STUDENT NAME: _____ FORM 4: ____

ST PATRICK'S SECONDARY SCHOOL

2026 MALAWI SCHOOL CERTIFICATE OF EDUCATION MOCK I EXAMINATIONS

MATHEMATICS

Friday, 20 February — Time allowed:2h 30 min

PAPER II — 8:00-10:30am

(100 MARKS)

INSTRUCTIONS

1. **This paper contains 14 printed pages.**

   Please check

2. Answer **all the 6** questions in section A and **any four** questions in section B.

3. The maximum number of marks for each answer is indicated against each question

4. Scientific calculators may be used

5. The graph papers and the blank answer sheet at the end of the question paper can be used if required. Do not tear them off.

6. **All working must be clearly shown**

7. Write your **full names** at the top of each page of your question paper in the spaces provided

8. In the provided on this page, **tick** against the question number you have answered.

9. At the end of examination, hand in your paper to the invigilator.

Question number	Tick if answered	Do not write in this columns	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

SECTION A (60 marks)

Answer all the **six** questions in this section

1. (a)Simplify $\frac{4x+12}{16x^2} \times \frac{x^2-9}{x^2-x-6}$

(5 marks)

(b) Two similar solids have their surface areas as $160\,cm^2$ and $360\,cm^2$. Calculate the ratio of their volume.

(4 marks)

2. (a) Given that $(2m+3)$ is one of the factors of $8m^3+10m^2-9m-9$, find the other two factors of $8m^3+10m^2-9m-9$.

(5 marks)

(b) Without using a calculator or four figure tables, evaluate $\frac{\log \sqrt{x}}{\log \sqrt[3]{x^2}}$

(4 marks)

3. (a) The sum of the first two terms of a G.P is 5. If the common ratio is $\frac{1}{4}$,find the first term

(4 marks)

(b) Prove the theorem which states that opposite angles of a cyclic quadrilateral are supplementary.

(6marks)

4. (a) Solve the following equations simultaneously:

$$x^2 - y^2 = 0$$
$$x - 2y = 1$$

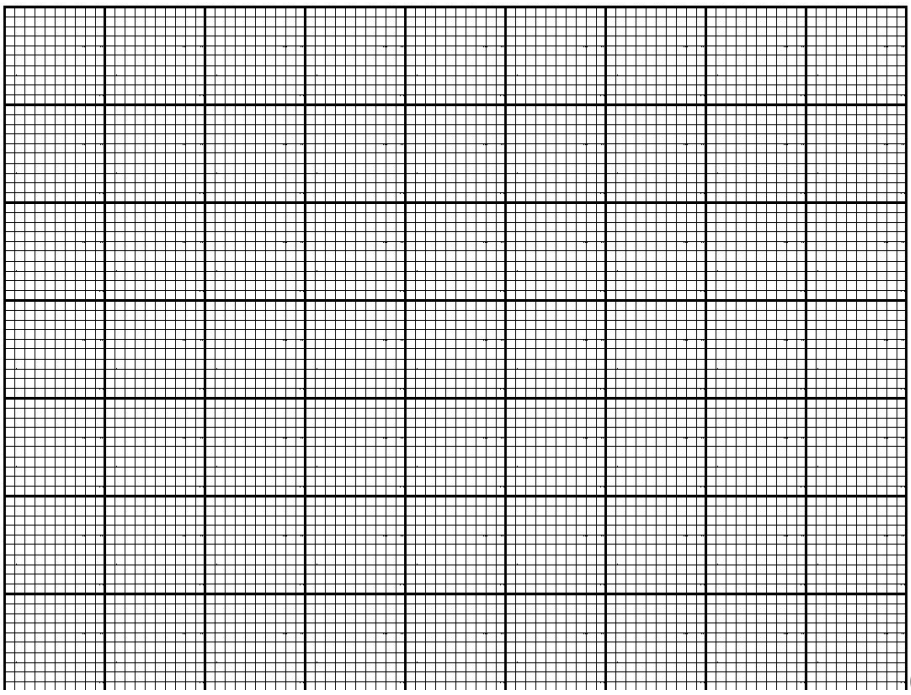
(5 marks)

(b) Table 1 shows marks scored by students to a mathematics test marked out of 60.

