

STUDENT NAME: _____ SCHOOL: _____

2025

M131/1



SOUTH WEST EDUCATION DIVISION

2025 MALAWI SCHOOL CERTIFICATE OF EDUCATION MOCK EXAMINATION

MATHEMATICS

Subject Number: M131/I

Tuesday, 27 March

Time Allowed: 2 hours

8:00-10:00 am

PAPER I

(100 marks)

Instructions

1. This paper contains 12 printed pages.
Please check.
2. Answer **all** the **20** questions in this paper.
3. The maximum number of marks for each answer is indicated against each question.
4. Write your answers in the spaces provided on the question paper.
5. Calculators may be used.
6. **All working must be clearly shown.**
7. Write your **Name and School name** at the top of each page of your question paper in the spaces provided.
8. In the table provided on this page, **tick** against the question number you have answered.

Question Number	Tick if answered	Do not write in these columns	
1			
2			
3			
4			
5			
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20			
Total			

STUDENT NAME: _____ SCHOOL: _____

2025

Page 2 of 12

M131/1

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

1. Factorise completely $2m^2 + 8mn - 42n^2$. (4 marks)

2. Without using a calculator, rationalise the denominator of $\frac{\sqrt{3}+5}{2\sqrt{3}+\sqrt{27}}$. (5 marks)

Continued/...

3. **Figure 1** shows a velocity-time graph of a moving object.

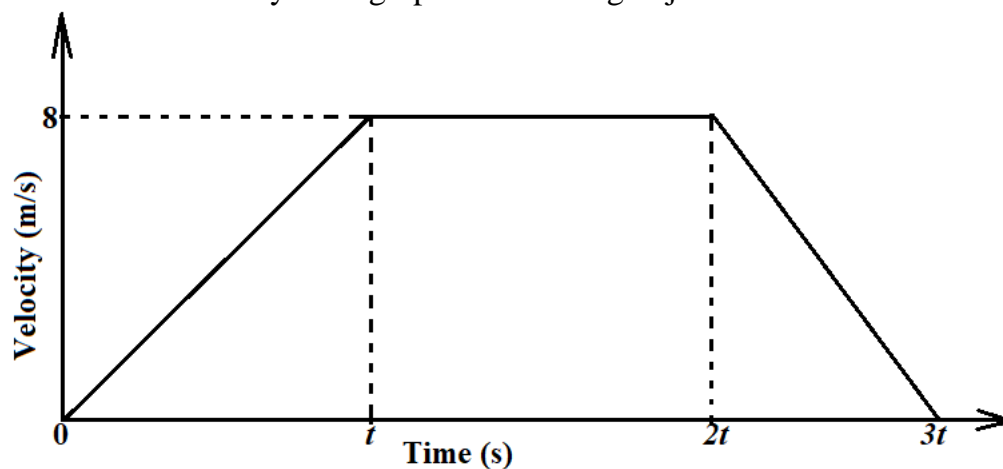


Figure 1

If the total distance travelled by the object is 48 m, calculate the value of t . **(4 marks)**

4. Given that $\mathbf{A} = \begin{pmatrix} 2 & 4 \\ 3 & -1 \end{pmatrix}$ and $\mathbf{B} = \begin{pmatrix} 6 & 2 \\ -2 & 1 \end{pmatrix}$. If $\mathbf{A}^2 - \mathbf{C} = 2\mathbf{B}$ find matrix \mathbf{C} . **(5 marks)**

STUDENT NAME: _____ SCHOOL: _____

2025

Page 4 of 12

M131/1

5. Given that $(y - 2)$ is a factor of the expression $4 + ky - 4y^3$. Calculate the value of k .
(5 marks)

6. Make f subject of the formula $b = \sqrt{\frac{xf^2 + w}{f^2}}$.
(6 marks)

Continued/...

7. **Figure 2** shows a cuboid which is 23 cm long, 15 cm wide and 10 cm high.

