

GCSE Mathematics (1MA1) – Aiming for Grade 5 3H

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 5 on similar questions from either the Summer 2023 or November 2023 exam sittings achieved on average 26.4 marks from these questions.

Grade	9	8	7	6	5	4	3
Mark	30.6	30.2	29.4	28.3	26.4	23.2	17.5

Answer all questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

*1 Jonny wants to know how much coffee he will need for 800 people at a meeting.

Each person who drinks coffee will drink 2 cups of coffee.

10.6 g of coffee is needed for each cup of coffee.

Jonny assumes 68% of the people will drink coffee.

(a) Using this assumption, work out the amount of coffee Jonny needs.

Give your answer correct to the nearest gram.

800 people

68% drink coffee

1 mark $0.68 \times 88 = 544$ people

544 people $\rightarrow$ 2 cups of coffee
1 mark

$$544 \times 2 = 1088 \text{ cups}$$

$$1088 \times 10.6 \text{ grams}$$

1 mark $= 11532.8 \text{ grams}$

Final mark

11533

..... g

Range accepted 11532.5 to 11533 (4)

Jonny's assumption is wrong.

72% of the people will drink coffee.

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

1 mark

My answer would be greater as he'd need more coffee.

(1)

(Total for Question 1 is 5 marks)

*2 (a) Simplify $(m^2)^3$

$$m^{2 \times 3}$$

1 mark

$$m^6$$

(1)

(b) Simplify $x^5 \times x^8$

$$x^{5+8}$$

1 mark

$$x^{13}$$

(1)

(c) Expand $4p(p^2 + 3p)$

$$4p \times p^2 + 4p \times 3p$$

$$4p^3 + 12p^2$$

1 mark for either of these

Final mark

$$4p^3 + 12p^2$$

(2)

(Total for Question 2 is 4 marks)

*3 (a) Write 468 000 in standard form.

1 mark

$$4.68 \times 10^5$$

(1)

(b) Write 5.037×10^{-4} as an ordinary number.

1 mark

$$0.0005037$$

(1)

(Total for Question 3 is 2 marks)

*4 Ali buys packs of balloons and boxes of pencils.
 There are 30 balloons in each pack.
 There are 24 pencils in each box.
 Ali buys exactly the same number of balloons and pencils.
 Work out how many packs of balloons and how many boxes of pencils she could have bought.
 You must show all your working.

Balloons

30

60

90

120

4 packs

Pencils

24

48

72

96

120

5 packs

Final mark

4

..... packs of balloons

5

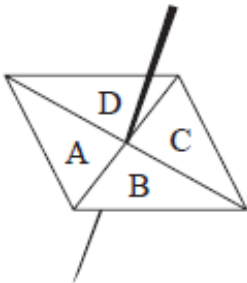
..... boxes of pencils

(Total for Question 4 is 3 marks)

*5 Here is a biased spinner.

The table shows the probabilities that when the spinner is spun it will land on A, on B, on C and on D.

Letter	A	B	C	D
Probability	0.4	0.21	0.32	0.07



Luka will spin the spinner 200 times.
 Work out an estimate for the number of times the spinner will land on A. 0.4

0.4 × 200

1 mark

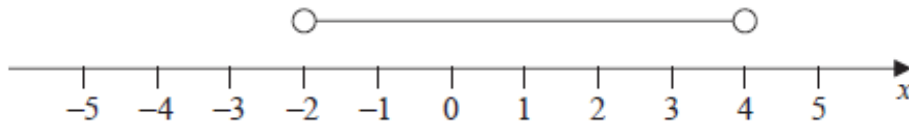
Final mark

80

.....

(Total for Question 5 is 2 marks)

***6** Jenna is asked to show the inequality $-3 < x \leq 4$ on a number line.
Here is her answer.



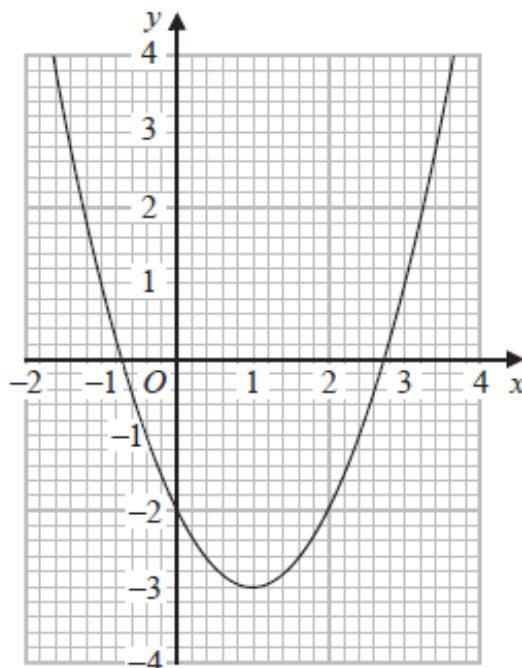
(a) Write down two mistakes Jenna has made.

