

GCSE Mathematics (1MA1) – Aiming for Grade 5 2H

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 27.5 marks from these questions.

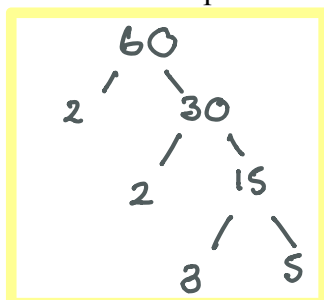
Grade	9	8	7	6	5	4	3
Mark	30.3	30.2	29.4	28.9	27.5	24.6	18.5

Answer all questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- *1 Write 60 as a product of its prime factors.



1 mark for complete factor tree - one error allowed

Final mark

$$2^2 \times 3 \times 5 \text{ or } 2 \times 2 \times 3 \times 5$$

(Total for Question 1 is 2 marks)

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

1 mark for either of these

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

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

Final mark

$$13y - 1$$

(2)

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

$$\begin{array}{cc} 1, 6 & 1, 15 \\ 2, 3 & 3, 5 \\ \hline & \end{array}$$

2 marks

$$3x(2x + 5)$$

(2)

- (c) Make g the subject of the formula $f = 3g + 11$

$$\begin{array}{cc} f = 3g + 11 \\ -11 & -11 \\ \hline \end{array}$$

1 mark

$$\frac{f - 11}{3} = \frac{3g}{3}$$

Final mark

$$g = \frac{f - 11}{3}$$

(2)

(Total for Question 2 is 6 marks)

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

$$\begin{array}{rcl}
 \checkmark & & \checkmark \\
 5x - 14 & = & 52 - x \\
 +x & & +x \\
 \hline
 6x - 14 & = & 52 \\
 +14 & & +14 \\
 \hline
 6x & = & 66 \\
 & & \div 6 \\
 x & = & 11
 \end{array}$$

1 mark

1 mark

Final mark

11

$x =$

(Total for Question 3 is 3 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.

800kg

$P + G = 57\% \text{ of } 800$

$$\begin{array}{l}
 = 0.57 \times 800 \\
 = 456 \text{ kg}
 \end{array}$$

1 mark

$P : G$
 $12 : 7$

$$\begin{array}{l}
 456 \div 19 = 24 \\
 12 \times 24 : 7 \times 24 \\
 288 : 168
 \end{array}$$

1 mark

168

..... kg

(Total for Question 4 is 3 marks)

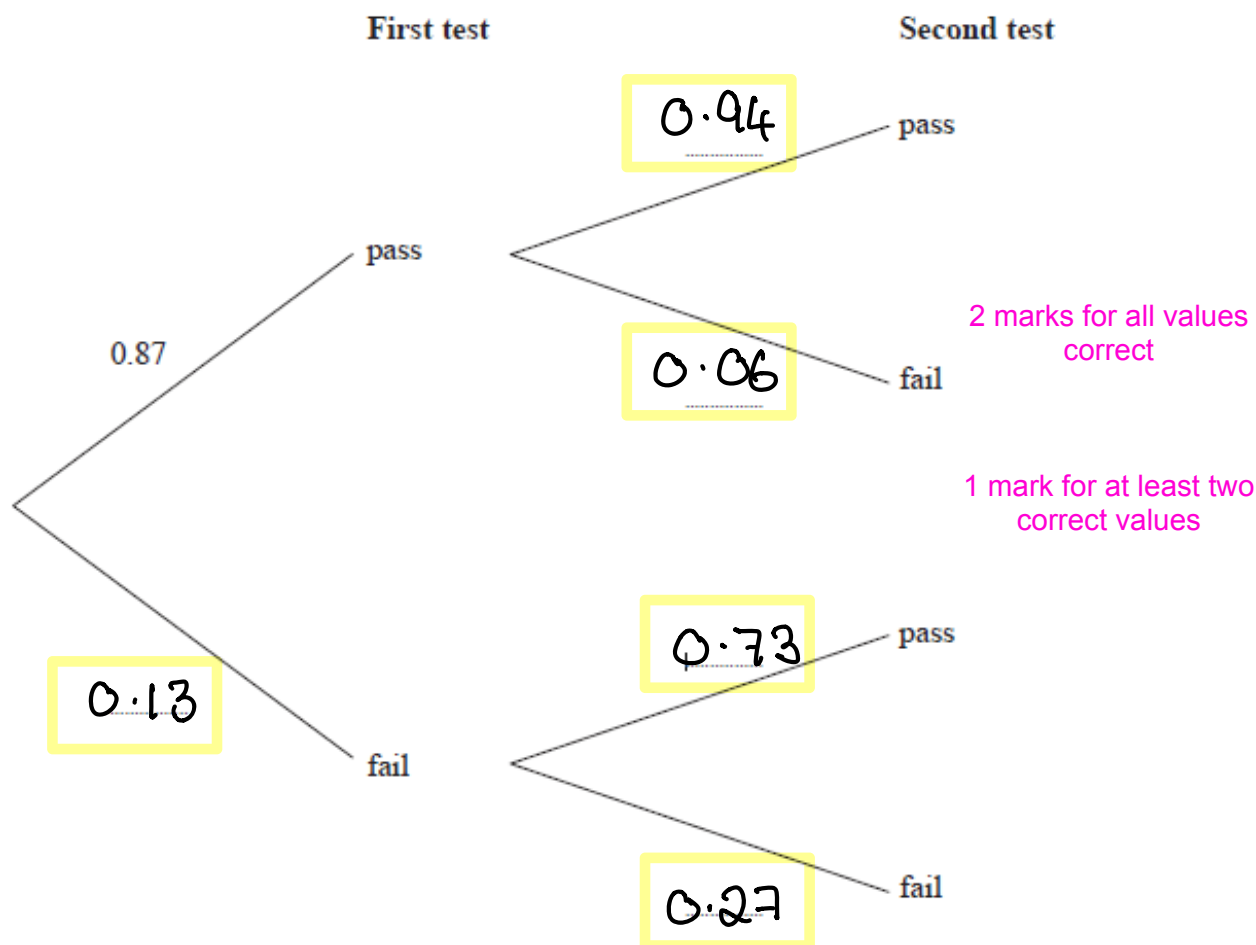
Final mark. Answer in the range 167.9 to 168