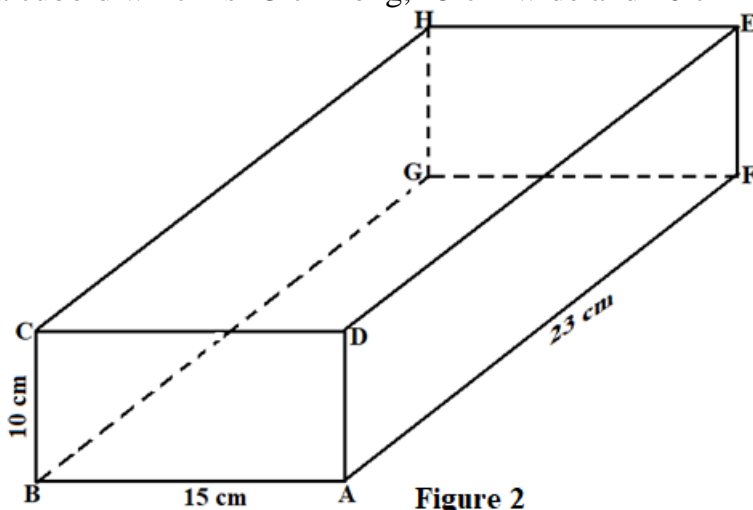


Figure 2

Calculate the total surface area of the cuboid.

(5 marks)

8. Given that the deviations from the mean of three scores are 2, 5 and a , calculate the variance of the scores. **(5 marks)**

STUDENT NAME: _____ SCHOOL: _____

2025

Page 6 of 12

M131/1

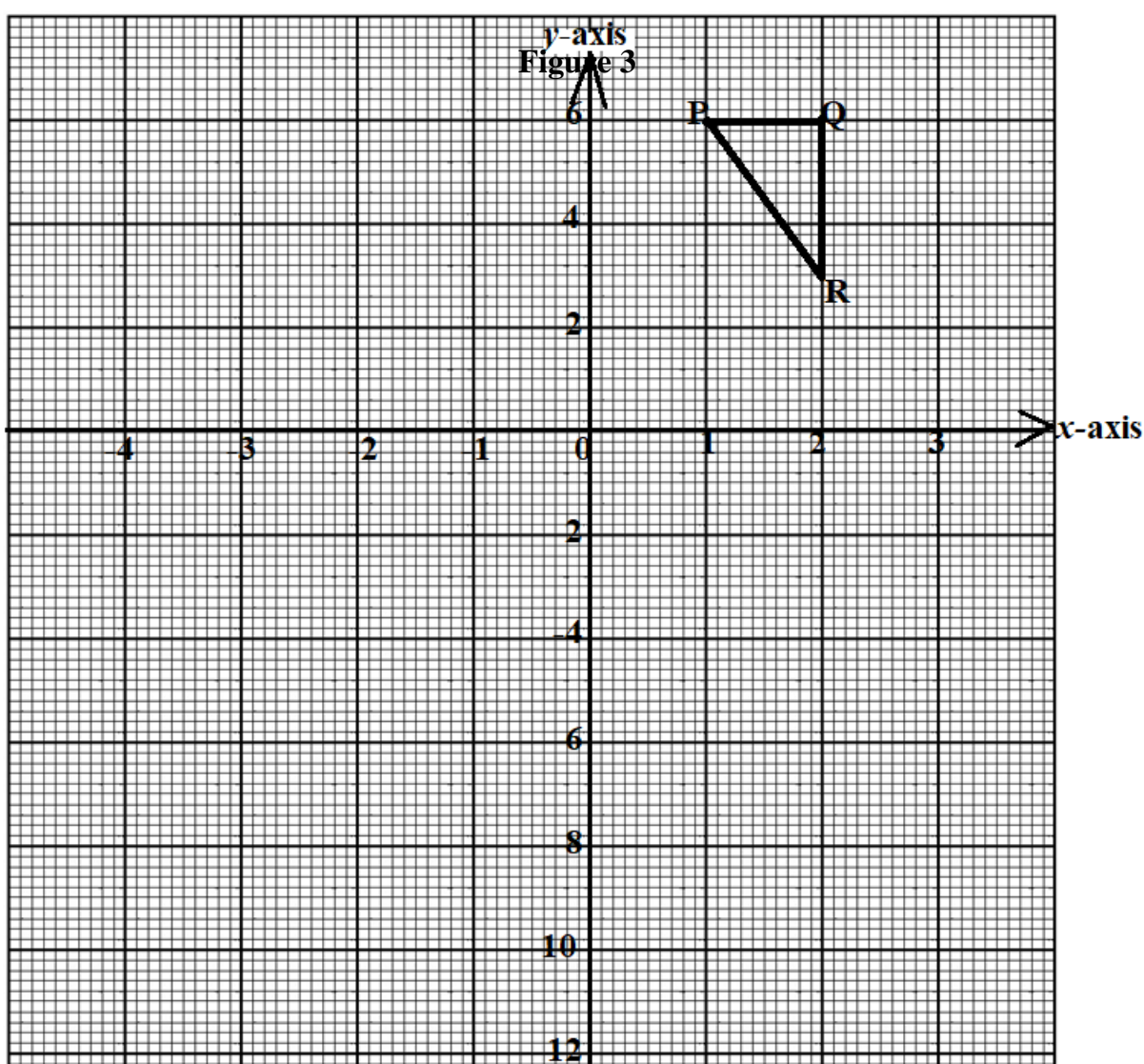
9. Solve the equation $2 - 8x = -5x^2$ giving the answer correct to two decimal places.

