EXAMINATION NO.: _____

THE MALAWI NATIONAL EXAMINATIONS BOARD

2025 MALAWI SCHOOL CERTIFICATE OF EDUCATION EXAMINATION

MATHEMATICS

Subject Number: M131/I

Thursday, 3 July

Time Allowed: 2 hours
8:00 – 10:00 am

PAPER I

(100 marks)

Instructions

1. **This paper contains 14 printed pages. Please check.**
2. Write your **Examination Number** at the top of each page of this question paper in the spaces provided.
3. Answer **all** the **20** questions in this paper.
4. The maximum number of marks for each answer is indicated against each question.
5. Scientific calculators may be used.
6. The graph paper and the blank answer sheet at the end of the question paper can be used if required. Do **not** tear them off.
7. **All working must be clearly shown.**
8. In the table provided on this page, **tick** against the question number you have answered.
9. At the end of the examination, hand in your paper to the invigilator.

Question Number	Tick if answered	Do not write in these columns	
1			
2			
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20			
Total			

Answer **all** the **twenty** questions in the spaces provided.

1. Without using a calculator, simplify $\frac{12}{\sqrt{27}}$ leaving the answer with a rational denominator. **(5 marks)**

2. Factorise completely $3x^2 - 13xy - 10y^2$. **(5 marks)**

Continued/...

3. Given that $h(x) = 3x + k$, calculate the value of k when $h(2) = 9$. **(3 marks)**

4. The areas of two similar triangles are 36 cm^2 and 25 cm^2. Calculate the ratio of their volumes. **(4 marks)**

Continued/...

5. Make d subject of the formula $a = \sqrt[3]{\frac{c}{2d+1}}$. **(5 marks)**

6. Write down the equation of a straight line passing through a point (2, -3) parallel to the line $2x - \frac{y}{2} = 6$ in the form $y = mx + c$. **(6 marks)**

7. **Figure 1** is a circle **ABCD** with centre **O** in which angle **ADB** = 75°, angle **ACD** = 81°, angle **BAC** = 42° and angle **BRA** = $x°$.

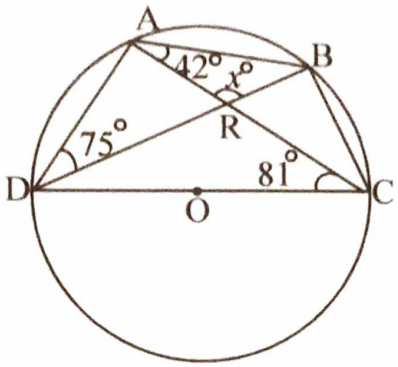

Figure 1

Calculate the value of x. **(4 marks)**

Continued/…

8. Given that **P** = (4, 6) and **Q** = (a, 10), calculate the value of a if $|PQ| = 5$.

(5 marks)

9. A quantity q varies directly as r and inversely as the square of d. When $q = 16$, $r = 36$ and $d = 3$, find r when $q = 4$ and $d = 5$. **(6 marks)**

10. The second and sixth terms of a geometric progression (**GP**) are 6 and 486 respectively. Find the third term. **(6 marks)**

11. In triangle **ABC**, right angled at **C**, **BC** = 6 cm and angle **CAB** = 60°. Calculate the length of **AB**, leaving the answer in a simplified surd form. **(5 marks)**

Continued/...

12. Solve the equation $3x^2 = 11x - 5$, giving the answers correct to 2 significant figures.
(6 marks)

13. **Figure 2** shows a triangular prism **PQRSTU** in which **SP** = 18 cm, **RS**= 6 cm and **UR** = 10 cm.

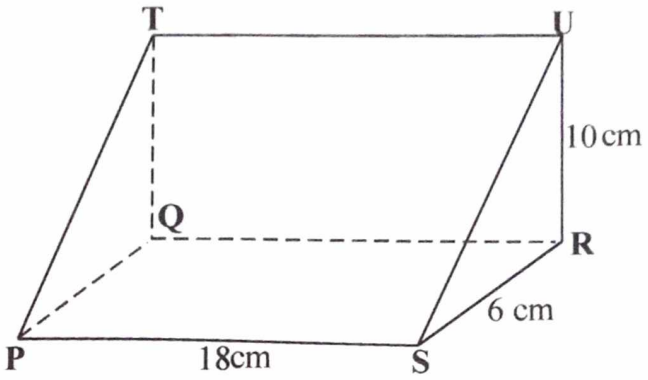

Figure 2

Calculate the volume of the prism. **(3 marks)**

14. When $4x^3 + x^2 - px - 2$ is divided by $x - 1$, the remainder is -2. Find the value of p.

(5 marks)

15. A chord **RS** is 3 cm from the centre of a circle. If the radius of the circle is 5 cm, calculate the length of the chord.

