NAME OF STUDENT……Form 4 | A | B | C | D |

PACT NORTH PARK SECONDARY SCHOOL

2025 MALAWI SCHOOL CERTIFICATE OF EDUCATION TERM 1 EXAMINATION

MATHEMATICS

PAPER I

(100 marks)

Subject number: M131/I
Time Allowed: 2 hours
07:30 – 09:30 am

Tuesday, 09 December.

Instructions

1. **This paper contains 9 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. The blank answer sheet at the end of the question paper can be used if required. Do **not** tear it off.
6. **All working must be clearly shown.**
7. Write your **name** and tick your class on top of each page of this question paper.
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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Turn over

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

1. Factorize $\frac{8}{9} - 2b^2$ completely. **(4 marks)**

2. Solve the equation $\left(\frac{1}{4}\right)^{m-1} = 1024$ **(5 marks)**

3. Find the equation of a straight line passing through the point $(3, 5)$ and x −axis of $2y = x - 4$ **(5 marks)**

Continued/…

4. If the rationalized the denominator of $\frac{10}{4-2\sqrt{3}} = a + b\sqrt{3}$, find the values of a and b **(6 marks)**

5. Simplify $\frac{2y^2-18}{3-y}$ to its lowest form. **(4 marks)**

6. Given a matrix $\boldsymbol{A} = \begin{pmatrix} p & 3 \\ -2 & 1 \end{pmatrix}$. If $\boldsymbol{A^2} = \begin{pmatrix} -1 & 6 \\ -4 & -5 \end{pmatrix}$. Find the value of p **(5 marks)**

Continued/…

7. Given that $x + 2$ is a factor of $x^3 + ax^2 - x + 4$, find the value of a. **(4 marks)**

8. Given that $(a + \sqrt{2})(3 + b\sqrt{2}) = 8 + 5\sqrt{2}$, find the values of a and b. **(7 marks)**

9. Simplify $\log_3 81 - \log_5 125 + \log_{\sqrt{2}} 8$. **(5 marks)**

10. Given that $\tan\theta = \sqrt{5}$, find $\sin\theta$ in simplest form. **(4 marks)**

Continued/…

11. A scout whose eye level from the ground was 1.3m was standing 3m away from a flag post. Find the angle of elevation of the flag given that it is 10m high from the ground. **(5 marks)**

12. A quantity M varies jointly as p and q. When $p = 12, q = 5$ and $M = 15$. Find p when $q = 28$ and $M = 21$. **(5 marks)**

13. The third and fifth terms of a Geometric Progression **(G.P)** are 12 and 48 respectively. Calculate the first term of the progression. **(5 marks)**

Continued/…

14. Given that the function $h(x) = \frac{x^2-3}{x}$ its domain is $\{-1, 1, 3\}$. Find the range and draw an arrow diagram to show both the domain and the range **(6 marks)**

15. **Table 1** below shows the marks Nabwire got in her end of term 1 tests.

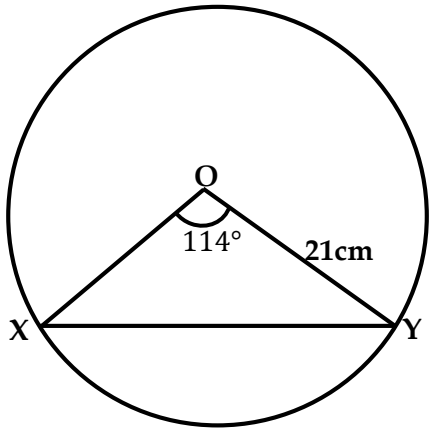
Subject	Marks (%)
Maths	24
English	72
Chemistry	40
Biology	44
Geography	80

Table 1

Represent this information on a pie chart. **(6 marks)**

Continued/…

16. Figure 2 below shows a circle centre O. The radius of the circle is 21cm and the chord **XY** subtends and angle of 114° at the centre of the circle.