1. The left hand circle should be above -3
1 mark for acceptable explanation

2. The right hand circle should be solid.
1 mark for acceptable explanation

(Total for Question 6 is 2 marks)

***7** Here is the graph of $y = x^2 - 2x - 2$



Write down the coordinates of the turning point on the graph of $y = x^2 - 2x - 2$

1 mark (1 , -3)

(Total for Question 7 is 1 mark)

8 The table shows some information about the heights of a group of adults.

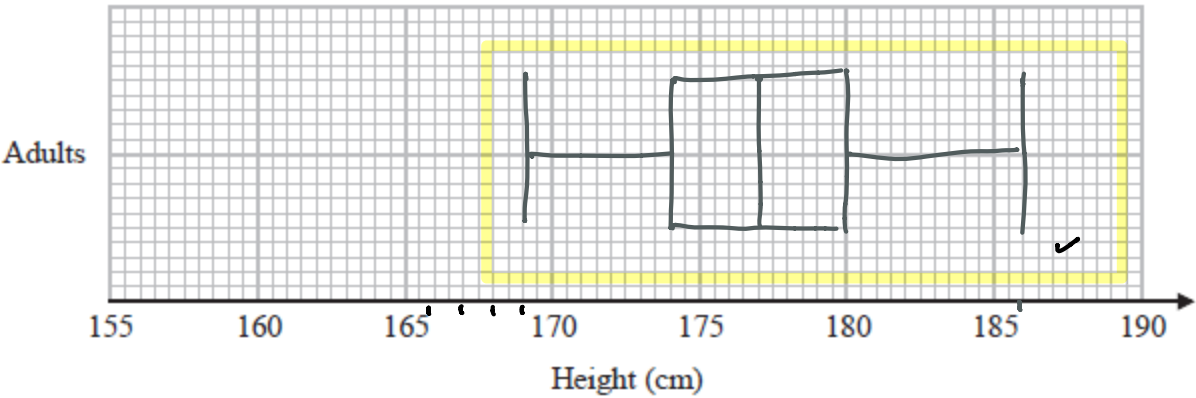
2 marks at least
three correct
points drawn

least height	169 cm
greatest height	186 cm
median	177 cm
lower quartile	174 cm
upper quartile	180 cm

1 mark for at
least two correct
points drawn

On the grid, draw a box plot for the information in the table.

3 marks for fully
correct box plot



(Total for Question 8 is 3 marks)

*9 A solid cuboid is made of metal.

The metal has a density of 9 g/cm³
The volume of the cuboid is 72 cm³

Work out the mass of the cuboid.



mass = 9 × 72
= 648

1 mark

Final mark

648

..... g
(Total for Question 9 is 2 marks)

*10 Riley travelled by car and by aeroplane.

He travelled 143 miles by car at an average speed of 55 miles per hour.

Riley then travelled for 5 hours and 20 minutes by aeroplane.

Work out, in hours and minutes, Riley's total travelling time.

1 mark

$$\text{time} = \frac{143}{55} = 2.6 \text{ hours}$$

Total time

$$= 5 \text{ hours } 20 \text{ mins} + 2.6 \text{ hours}$$

$$0.6 \text{ of } 1 \text{ hour} = 36 \text{ mins}$$

so $5 \text{ hours} + 2 \text{ hours} + 20 \text{ mins} + 36 \text{ mins}$
 $= 7 \text{ hours} + 56 \text{ mins}$ 1 mark

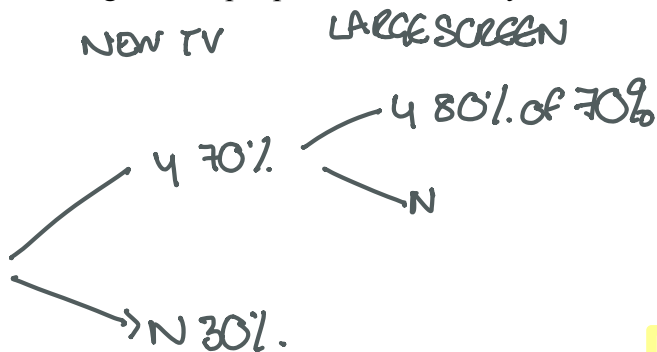
..... 7 hours 56 minutes Final mark
 (Total for Question 10 is 3 marks)

11 Some people were asked if they wanted a new television.

70% of the people said yes.

80% of the people who said yes wanted a television with a large screen.

What percentage of the people asked said they wanted a television with a large screen?



1 mark

$$0.8 \times 70 = 56$$

56 Final mark
 %
 (Total for Question 11 is 2 marks)

***12** A company orders a large number of plates from a factory.
It would take 30 hours to make all the plates using 4 machines.
How many machines are needed to make all the plates in 6 hours?

Time

30 hours

Machines

4

so 120 hours in total

if 6 hours

120 ÷ 6 = 20 machines

1 mark

20

Final mark

(Total for Question 12 is 2 marks)

TOTAL FOR PAPER IS 31 MARKS