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1MA1 June 2027 Paper 3H Best Guess Paper

Higher · Standard · Question Paper

Disclaimer

This independently compiled practice paper is for students preparing for Pearson Edexcel GCSE Mathematics (1MA1), Higher Tier, Paper 3H. A calculator may be used.

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Revise the full specification. Attempt the matching question paper before using the mark scheme, model answers and practice resources at www.mygrade9mathstutor.com.

If you find this paper helpful, please support me by buying me a coffee

Video walkthrough

Full walkthrough QR not yet linked.

Calculator allowed · 20 questions · 80 marks · Suggested time: 1 hour 30 minutes.

Answer ALL TWENTY questions
Write your answers in the spaces provided
You must show all stages of your working

1 A plane has a length of 78 metres.

A scale model is made of the plane.
The scale of the model is 1: 200

Work out the length of the scale model.
Give your answer in centimetres.

..... cm

(Total for Question 1 is 3 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 3 Review: ____ / ____

2 The length of a table is measured as 1.6 metres correct to one decimal place.

(a) Write down the upper bound of the length of the table.

..... metres (1)

(b) Write down the lower bound of the length of the table.

..... metres (1)

(Total for Question 2 is 2 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 2 Review: ____ / ____

3 In a sale, normal prices are reduced by 20%.

The sale price of a coat is £72.

Work out the normal price of the coat.

(Total for Question 3 is 2 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 2 Review: ____ / ____

4 (a) Expand and simplify $3(2x - 5) - 2(x + 4)$.

.....

(2)

(b) Factorise fully $18a^2b - 12ab^2$.

.....

(2)

(Total for Question 4 is 4 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 4 Review: ____ / ____

5 Here are eight numbers written in order of size:

$$p, \quad 4, \quad 7, \quad 10, \quad q, \quad 15, \quad r, \quad r$$

where p, q, and r are integers.
The median of the eight numbers is **11**
The mode of the eight numbers is **19**
The range of the eight numbers is **16**
Work out the value of p, the value of q and the value of r.

p = ...

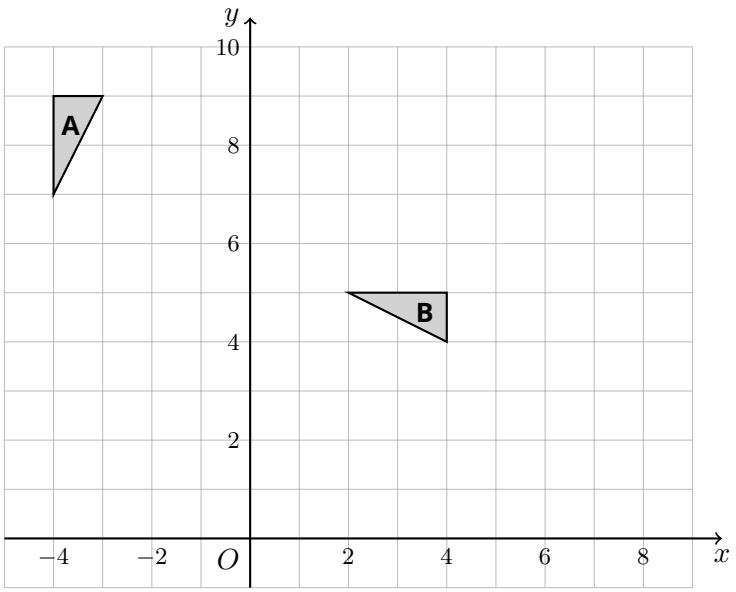
q = ...

r = ...

(Total for Question 5 is 3 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 3 Review: ____ / ____

6



(a) Describe fully the single transformation that maps triangle **A** onto triangle **B**.

(3 marks)

(b) On the grid, translate triangle **A** by the vector $\begin{pmatrix} 2 \\ -5 \end{pmatrix}$.
Label the new triangle **C**.