Table 1

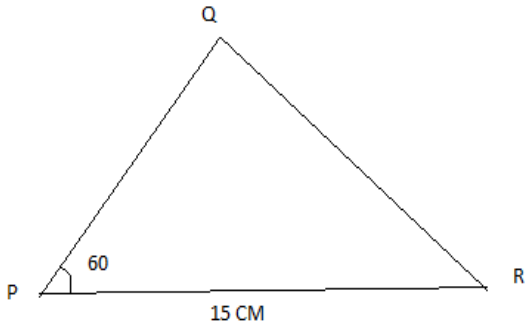
MARKS	1-15	16-20	31-45	46-60
FREQUENCY	7	12	6	4

Using 2 cm to represent 2 units on the vertical axis, draw a histogram to represent the information on table 1.



(5 marks)

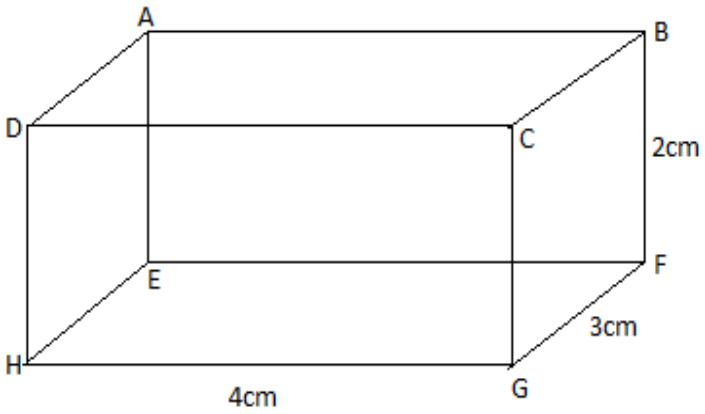
5. (a)Figure below, is a triangle PQR in which PR =15 cm and angle QPR =60°.



If the area of the triangle is $5\sqrt{3}cm^2$, without using a calculator, calculate the length of PQ.

(4 marks)

(b) Figure below is a cuboid with HG=4cm, GF=3cm,BF=2cm



Calculate the length of AG leave the answer to 2 decimal point.

(5 marks)

6. (a) Using a ruler and a pair of compasses only, construct in the same diagram:

- a circle center O with radius 2.5cm
- a point P outside the circle and 7cm from the center.
- Tangent PQ and PR at Q and R respectively.

(6 marks)

(b) The probability of having early supper at a boarding school is $\frac{2}{3}$. When the supper is early the probability of having beef is $\frac{7}{10}$, and when it is late the probability of having beef is $\frac{1}{8}$. Draw a tree diagram to represent this information completing all the branches.

(7 marks)

SECTION B (40marks)

Answer **any four** questions only in this section in the spaces provided

7. At a certain school, 72 students like watching football, 64 like watching basketball and 62 like watching netball, 18 like watching football and basketball, 24 like watching football and netball, 20 like watching basketball and netball, 8 students like watching all the three games, while 56 students do not like watching any of the games.
   (a) Draw a Venn diagram representing this information.
   (b) From the Venn diagram, calculate the number of students at the school.

(10 marks)

8. The Cost C of a holiday consists of two parts. One part is constant and the other part varies as the number of days, d and the number of people, p. The total cost for 15 people for 5 days is *K* 41,500 and the total cost 8 people for 15days is *K* 41,950.
   Find the cost of 12 people for 7 *days*

(10 marks)

