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4MA1 Nov 2026 Paper 1 Best Guess Paper

----- Disclaimer -----

This paper has been created based on topics from previous years and careful analysis of what topics are highly likely to appear in paper 1H. The paper should be excellent at helping students revise for exams. This paper is specifically targeted at high-attaining students aiming for a Grade 9, so it is intentionally more rigorous and challenging than a standard real exam paper. The topics from this paper may well appear in the real exams, however there is absolutely no guarantee of this. There are deliberately more questions at a higher grade than you would expect.

Despite what you might see on social media it is not possible to "predict" the paper perfectly. This is usually what people say when they are selling you something...

The best way to prepare for the exams is to revise all topics

You can find a link to this paper and more completely free resources at www.mygrade9mathstutor.com

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



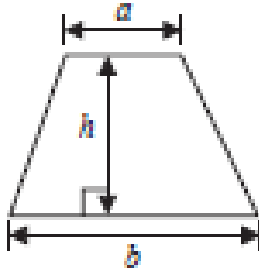
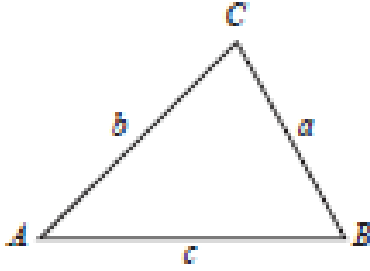
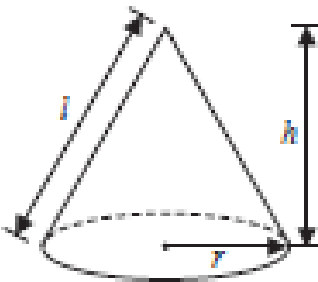
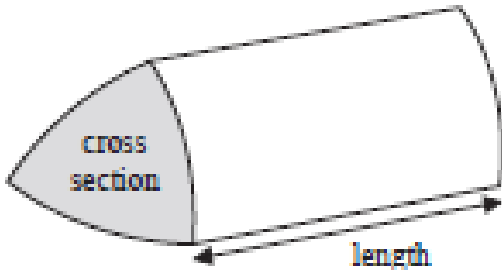
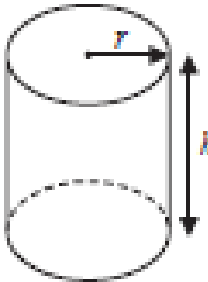
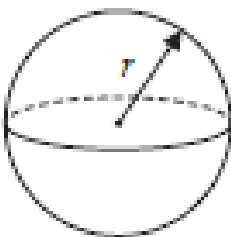
The Playlist for Solutions can be found



The best way to work with this paper is work through it all, watch the Clip. If you get the question incorrect watch the clip again and then try the similar questions from the worksheets

International GCSE Mathematics

Formulae sheet – Higher Tier

Arithmetic series Sum to n terms, $S_n = \frac{n}{2} [2a + (n - 1)d]$	Area of trapezium $= \frac{1}{2}(a + b)h$ 
The quadratic equation The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$ are given by: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	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 $= \text{area of cross section} \times \text{length}$ 
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 FOUR questions.
Write your answers in the spaces provided.**

You must write down all the stages in your working.

- 1** Express 5040 as a product of powers of its prime factors.
Show your working clearly.

(Total for Question 1 is 2 marks)

Model Solution	Practice Perfect Questions
	

2 Work out $\frac{3.6 \times 10^{22}}{4.5 \times 10^{-6}}$

Give your answer in standard form.

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

Model Solution	Practice Perfect Questions
	

3 Solve the simultaneous equations:

$$3x + 2y = 16$$

$$4x - 3y = 27$$

Show clear algebraic working

(Total for Question 3 is 3 marks)

Model Solution	Practice Perfect Questions
	

4 (a) Simplify $a^6 \times a^{10}$

.....
(1)

(b) Simplify $c^{30} \div c^{12}$

.....
(1)

Model Solution	Practice Perfect Questions
	

(c) (i) Factorise $x^2 - 10x + 24$

.....
(2)

(ii) Hence, solve $x^2 - 10x + 24 = 0$

.....
(1)

(Total for Question 4 is 5 marks)

Model Solution	Practice Perfect Questions
	

- 5 The value of a vehicle depreciates by 12% in its first year and by 15% in its second year. At the end of the second year, the vehicle is worth £11, 220. Calculate the original price of the vehicle.