(5 marks)

16. **Figure 3** shows a quadrilateral **PQRS** drawn on a graph paper.

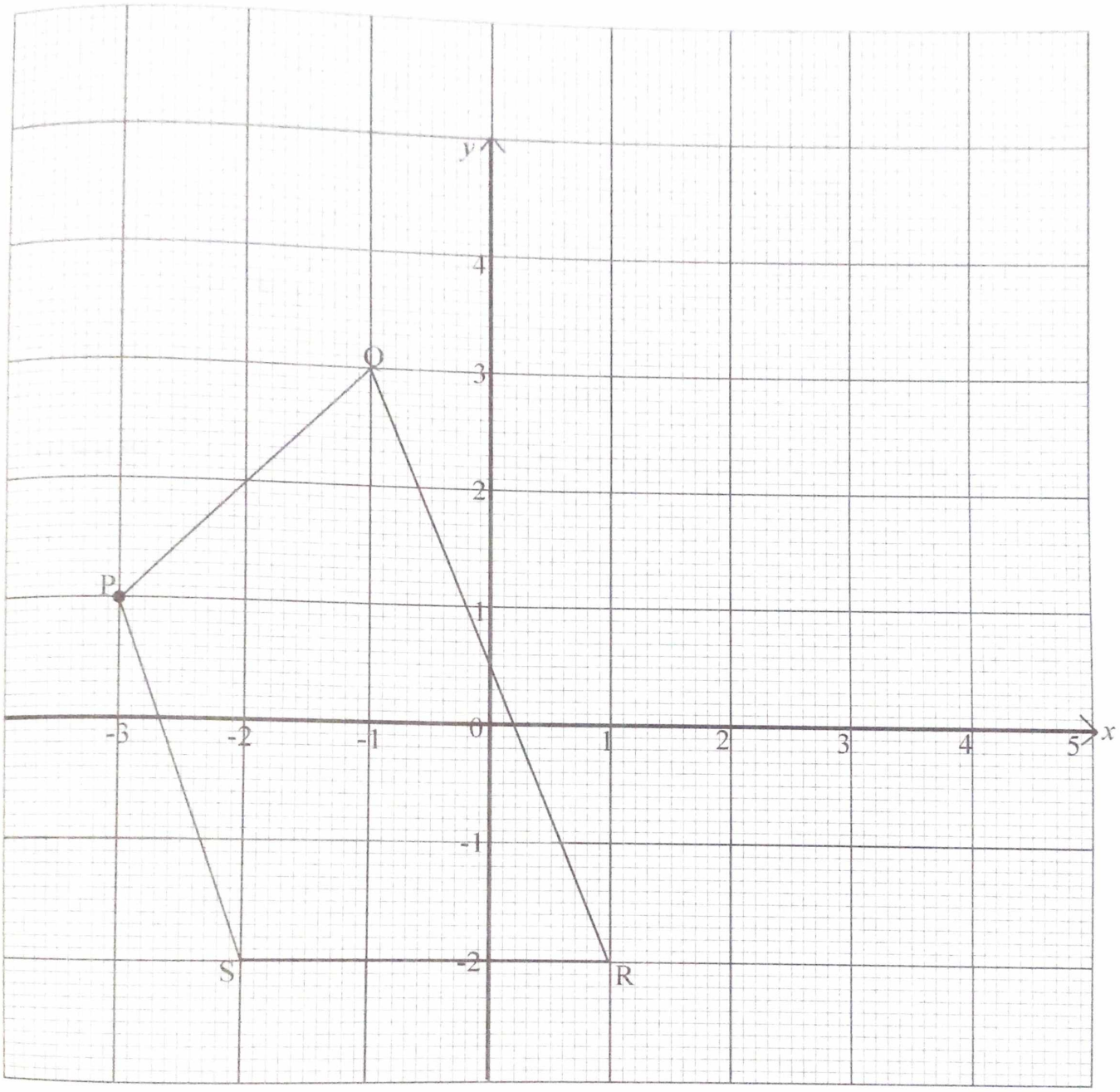

Figure 3

On the same graph paper and using the same axes, draw quadrilateral $P'Q'R'S'$ after enlargement with a scale factor $-\frac{1}{2}$ and centre of enlargement at (2, 1). **(5 marks)**

Continued/...

17. **Figure 4** shows a velocity–time graph of an object.

