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4MA1 June 2027 Paper 2H Best Guess Paper

Higher · Standard · Question Paper

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This independently compiled practice paper is for students preparing for Pearson Edexcel International GCSE Mathematics A (4MA1), Higher Tier, Paper 2H. 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.

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Video walkthrough

Full walkthrough QR not yet linked.

Calculator allowed · 25 questions · 100 marks · Suggested time: 2 hours.

International GCSE Mathematics

Formulae sheet – Higher Tier

Arithmetic series

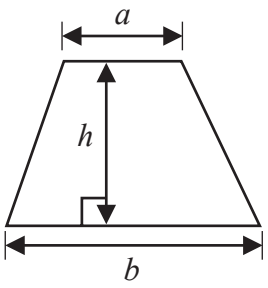
Sum to n terms, $S_n = \frac{n}{2}[2a + (n-1)d]$

The quadratic equation

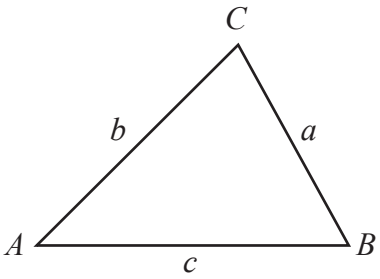
The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$ are given by:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Area of trapezium $= \frac{1}{2}(a + b)h$



Trigonometry



In any triangle *ABC*

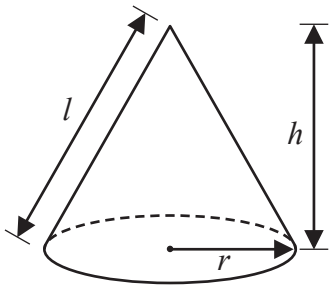
Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc\cos A$

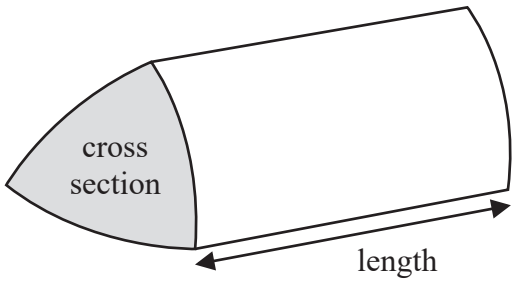
Area of triangle $= \frac{1}{2}ab\sin C$

Volume of cone $= \frac{1}{3}\pi r^2 h$

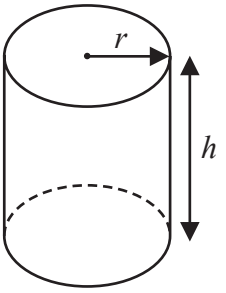
Curved surface area of cone $= \pi rl$



Volume of prism
= area of cross section × length

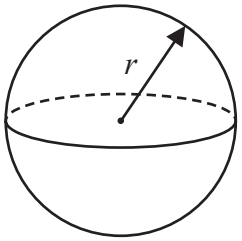


Volume of cylinder $= \pi r^2 h$
Curved surface area of cylinder $= 2\pi rh$



Volume of sphere $= \frac{4}{3}\pi r^3$

Surface area of sphere $= 4\pi r^2$



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

1 (a) Paul invests £5000 for 3 years at 2.4% compound interest per year. Work out the value of his investment after 3 years, to the nearest penny.

.....

(2)

(b) Paige buys a watch for £40 and sells it for £47.20. Calculate her percentage profit.

.....

(2)

(Total for Question 1 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: ____ / ____

2 Sophie wants to exchange 1200 US dollars for euros. She compares two bureaux de change.
Bureau A offers 1 US dollar = 0.92 euros and charges no commission.
Bureau B offers 1 US dollar = 0.95 euros and charges a fee of 20 US dollars. This fee is deducted from Sophie's 1200 US dollars before the remaining US dollars are converted to euros.

Which bureau gives Sophie more euros, and how many more euros does it give?
Show all your working.

(Total for Question 2 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: ____ / ____

3 Each exterior angle of a regular polygon is 15°.

(a) Work out how many sides the polygon has.

(2)

(b) Work out the size of each interior angle.

(1)

(Total for Question 3 is 3 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
QR not available yet	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 3 Review: ____ / ____

4 (a) Write 3.4×10^{-4} as an ordinary number.

.....

(1)

(b) Work out $(4.5 \times 10^5) \times (6 \times 10^4)$. Give your answer in standard form.

.....