(Total for Question 5 is 3 marks)

Model Solution	Practice Perfect Questions
	

- 6 The table gives information about the masses, m kg, of 50 luggage bags:

Mass (m kg)	Frequency
$0 < m \leq 5$	6
$5 < m \leq 10$	14
$10 < m \leq 15$	18
$15 < m \leq 20$	8
$20 < m \leq 25$	4

Calculate an estimate for the mean mass of the 50 luggage bags.

(Total for Question 6 is 3 marks)

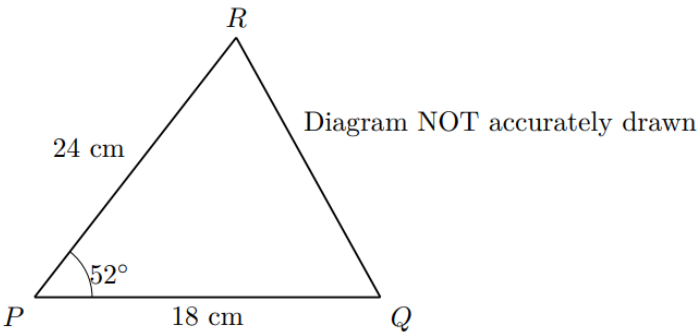
Model Solution	Practice Perfect Questions
	

7 Use algebra to show that $0.\dot{3}8\dot{1} = \frac{21}{55}$

(Total for Question 7 is 3 marks)

Model Solution	Practice Perfect Questions
	

8 The diagram shows triangle P QR with P Q = 18 cm, P R = 24 cm, and $\angle QP R = 52^\circ$



(a) Calculate the length of QR. Give your answer correct to 3 significant figures

(3)

Model Solution	Practice Perfect Questions
	

(b) Calculate the area of triangle P QR. Give your answer correct to 3 significant figures.

(2)

(Total for Question 8 is 5 marks)

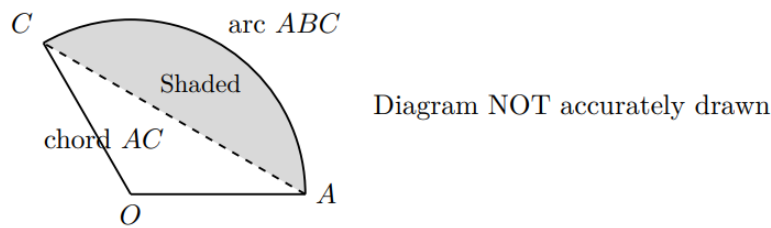
Model Solution	Practice Perfect Questions
	

- 9 y is directly proportional to the square of t .
 $y = 20$ when $t = 2$
 t is inversely proportional to the square root of x .
 $t = 3$ when $x = 4$
Find a formula for y in terms of x .
Give your answer in its simplest form.

(Total for Question 9 is 4 marks)

Model Solution	Practice Perfect Questions
	

- 10 The diagram shows a sector OABC of a circle with centre O and radius 15 cm.
The central angle $\angle AOC = 120^\circ$.



Calculate the area of the shaded segment. Give your answer correct to 3 significant figures.

(Total for Question 10 is 4 marks)

Model Solution	Practice Perfect Questions
	

11 Make y the subject of the formula:

$$p = \sqrt{\frac{2y + 5}{3y - k}}$$

(Total for Question 11 is 3 marks)

Model Solution	Practice Perfect Questions
	

12 The acceleration $a \text{ m/s}^2$ of an object is calculated using the formula:

$$a = \frac{2(s - ut)}{t^2}$$

where $s = 150$, $u = 12$, and $t = 4.0$ (all given correct to 1 decimal place). By considering bounds, work out the upper bound for the value of a to a suitable degree of accuracy. Show your working clearly.

