



NAME OF CANDIDATE: FORM

ST MARY'S SECONDARY SCHOOL

2025 MALAWI SCHOOL CERTIFICATE OF EDUCATION 2ND MOCK EXAMINATIONS

MATHEMATICS

Subject Number: M131/I

Monday, 12 May.

Time allowed: 2 hours

08:00 – 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. Scientific calculators may be used.
5. All working must be clearly shown.
6. Write your **name** at the top of question paper in the spaces provided.
7. In the table provided on this page, **tick** against the question number you have answered.
8. 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			
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Answer **all** the **twenty** questions in the spaces provided.

1. Factorise completely $2p^2 - 6pq - 8q^2$ (4 marks)

2. Without using a calculator, simplify $\frac{6\sqrt{27} - \sqrt{48}}{5\sqrt{2}}$, giving the answer with a rational denominator. (5 marks)

3. Make h the subject of the formula $d = \sqrt[3]{\frac{P}{m-h^2}}$ (5 marks)

4. Given that matrix $\mathbf{N} = \begin{pmatrix} 2 & 3 \\ 1 & 1 \end{pmatrix}$ and $\mathbf{P} = \begin{pmatrix} 1 & -2 \\ 0 & 4 \end{pmatrix}$, evaluate $3\mathbf{P} - \mathbf{N}^2$. (5 marks)

5. In a school hall there are 20 seats in the first row, 23 seats in the second row, 26 seats in the third row and so on. Calculate the number of seats in the 20th row. **(4 marks)**

6. Given that $3x^3 - 8x^2 + 4x - 5$ is identical to $x(3x + k)(x - 2) - 5$, find the value of k **(5 marks)**



7. **Figure 1** shows an image triangle $L'M'N'$ of triangle LMN after a translation.