9. The table below shows some value of $x \wedge y$, for the equation $y = x^2 - 4x + 5$.

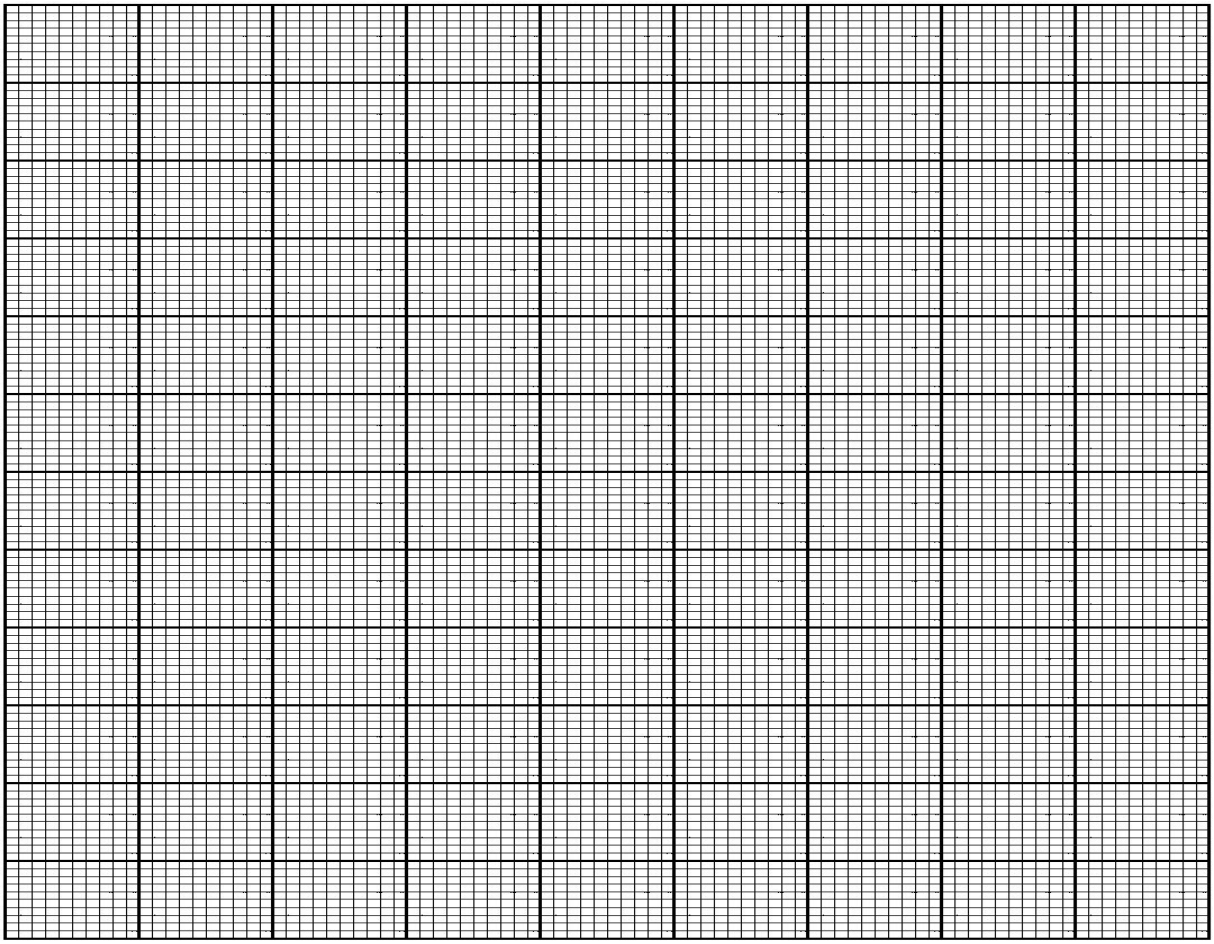
X	-1	0	1	2	3	4	5
Y	10	5		1	2		10

a. Complete the table of values. (1 mark)

b. Using a scale of 2cm to represent 1 unit on the horizontal axis and 2cm to represent 2 units on the vertical axis, draw the graph of $y=x^2-4x+5$ on the graph paper page. (5 marks)

c. Use the graph to solve the equation $x^2-2x-3=0$.