.....

(Total for Question 12 is 4 marks)

Model Solution	Practice Perfect Questions
	

13 Solve the quadratic inequality: $3x^2 - 5 \leq 14x$
Show clear algebraic working.

(Total for Question 13 is 3 marks)

Model Solution	Practice Perfect Questions
	

14 A box contains n counters. 8 of the counters are red and the rest are blue.
 Two counters are taken at random from the box without replacement.
 Given that the probability that both counters are the same colour is $\frac{7}{15}$

(a) Show that $n^2 - 31n + 240 = 0$.

(3)

(b) Solve $n^2 - 31n + 240 = 0$ to find the value of n .

(2)

(Total for Question 14 is 5 marks)

Model Solution	Practice Perfect Questions
	

15 The functions f and g are defined as:

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

(a) Find $f^{-1}(x)$

(3)

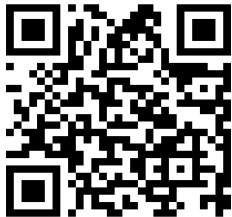
(b) Express $gf(x)$ as a single fraction in its simplest form.

(3)

(c) Solve $g(x) = 21$

(1)

(Total for Question 15 is 6 marks)

Model Solution	Practice Perfect Questions
	

16 An open-topped storage tank has a square base of length x m and vertical height h m.
The total external surface area of the tank is 108 m^2 .

(a) Show that the volume $V\text{ m}^3$ of the tank is given by $V = 27x - \frac{1}{4}x^3$

(3)

(b) Find the maximum volume of the tank. Show clear algebraic working

(4)

(Total for Question 16 is 7 marks)

Model Solution	Practice Perfect Questions
	

17 The straight-line L has equation $2x + y = 7$.
 The curve C has equation $x^2 + y^2 - 4x + 2y = 32$.
 Find the coordinates of the points where L and C intersect.
 Show clear algebraic working.

.....
 (Total for Question 17 is 5 marks)

Model Solution	Practice Perfect Questions
	

- 18** In triangle OAB, $\vec{OA} = 6\mathbf{a}$ and $\vec{OB} = 9\mathbf{b}$.
P is the point on OA such that $OP:PA = 1:2$.
Q is the point on AB such that $AQ:QB = 2:1$.

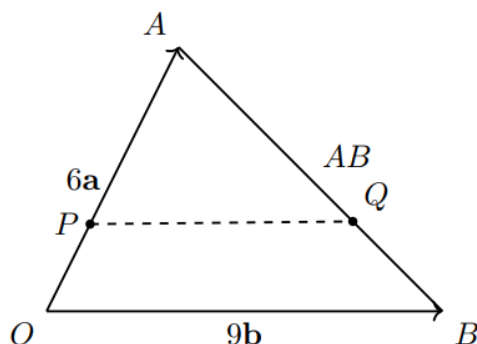


Diagram NOT accurately drawn

- (a) Find $\vec{PQ}$ in terms of $\mathbf{a}$ and $\mathbf{b}$.

(2)

- (b) Use a vector method to prove that PQ is parallel to OB , and state the ratio of the length of PQ to the length of OB .

(4)

(Total for Question 18 is 6 marks)

Model Solution	Practice Perfect Questions
	

19 An arithmetic series has first term a and common difference d .
The sum of the first 20 terms is 1155.
The sum of the 5th term and the 15th term is 111

- (a) Show that $a = 15$ and $d = 4.5$
- (b) Find the value of N such that $S_N = 4110$.

(Total for Question 19 is 5 marks)

Model Solution	Practice Perfect Questions
	

- 20** The diagram shows a right pyramid $VABCD$ with a horizontal square base $ABCD$ of side length 10 cm.
The vertical height VH of the pyramid is 15 cm, where H is the centre of the base $ABCD$. M is the midpoint of BC .

