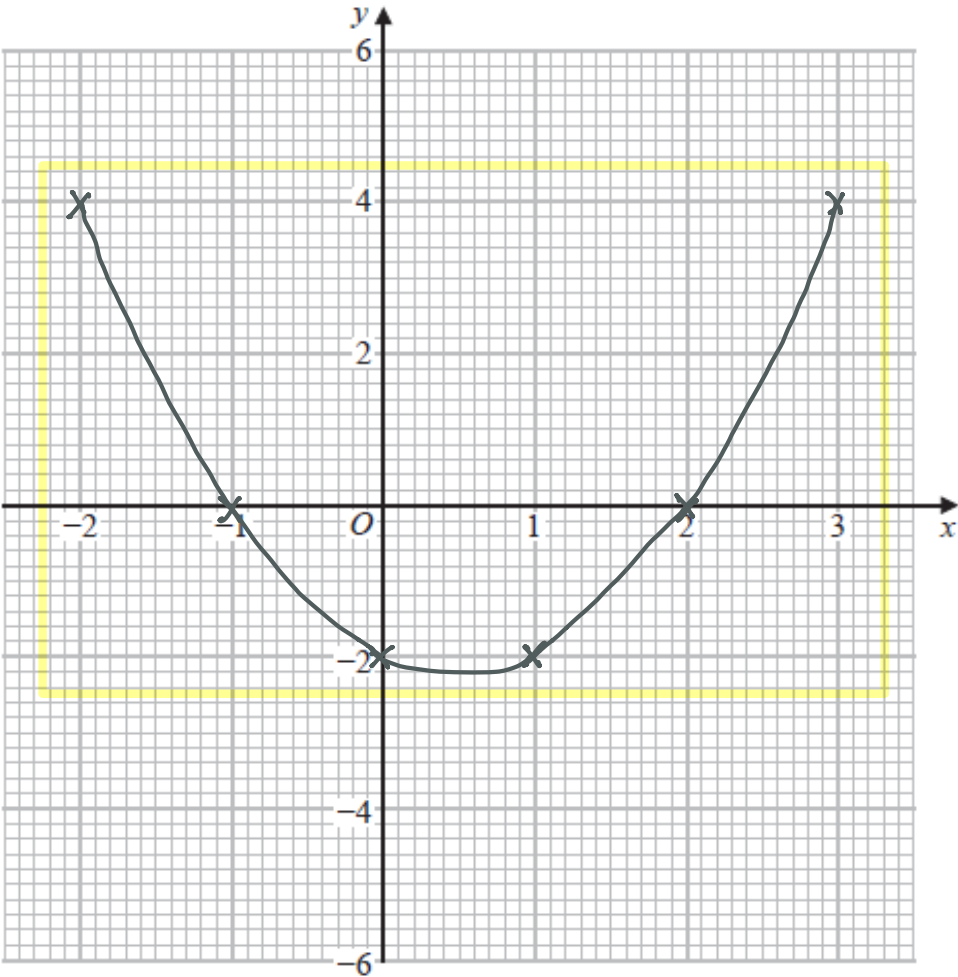
(Total for Question 10 is 4 marks)

- 11
- (a) Complete the table of values for $y = x^2 - x - 2$
- 2 marks for all four correct values
1 mark for two or three correct values

x	-2	-1	0	1	2	3
y	4	0	-2	-2	0	4

(2)

- (b) On the grid, draw the graph of $y = x^2 - x - 2$ for values of x from -2 to 3



(2)

2 marks for fully correct graph
1 mark for plotting at least four correct points

(Total for Question 11 is 4 marks)

- 12
- Rima is going to roll a fair 6-sided dice.

Choose the word that best describes the probability that the dice will land on the number 3

impossible	unlikely	evens	likely	certain
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..... unlikely

1 mark

(Total for Question 12 is 1 mark)

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

$$\begin{array}{rcl} 5x - 14 & = & 52 - x \\ +x & & +x \end{array}$$
$$\begin{array}{rcl} 6x - 14 & = & 52 \\ +14 & & +14 \end{array}$$

1 mark

$$\begin{array}{rcl} 6x & = & 66 \\ \div 6 & & \div 6 \end{array}$$

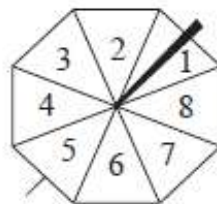
1 mark

$$x = 11$$

$x =$ 11 Final mark

(Total for Question 13 is 3 marks)

14 Here is a fair ordinary dice and a fair 8-sided spinner.



Charlie throws the dice once and spins the spinner once.

Is Charlie more likely to get

- a number less than 3 on the dice
or a number greater than 5 on the spinner?

You must show all your working.

Dice number less than 3
1, 2

$$= \frac{1}{3}$$
 1 mark

Spinner greater than 5
6, 7, 8

$$= \frac{3}{8}$$
 1 mark

$$\begin{array}{r} \frac{1}{3} \\ \times 8 \\ \hline 8 \\ 24 \end{array} \quad \begin{array}{r} \frac{3}{8} \\ \times 3 \\ \hline 9 \\ 24 \end{array}$$

Final mark

A number greater than 5
on the spinner is more likely

(Total for Question 14 is 3 marks)

***15** 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.

$4500 \times 1.034 = 4653$

1 mark

$$4653 \times 1.034 = 4811.20$$

Final mark

£

4811.20

(Total for Question 15 is 2 marks)

TOTAL FOR PAPER IS 45 MARKS