(2)

(Total for Question 4 is 3 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
QR not available yet	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 3 Review: ____ / ____

5 (a) Factorise fully $x^2 + 3x - 10$.

.....

(2)

(b) Hence solve $x^2 + 3x - 10 = 0$.

.....

(1)

(Total for Question 5 is 3 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
QR not available yet	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 3 Review: ____ / ____

6 (a) Work out the value of 7^0.

.....

(1)

(b) p and q are non-zero.
Simplify fully

$$\frac{(p^3q^2)^2}{p^2q^5}$$

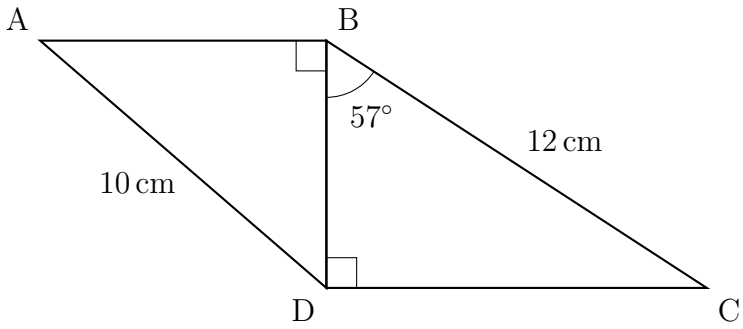
.....

(2)

(Total for Question 6 is 3 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
QR not available yet	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 3 Review: ____ / ____

7 The diagram shows two right-angled triangles ABD and BCD, sharing a common side BD.
$AD = 10\,\text{cm}$, $BC = 12\,\text{cm}$ and angle $DBC = 57°$.



Not to scale

Work out the length of AB.
Give your answer correct to 3 significant figures.

(Total for Question 7 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: ____ / ____

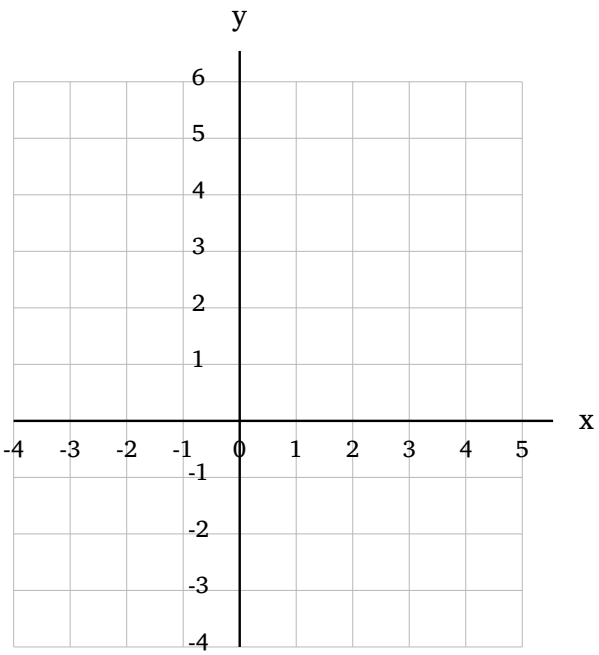
8 On the grid, show the region that satisfies all three inequalities.

$x \geq 0$

$y \geq x + 1$

$y \leq 4$

Shade the unwanted regions and label the remaining region R.



(Total for Question 8 is 3 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
QR not available yet	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It **Marks: ____ / 3** **Review: ____ / ____**

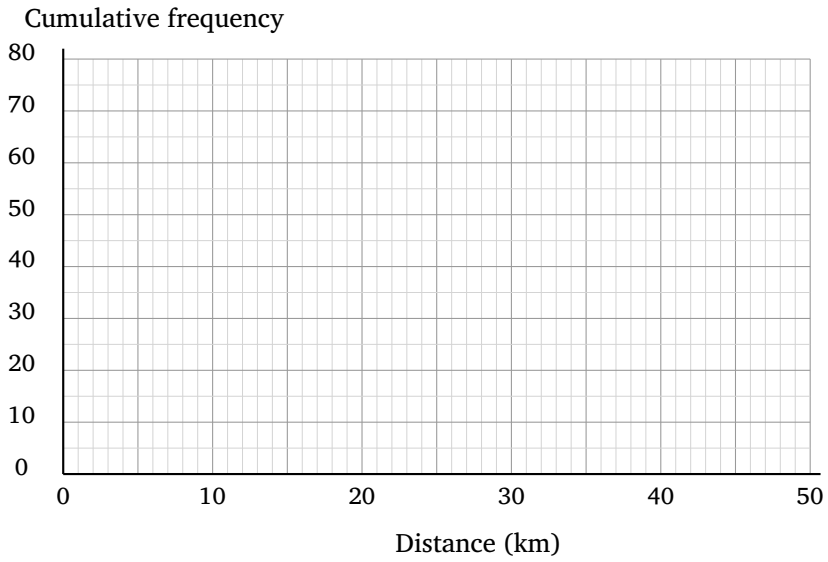
9 The table shows the distances travelled to an office by 80 workers.