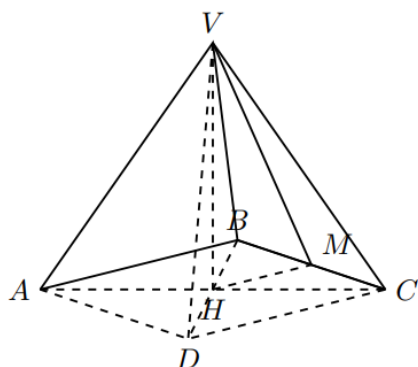


Diagram NOT accurately drawn

- (a) Calculate the length of VM . Give your answer correct to 3 significant figures
- (b) Calculate the angle between the triangular face VBC and the base plane $ABCD$. Give your answer correct to 1 decimal place.

(Total for Question 20 is 5 marks)

Model Solution	Practice Perfect Questions
	

21 Solve the equation to 3 significant figures:

$$\frac{3}{x-2} - \frac{4}{2x+1} = 1$$

Show clear algebraic working.

(5 marks)

Model Solution	Practice Perfect Questions
	

Show that the following expression can be written in the form $a + b\sqrt{3}$, where a and b are integers:

$$\frac{(2 + \sqrt{3})^2}{2 - \sqrt{3}}$$

Show all stages of your working clearly.

(4 marks)

Model Solution	Practice Perfect Questions
	

23.

The curve with equation $y = f(x)$ has a single local maximum turning point at $(-2, 5)$.

(a) Write down the coordinates of the local minimum turning point of the curve with equation:

$$y = -f(x + 3)$$

(2 marks)

(b) Write down the coordinates of the local maximum turning point of the curve with equation:

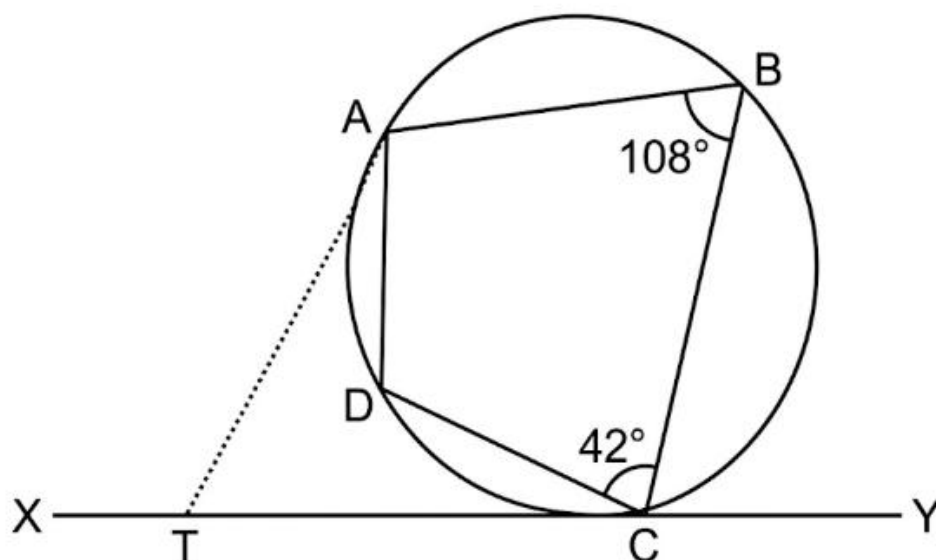
$$y = 3f\left(\frac{1}{2}x\right)$$

(2 marks)

Model Solution	Practice Perfect Questions
	

24.

Points A , B , C , and D lie on the circumference of a circle.



The straight line XY is a tangent to the circle at the point C .

The line AD is extended to meet the tangent at a point T .

Angle $ACX = 42^\circ$ and Angle $ABC = 108^\circ$.

Calculate the size of Angle CDA .

You must give a formal geometrical reason for each stage of your working.

(3 marks)

Model Solution	Practice Perfect Questions
	

TOTAL FOR PAPER = 100 MARKS