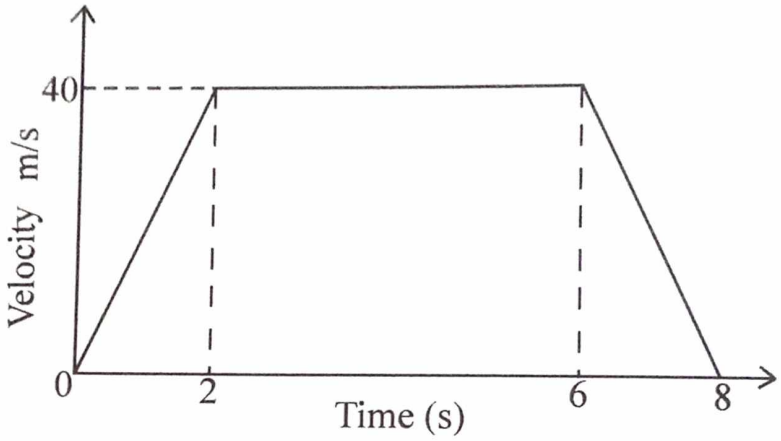

Figure 4

Calculate the average speed of the object. **(4 marks)**

18. Given that $\mathbf{A}=\begin{bmatrix}3 & 15\\ 9 & 12\end{bmatrix}$ and $\mathbf{B}=\begin{bmatrix}1 & 3\\ 4 & -2\end{bmatrix}$, find $\frac{1}{3}\mathbf{A}-\mathbf{B}^2$. **(6 marks)**

19. Find the variance of the following data set: 6, 7, 12, 8, 12, 4, 10, 13. **(6 marks)**

20. **Figure 5** shows the unshaded region (**P**) represented by **three** inequalities.

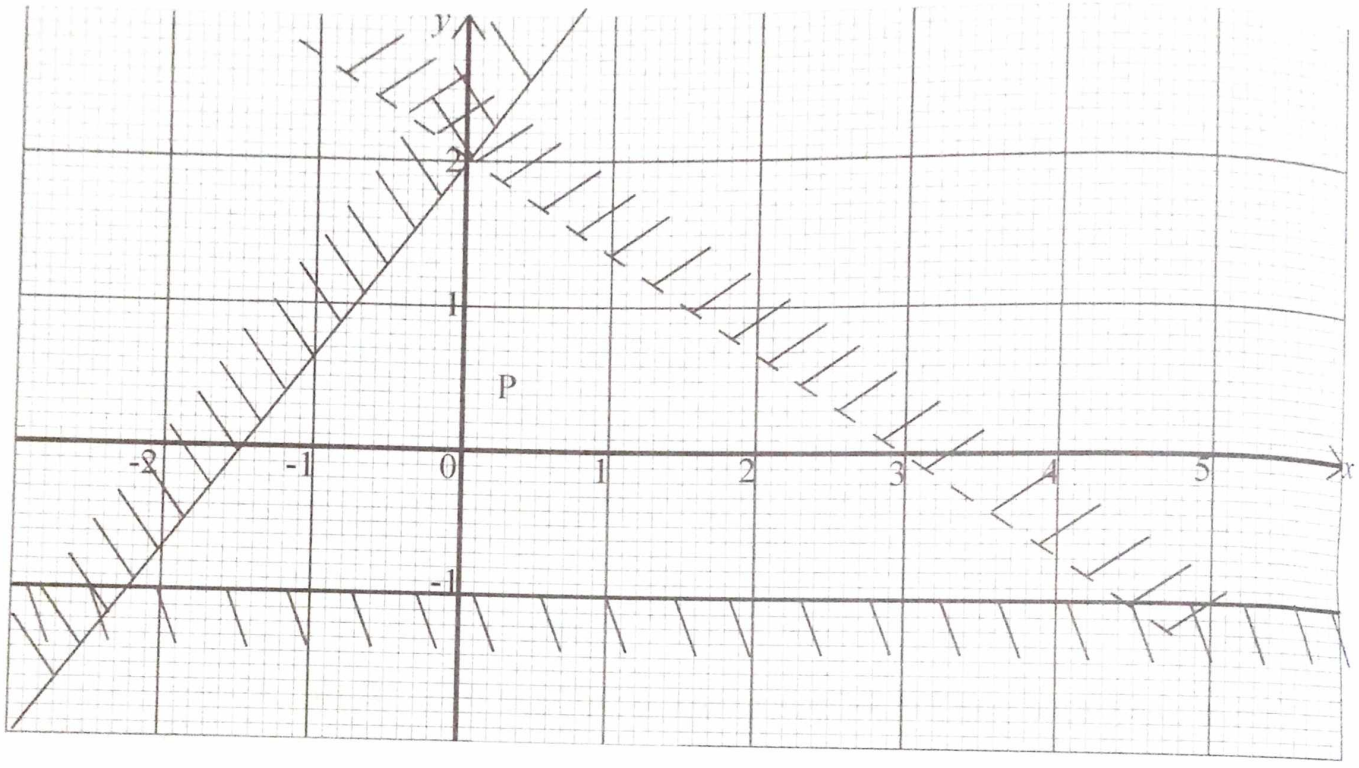

Figure 5

Write down the **three** inequalities. **(6 marks)**

END OF QUESTION PAPER

NB: This paper contains 14 printed pages.