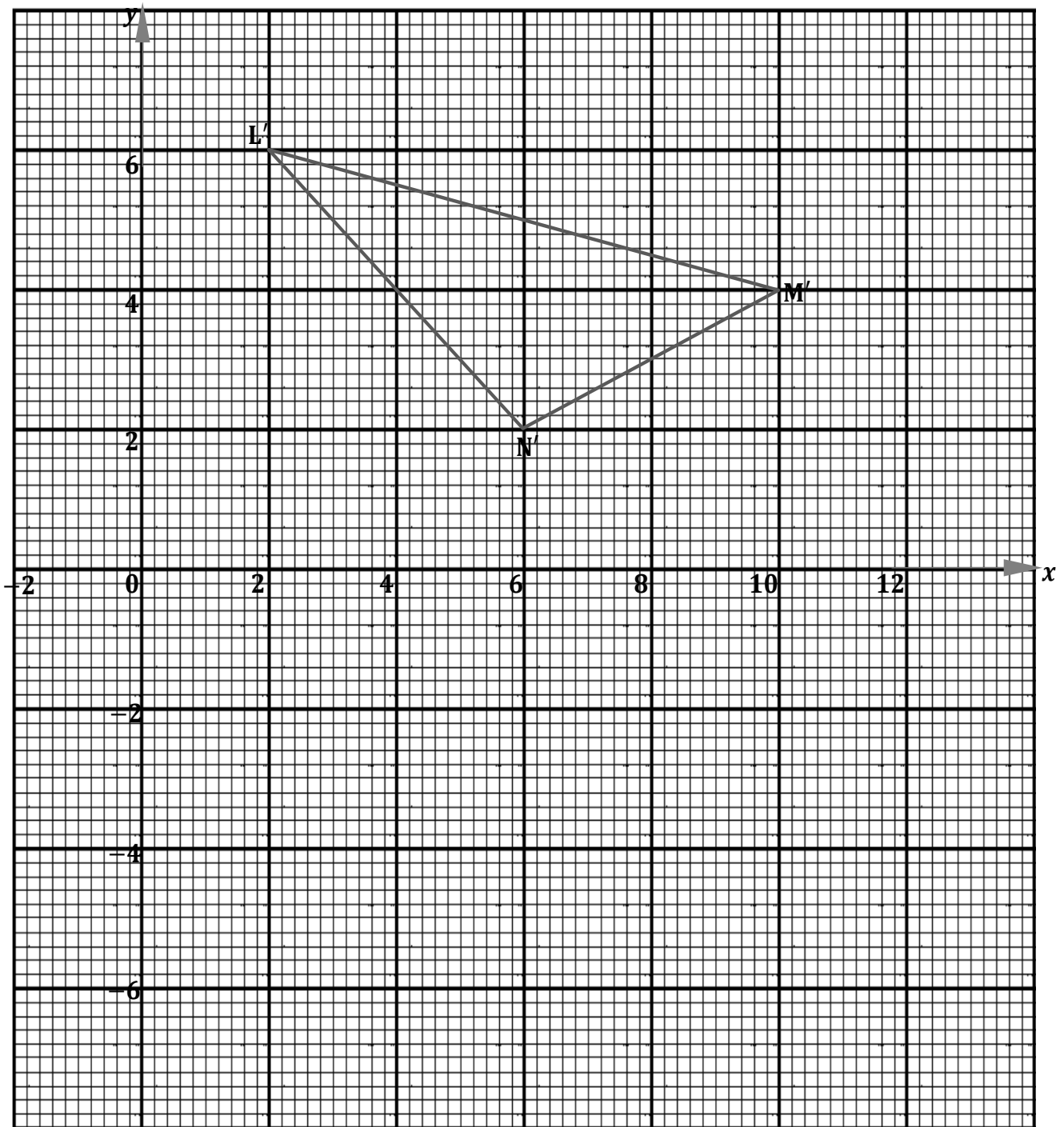


Figure 1

If $L'M'N'$ was translated under a vector $T = \begin{pmatrix} -1 \\ 6 \end{pmatrix}$, using the same axes, draw triangle LMN in figure 1. (5 marks)

8. A chord is 5 cm from the centre of a circle of radius 9 cm . Calculate the length of the chord, giving the answer correct to two decimal places. **(5 marks)**

9. The surface areas of two similar cylinders are 64 cm^2 and 36 cm^2 . Find the volume of the larger cylinder if the volume of the smaller cylinder is 297 cm^3 . **(4 marks)**

10. Given that the function $f(x) = \frac{3x-1}{2}$ and that its domain is $\{-1, 0, 3\}$. Draw an arrow diagram to show the domain and the range. (5 marks)

11. **Figure 2** shows a circle **ABCD**. **EDF** is a tangent to the circle at **D** such that **DE = DC**, **EAC** is a straight line and angle **CAD** = 60° .

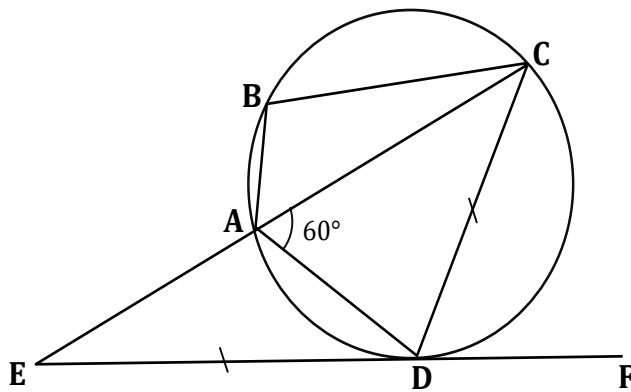


Figure 2

Calculate the value of angle **ABC**.

(6 marks)

2025

Page 8 of 12

M131/I

12. Solve the equation $2x^2 - 6x + 1 = 0$, giving the answer correct to two decimal places. (6 marks)
13. A point M on the level ground is $15m$ away from the foot of the wall of a house. The angle of elevation of the bottom (B) of a window on the wall from M is 14° . The angle of elevation of the top (T) of the window from M is 20° . Calculate the height of the window, giving the answer correct to the nearest metre. (5 marks)



14. **Figure 3** shows a graph of a straight line **ST** on a Cartesian plane which passes through a point **(2, 5)** and makes an angle θ with the x -axis.

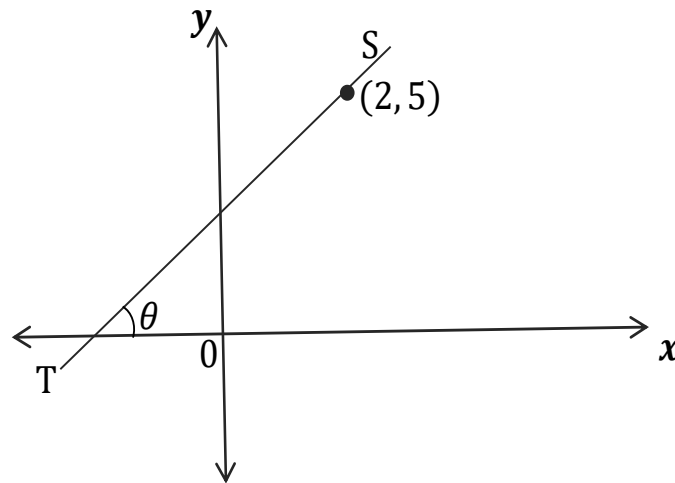


Figure 3

Given that $\tan \theta = \frac{1}{2}$, find the equation of line **ST**.