(1 mark)

(Total for Question 6 is 4 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
QR not available yet	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 4 Review: ____ / ____

7 A bag contains only blue counters, yellow counters, black counters, and orange counters.

The table gives each of the probabilities that, when a counter is taken at random from the bag, the counter will be black or the counter will be orange.

Counter	Blue	Yellow	Black	Orange
Probability			0.15	0.45

The ratio of the number of blue counters to the number of yellow counters is 3 : 5.
There are 54 orange counters in the bag.
Work out the number of blue counters in the bag.

(4)

(Total for Question 7 is 4 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 4 Review: ____ / ____

8 A charity shop sells books, DVDs, and vinyl records.

At the start of the day:

- The ratio of the number of books to the number of DVDs is 5 : 3.
- The ratio of the number of DVDs to the number of records is 4 : 1.

During the day:

- 40% of the books are sold.
- One sixth of the DVDs are sold.
- No records are sold.

At the end of the day, there are 150 items left in total.

Work out how many items were sold altogether during the day.
You must show all your working.

(Total for Question 8 is 5 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 5 Review: ____ / ____

9 A 4-digit security code is to be formed using digits chosen from the set

$$\{1, 2, 3, 4, 5, 6, 7, 8\}$$

No digit may be used more than once in any code.
The 4-digit code must be an even number greater than 5000.

Work out the total number of possible codes that can be formed.

(Total for Question 9 is 3 marks)

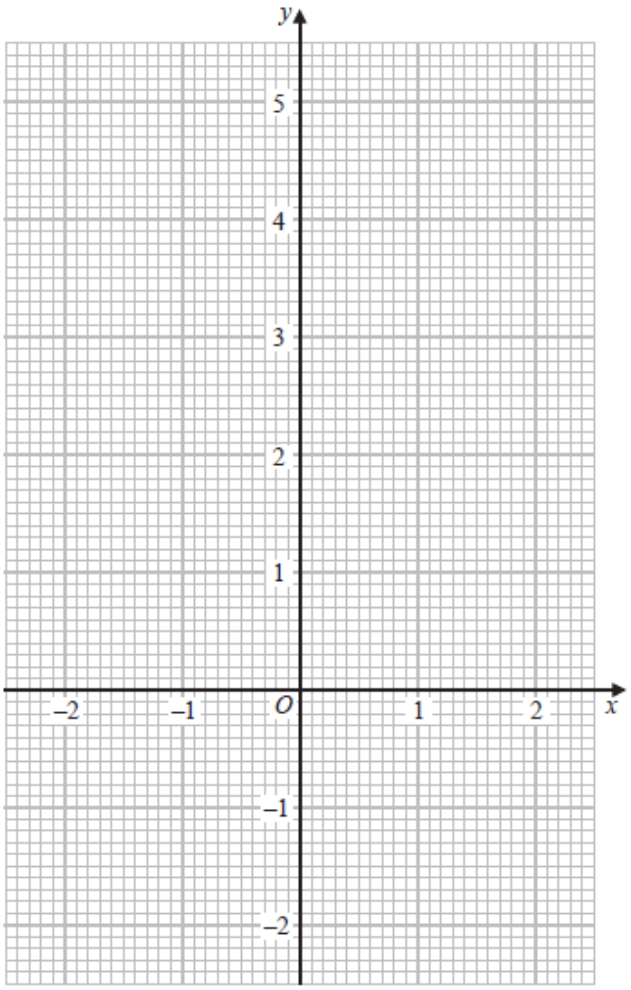
Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 3 Review: ____ / ____

10 *a*)Complete the table of values for $y = x^3 - 3x + 1$

x	–2	–1	–0.5	0		1	1.5	2
y		3	2.4			-1	-0.1	

(2)

(*b*) On the grid, draw the graph of $y = x^3 - 3x + 1$ for values of x from –2 to 2



(2)

(*c*) By drawing a suitable straight line on the grid, use your graph to find an estimate for the solution of $x^3 - 3x - 1 = 0$
Give your answer correct to one decimal place.

(2)

(Total for Question 10 is 6 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 6 Review: ____ / ____

11 The nth term of a sequence is $u_n = n^2 - 3n + 5$.

(a) Find the first three terms of the sequence.