Distance (d km)	Frequency	Cumulative frequency
$0 < d \leq 10$	14	
$10 < d \leq 20$	28	
$20 < d \leq 30$	22	
$30 < d \leq 40$	12	
$40 < d \leq 50$	4	

(a) Complete the cumulative frequency column.

(1)

(b) Draw a cumulative frequency graph on the grid.



(2)

(c) Use your graph to estimate the interquartile range.

.....

(2)

(Total for Question 9 is 5 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
QR not available yet	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 5 Review: ____ / ____

10 A robotic lawn mower is connected to a charging post by a cable of length $4a$.

The charging post is fixed at an outside corner of a square shed with side length $2a$.

The mower cannot pass through the shed.

Find an expression, in terms of a and π, for the maximum area of grass the mower can cut. Give your answer in its simplest form.

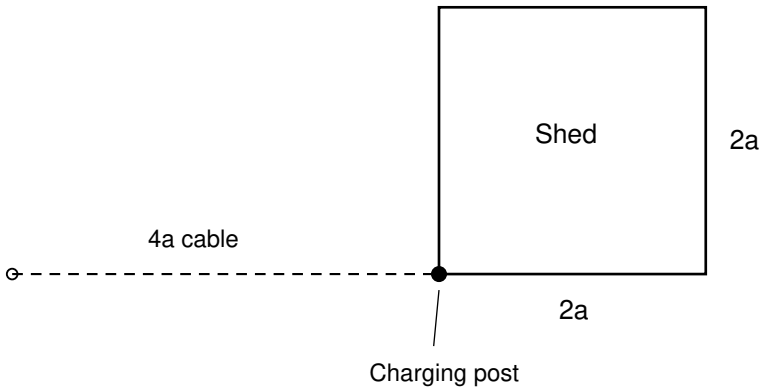


Diagram not to scale.

(Total for Question 10 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: ____ / ____**

11 A train travels 230 km, correct to the nearest 10 km.
The journey takes 4.5 hours, correct to 1 decimal place.
Calculate the upper bound for the average speed, in km/h, to 3 significant figures.
Show your working clearly.

(Total for Question 11 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: ____ / ____

12 Make x the subject of

$$y = \frac{2x + 5}{x - 3}$$

(Total for Question 12 is 3 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
QR not available yet	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 3 Review: ____ / ____

13 (a) Show that the first expression below can be written in the stated form, where a and b are integers. Show your working clearly.

$$\frac{14}{3 - \sqrt{5}} = \frac{a + b\sqrt{5}}{2}$$

(3)

(b) Hence write the second expression below in the same form.

$$\frac{14}{3 + \sqrt{5}}$$

(1)

(Total for Question 13 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: ____ / ____

14 Solids A and B are mathematically similar.
Their total surface areas are 40 cm^2 and 90 cm^2 respectively.
The volume of A is 120 cm^3. Calculate the volume of B.

(Total for Question 14 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: ____ / ____

15 A particle moves along a straight line. Its displacement s metres from a fixed point O, at time t seconds, is given by
$s = 2t^3 - 9t^2 + 12t + 5$, where $t \geq 0$.

(a) Find an expression for the velocity v of the particle, in m/s.

(2)

(b) Find the times when the particle is instantaneously at rest. Show clear algebraic working.

(3)

(Total for Question 15 is 5 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
QR not available yet	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 5 Review: ____ / ____

16 x and y are recurring decimals.

$x = 0.\dot{2} \quad y = 0.6\dot{8}\dot{1}$

Use algebra to show that $xy = \frac{5}{33}$

(Total for Question 16 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: ____ / ____

17 The incomplete table gives information about the weights, in kilograms, of 160 luggage bags at an airport check-in desk.
On a histogram drawn to represent this data:
The bar representing $0 < w \leq 10$ has a height of 6 cm on the vertical (frequency density) scale.
The height of the bar for $10 < w \leq 15$ is twice the height of the bar for $25 < w \leq 40$.