Calculate the length of the chord XY to one decimal place. **(5 marks)**

17. The volume of a cylinder is $27cm^3$ and its height is 2cm. Calculate the volume of a similar cylinder having a height of 6cm. **(4 marks)**

Continued/…

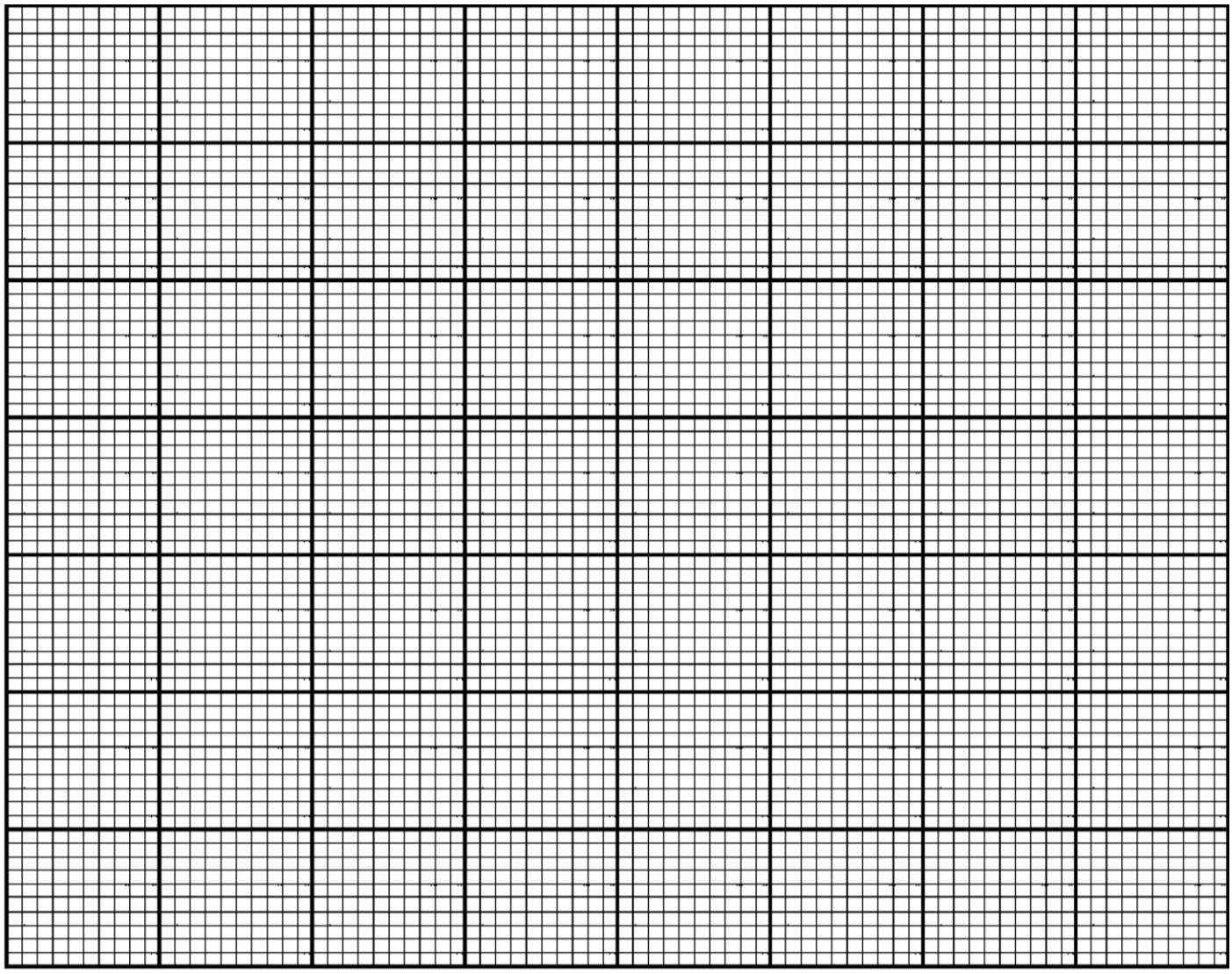
18. Given that $n(A) = 12, n(B) = 5, n(A \cap B) = 8$. Find $n(A \cup B)$. **(4 marks)**