(2)

(b) Is 113 a term of this sequence? Show algebraic working to justify your answer.

(3)

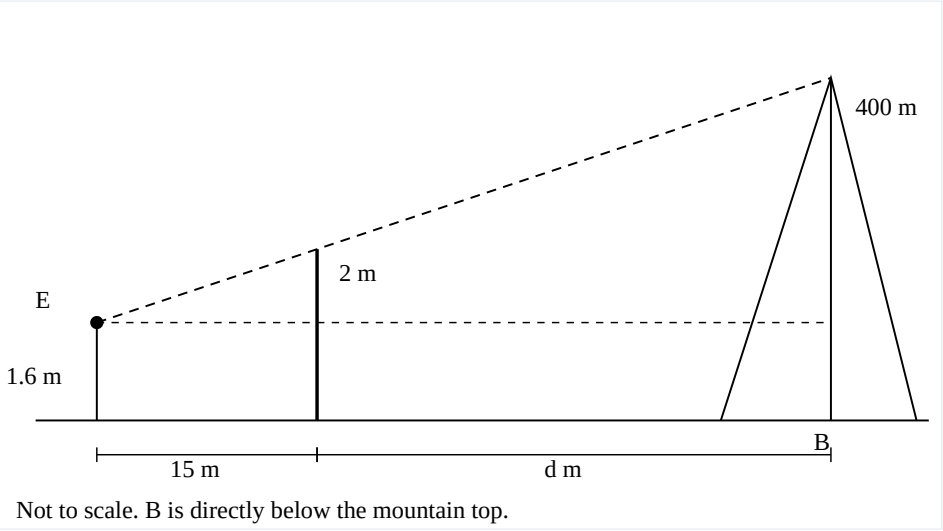
(Total for Question 11 is 5 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 5 Review: ____ / ____

12

Katie's eye level is at 1.6 m above the ground. She is looking at a mountain that she knows is 400 m tall. There is a 2 m tall pine tree between her and the mountain.

When she is standing 15 m away from the base of the tree, the top of the mountain is just hidden by the top of the pine tree. All measurements have been taken from level ground.



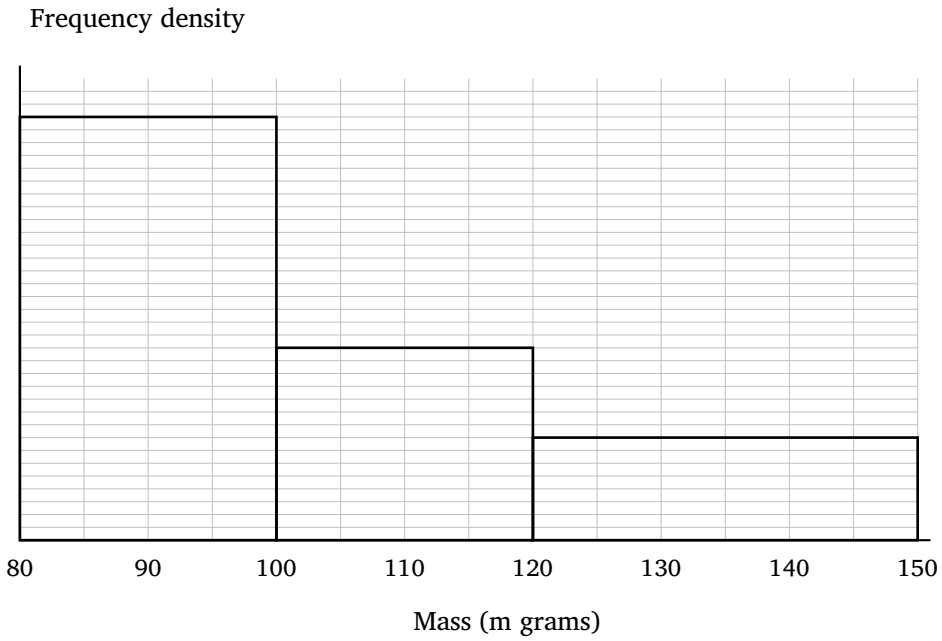
Not to scale. B is directly below the mountain top.