Weight (w kg)	Frequency
$0 < w \leq 10$	30
$10 < w \leq 15$	a
$15 < w \leq 25$	60
$25 < w \leq 40$	b

(a) Work out the value of a and the value of b.

.....

(2)

(b) Write the class interval which contains the median.

.....

(1)

(Total for Question 17 is 3 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
QR not available yet	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 3 Review: ____ / ____

18 Solve the simultaneous equations.
Give your solutions in exact form, showing clear algebraic working.

$$2x^2 + y^2 = 30$$

$$y = 2x - 3$$

(Total for Question 18 is 5 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
QR not available yet	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It **Marks: ____ / 5** **Review: ____ / ____**

19 ABCDEFGH is a cuboid. ABCD is the base, with E, F, G and H vertically above A, B, C and D.
AB = 10 cm, BC = 6 cm and CG = 5 cm.
Calculate the angle between BH and plane ABCD. Give your answer to 1 decimal place.

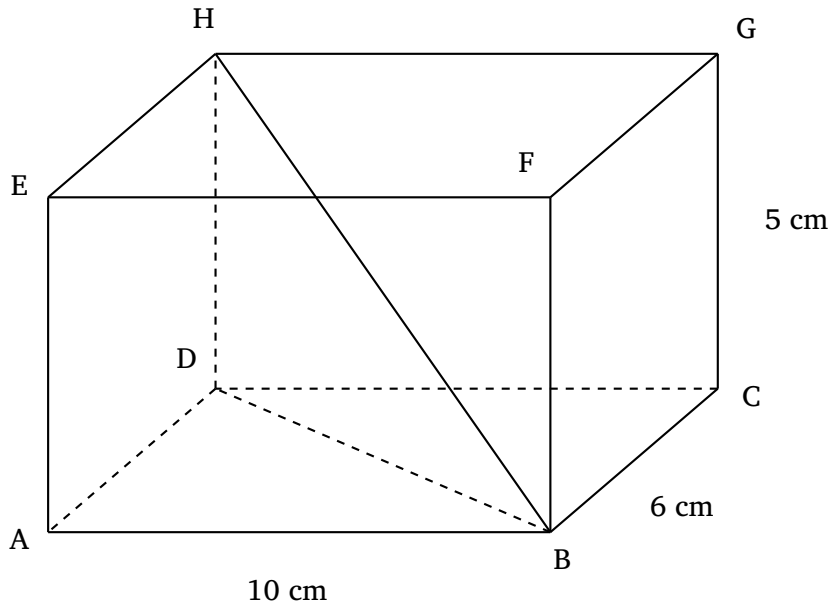


Diagram not to scale

(Total for Question 19 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: ____ / ____

20 In triangle OAB, vector OA = **a** and vector OB = **b**.
M is the midpoint of AB. N lies on OB such that ON : NB = 1 : 2.
Find vector MN in terms of **a** and **b**, in its simplest form.

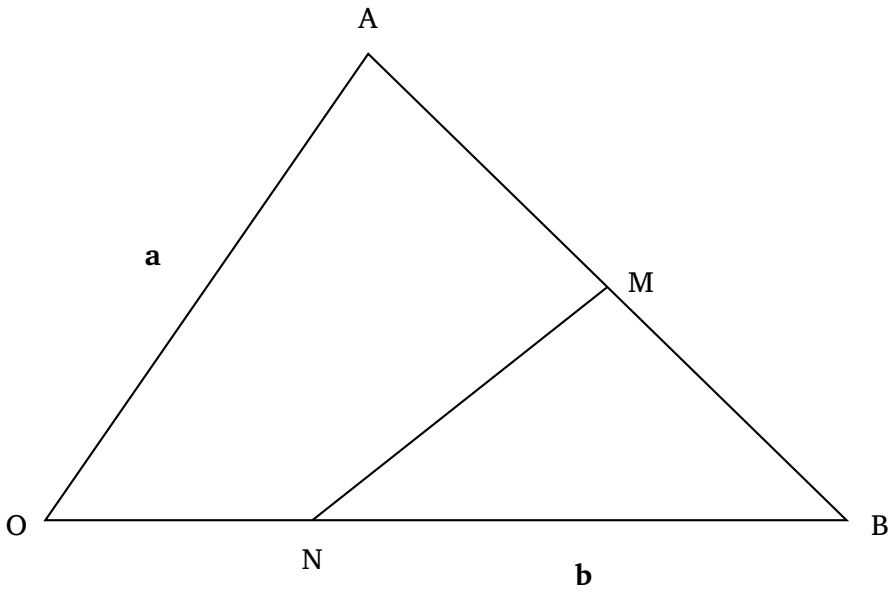


Diagram not to scale

(Total for Question 20 is 4 marks)