19. On the same axes, draw the graphs represented by the following inequalities.

i. $y \geq 0$ **(6 marks)**

ii. $y \leq 4 - 2x$

iii. $y < x$



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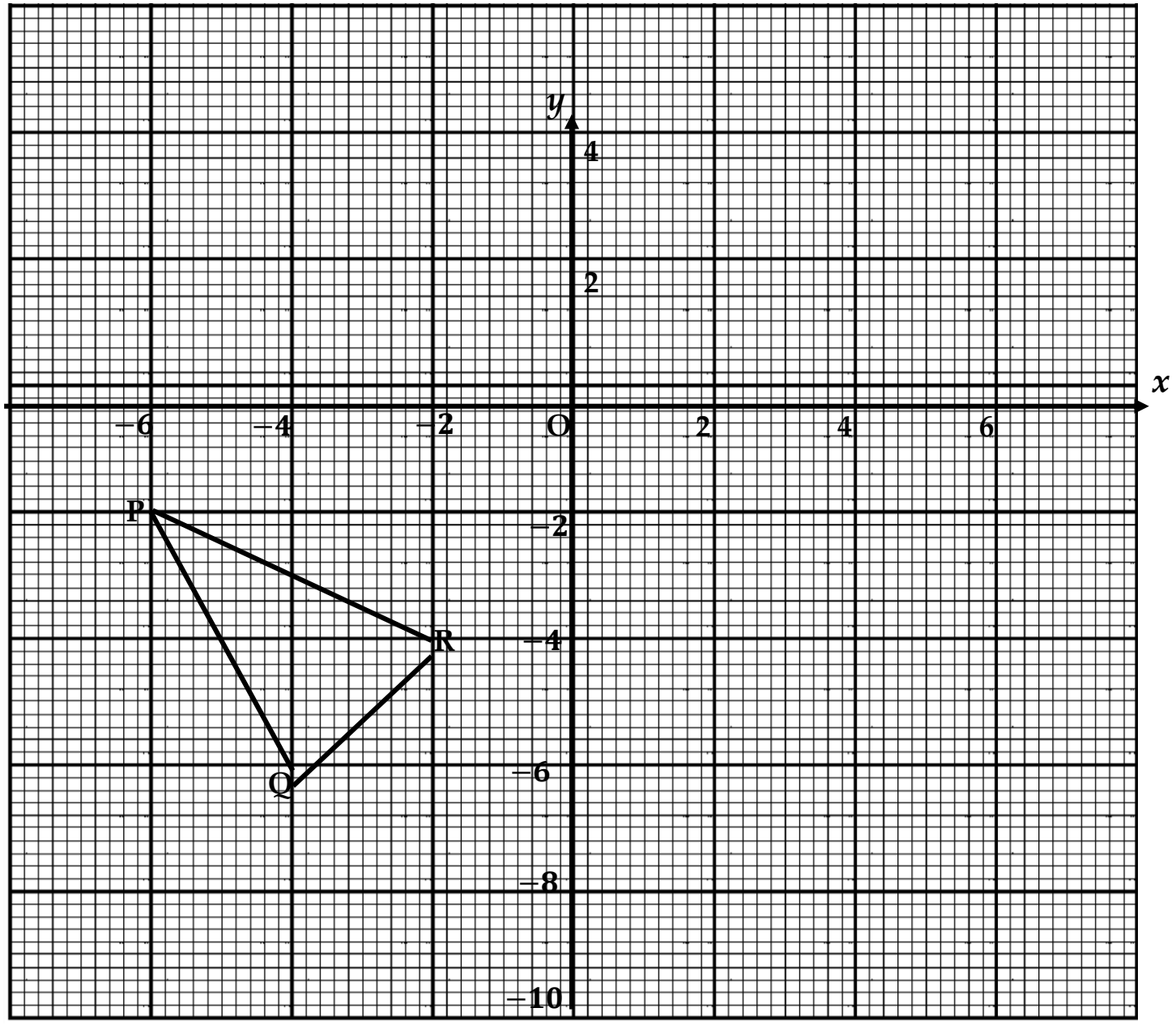
20.Figure 3 below shows a triangle on a graph paper.



Using $(0,-2)$ as the centre of rotation, draw a triangle PQR after rotation about 45° clockwise. **(4 marks)**

END OF QUESTIONS