(7 marks)

Continued/...

10. The function $f(x) = \frac{3\sqrt{x}-2}{2} + 0.5$ has the domain $\{a, 49\}$ and the range $\{4, b\}$, calculate the values of a and b . (5 marks)

11. **Figure 3** shows a triangle **PQR** whose vertices are **P**(1,6), **Q**(2,6) and **R**(2,3).



Draw the image of the triangle **PQR** using **-2** as a scale factor and **(1, 0)** as the centre of enlargement. (5 marks)

Continued/...

12. The quantity d varies inversely as the square of r and directly as h . When $d=2$, $r=-12$ and $h=8$. Find r when $d=9$ and $h=6\frac{1}{4}$. (6 marks)

13. A chord of a circle centre O is 2.76 cm long. If the diameter of the circle is 6 cm, calculate the distance of the chord from the centre leaving the answer to 2 significant figures. (5 marks)

14. Find the coordinates of x -intercept for a line parallel to $y - (2\sqrt{3})x = -3$ passing through $(0, 4)$ leaving the answer in the simplest surd form. **(5 marks)**

15. Given that the volumes of two similar bottles are 32 cm^3 and 500 cm^3 . If their heights are $h \text{ cm}$ and $(2h+3) \text{ cm}$ respectively, calculate the value of h . **(4 marks)**

STUDENT NAME: _____ SCHOOL: _____

2025

Page 10 of 12

M131/1

16. Given the coordinates for $\mathbf{P} = (2, 4)$ and $\mathbf{Q} = (6, u)$. If $2|\overrightarrow{PQ}| = 10$ units. Calculate the values of u . (5 marks)

17. The n th term of a geometric progression (**GP**) is given by $3(2^{n-1})$. Find the sum of the first 8 terms. (5 marks)

Continued/...

18. The angle of elevation from a man to the top of a tower is 38° . If the man is 12 m from the foot of the tower, calculate the distance of the man from the top of the tower, giving the answer correct to 2 decimal places. (4 marks)

19. **Figure 4** shows a circle **ABC** centre **O** in which **AT** and **BT** are tangents to the circle at **A** and **B** respectively.

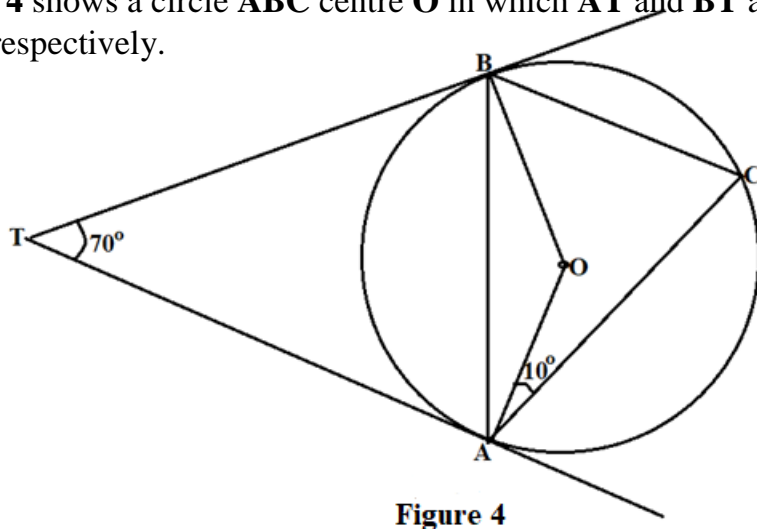


Figure 4

If angle **ATB** = 70° and angle **OAC** = 10° , calculate the value of angle **BAC**. (5 marks)

20. On the same axes, using a scale of 2 cm to represent 1 unit on horizontal axis and 2 cm to represent 2 units on vertical axis, draw the graphs to show the region bounded by the following inequalities on the graph paper below. Shade the unwanted region.

$x \geq 0$

$y \leq 6$

$y \geq -2x$

$4x - y < 6$

(5 marks)