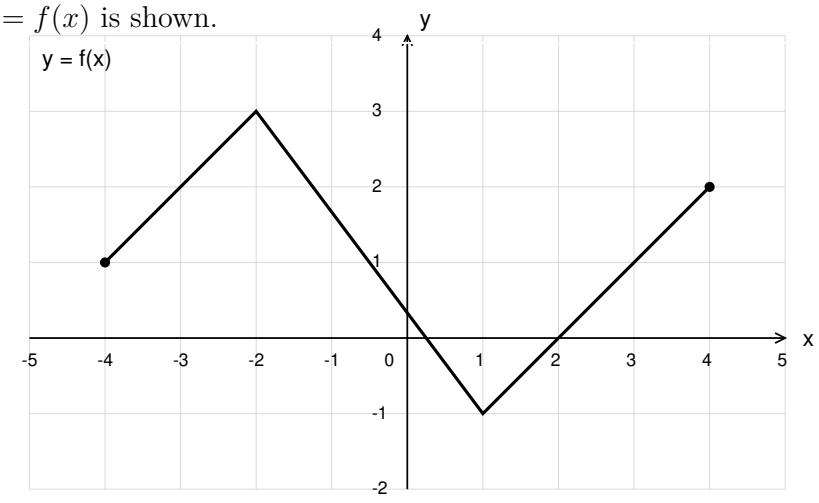
Model Solution	Practice Perfect Questions	Progress & Mastery
QR not available yet	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 4 Review: ____ / ____

21 A curve has equation $y = 2x^3 - 3x^2 - 12x + 5$.
Find the coordinates of its turning points. Show clear algebraic working.

(Total for Question 21 is 5 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
QR not available yet	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 5 Review: ____ / ____

22 The graph of $y = f(x)$ is shown.



The graph of $y = g(x)$ is obtained by translating the graph of $y = f(x)$ by the vector

$$\begin{pmatrix} 4 \\ -3 \end{pmatrix}$$

Write $g(x)$ in terms of $f(x)$.

.....

The graph of $y = h(x)$ is obtained from $y = f(x)$ by a stretch parallel to the x-axis with scale factor 2.

Write $h(x)$ in terms of $f(x)$.

.....

(Total for Question 22 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: ____ / ____**

23 A bag contains only red and blue counters. Exactly 5 counters are red.
Two counters are taken at random without replacement.
The probability that both are red is

$$\frac{5}{14}$$

Work out the total number of counters. Show clear algebraic working.

(Total for Question 23 is 5 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
QR not available yet	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 5 Review: ____ / ____

24 In triangle ABC, AB = x cm, BC = (x + 2) cm, AC = 7 cm and angle ABC = 60°.
Find the exact value of x. Show clear algebraic working.

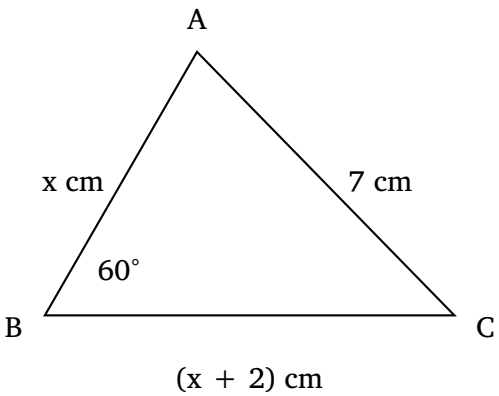


Diagram not to scale

(Total for Question 24 is 5 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
QR not available yet	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 5 Review: ____ / ____

END OF PAPER

25 The sum of the first 60 terms of an arithmetic series, S, is 528.

The 55th term of S is 18.6.

The sum of the first X terms of S is 261.

Work out the value of X.
Show your working clearly.

(Total for Question 25 is 5 marks)

Model Solution	Practice Perfect Questions	Progress & Mastery
QR not available yet	Worksheet	☐ Nailed It ☐ Watched Clip ☐ Mastered It ☐ Come Back To It Marks: ____ / 5 Review: ____ / ____

END OF PAPER