(4 marks)

15. Given that $\underline{x} = \begin{pmatrix} 4 \\ 2 \end{pmatrix}$ and $\underline{y} = \begin{pmatrix} 2 \\ -1 \end{pmatrix}$, calculate $|\underline{x}| + |\underline{y}|$, giving the answer in simple surd form.

(5 marks)

16. **Figure 4** shows a speed-time graph of car.

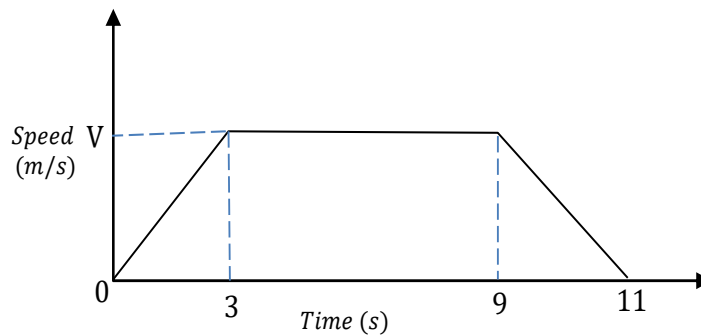


Figure 4

Given that the total distance travelled is 400 m, calculate deceleration of the car in the last 2 seconds. **(5 marks)**

17. A quantity P varies directly as m and inversely as the square root of r . When $m = 2$ and $r = 36$, $P = 8$. Find r when $m = 4$ and $P = 12$. **(6 marks)**

18. **Figure 5** shows unshaded region **J**.

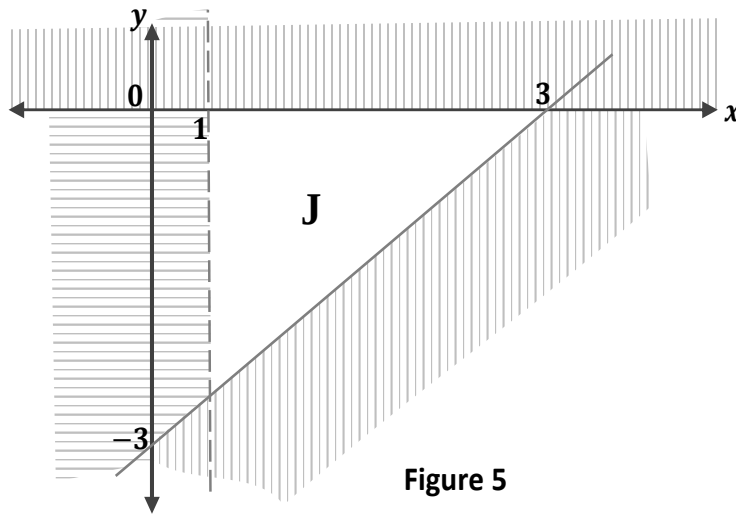


Figure 5

Write down **three** inequalities that describe the unshaded region **J**.

(5 marks)

19. Given that $-4, -2, -1, 3$ and 4 are deviations from the mean of a certain data. Calculate the standard deviation of the data, giving the answer correct to 2 decimal places. **(5 marks)**

20. **Figure 6** shows a metal object, open at the top, made by joining a hemisphere and a cylinder. The cylinder has a diameter of 28 cm and a height of 35 cm .

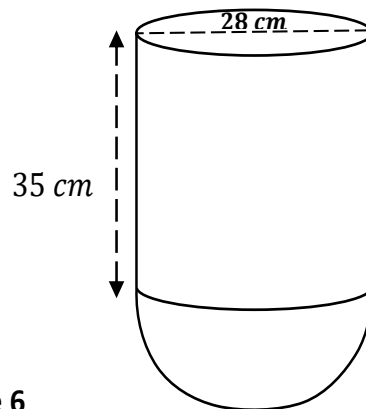


Figure 6

The whole object was painted outside only. Calculate the total surface area that was painted. (Take $\pi = \frac{22}{7}$).

(6 marks)

END OF QUESTION PAPER.

NB: This paper contains 12 printed pages