Calculate how far the mountain is from the other side of the tree.

(Total for Question 12 is 4 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 4 Review: ____ / ____

13 The histogram shows the masses of 120 apples. The vertical scale is not labelled.
The bar for $100 < m \leq 120$ represents 30 apples.
Work out the number of apples with a mass greater than 120 grams.



(Total for Question 13 is 4 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 4 Review: ____ / ____

14 At the start of year n, the number of animals in a population is P_n.

At the start of the following year, the number of animals in the population is P_{n+1} where

$$P_{n+1} = kP_n$$

At the start of 2018 the number of animals in the population was 5000.

At the start of 2020 the number of animals in the population was 4050.

Find the value of the constant k.

(Total for Question 14 is 3 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 3 Review: ____ / ____

15 Solve the inequality

$$3x^2 - 14x - 5 > 0$$

Write your answer using set notation.

(Total for Question 15 is 4 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 4 Review: ____ / ____

16 The circle has centre $(3, 2)$ and radius 5.
The point A has coordinates $(7, 5)$.

Find the equation of the tangent to the circle at A.
Give your answer in the form $ax + by = c$, where a, b, and c are integers.

(Total for Question 16 is 4 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 4 Review: ____ / ____

17 The functions f and g are defined by

$$f(x) = \frac{2x + 1}{x - 3} \quad (x \neq 3), \; g(x) = x^2 - 4.$$

(a) Find f(4).

.....

(1)

(b) Solve the equation $fg(x) = \frac{11}{2}$.

.....

(4)

(c) Find the inverse function $f^{-1}(x)$.

.....

(2)

(Total for Question 17 is 7 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 7 Review: ____ / ____

18 Elena owns a house.

During 2024, the value of Elena's house increased by x%.
During 2025, its value increased by (2x)% of its value at the end of 2024.

Overall, during 2024 and 2025, the value of Elena's house increased by 45.92%.

Work out the value of x.
Show clear algebraic working.

(Total for Question 18 is 4 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 4 Review: ____ / ____

19

Ship A and Ship B both leave Port P at the same time.
Ship A sails 35 km on a bearing of 052°.
Ship B sails 58 km on a bearing of 118°.

Calculate the bearing of Ship B from Ship A.
Give your answer correct to the nearest degree.
Show all of your working clearly.

. . . . . °

(Total for Question 19 is 4 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 4 Review: ____ / ____

20

ABCD is a rectangle. PQRS is a square with P on AB, R on BC and S on CD. Q lies outside the rectangle. T is where QR crosses AB. AB = 8 cm, BC = 4 cm and PQ = 5 cm. The shaded region is inside both shapes. Calculate its exact area. Show all your working.

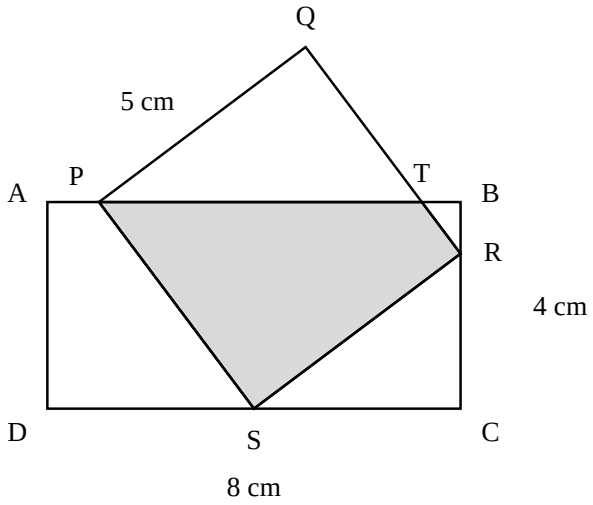


Diagram not to scale. T is where QR crosses AB.

(Total for Question 20 is 5 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
Clip	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 5 Review: ____ / ____