SPECIAL CASE: if 288 is shown as the final answer award 2 marks.

- 5 Shakir has to complete two tests.
He can either pass or fail each test.

The probability that he will pass the first test is 0.87
If he passes the first test the probability he will pass the second test is 0.94
If he fails the first test the probability he will pass the second test is 0.73

Complete the probability tree diagram for this information.



(Total for Question 5 is 2 marks)

*6 Work out the value of $\frac{25 - \sqrt{43.87}}{6 + 2.1^2}$

Write down all the figures on your calculator display.

= 18.37655679

10.41

1 mark for either of these

1.76527923

Final mark. Must be at least 3 decimal places.

(Total for Question 6 is 2 marks)

*7 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

Yr1

150000 × 1.04 = 156000

Yr2

156000 × 1.04 = 166240

1 mark for one year for either Rachel OR Tamsin

Rachel

Yr1

160000 × 1.015 = 162400

Yr2

162400 × 1.015 = 164836

1 mark for two years for either Rachel OR Tamsin

1 mark for two years for BOTH Rachel and Tamsin

Rachel

164836 > 162240

(Total for Question 7 is 4 marks)

1 mark for Rachel WITH correct figures

- *8 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.

$$100 + 3.4 = 103.4\% \rightarrow 1.034$$

Yr1 $4500 \times 1.034 = 4653$

Yr2 $4653 \times 1.034 = 4811.202$

1 mark

Final mark

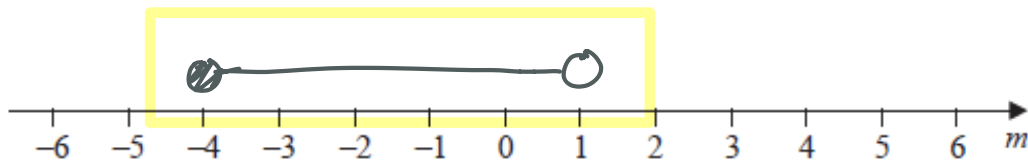
£ 4811.20

(Total for Question 8 is 2 marks)

- *9 On the number line below, show the inequality $-4 \leq m < 1$

2 marks for fully correct diagram.

1 mark can be awarded for either correct circles or line from -4 to 1



(Total for Question 9 is 2 marks)

- *10 There are 48 counters in a bag.

There are only red counters and blue counters in the bag.

number of red counters : number of blue counters = 1 : 2

Helen has to work out how many red counters are in the bag.

She says,

“There are 24 red counters in the bag because 1 is half of 2 and 24 is half of 48”

Is Helen correct?

You must give a reason for your answer.

$$48 \div 3 = 16$$

$$16 : 32$$

No, the fraction of red counters is one third not one half.

1 mark for 'no' WITH valid reason

(Total for Question 10 is 1 mark)

***11** Karen is organising a party for a charity.

She spends

£100 on food

£120 on a hall

£80 on a DJ.

Karen sells 54 tickets for the party.

Each ticket costs £7.50

Work out the percentage profit Karen makes for the charity.

Spends $100 + 120 + 80 = \text{£}300$

1 mark

Tickets $= 54 \times 7.50 = \text{£}405$

Profit $= 405 - 300 = 105$

1 mark

% profit $= \frac{105}{300} \times 100$

1 mark

Final mark

35

$= 35\%$

.....%
(Total for Question 11 is 4 marks)

TOTAL FOR PAPER IS 31 MARKS