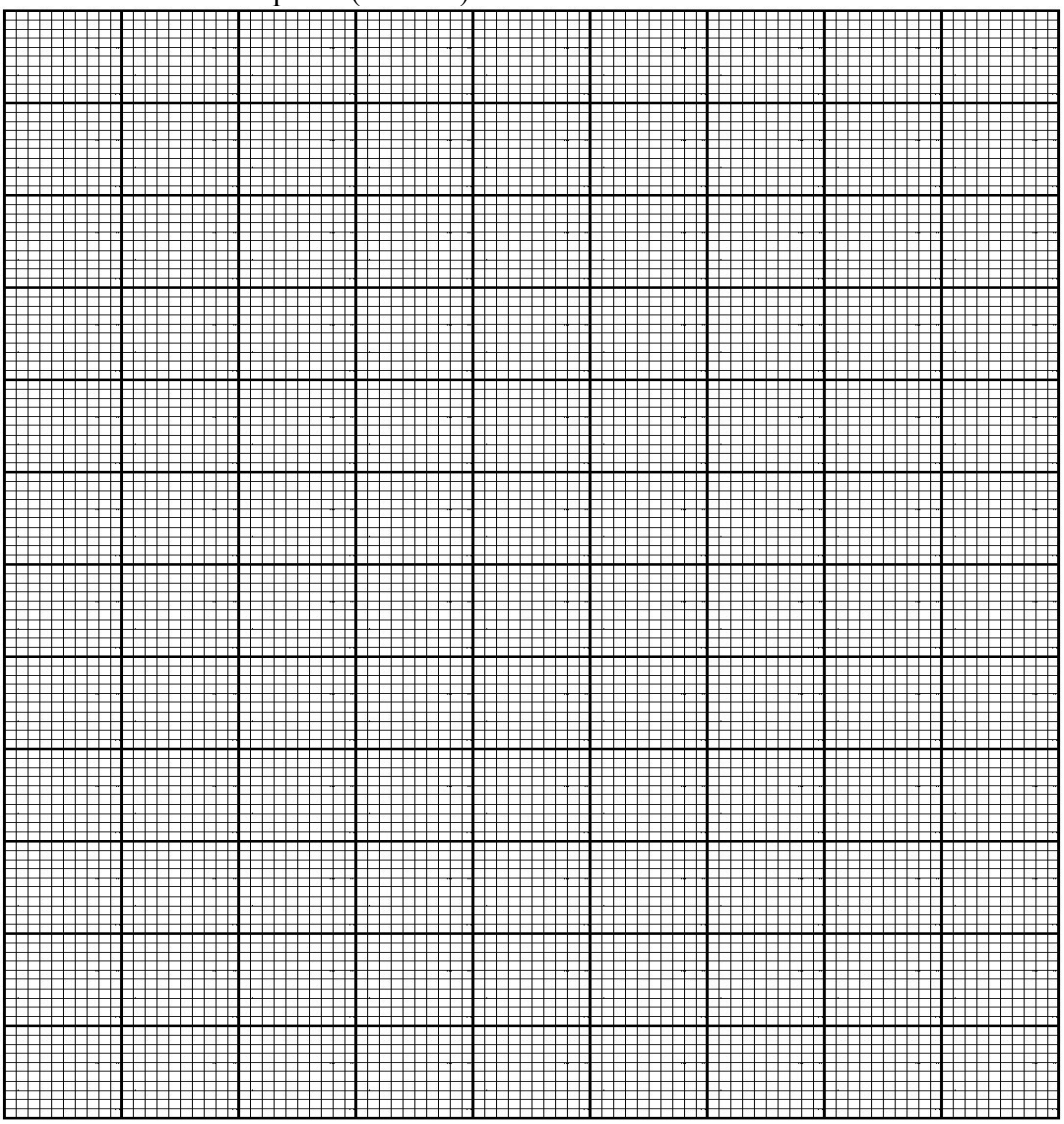
(4 marks)



10. A vendor decides to spend up to K600 to buy packets of sweets and biscuits. She doesn't want to buy more than 10 packets altogether but want to buy at least 2 packets of each. A packet of sweet costs K40 and that of a biscuit cost K80. The profit on each packet of sweet is K10 and each packet of biscuit is K15.

By taking x to represent the number of packets of sweets and y the number of packets of biscuits

a. Write down four inequalities (3 marks)
b. Using a scale of 2cm to represent 2 units on both axes, draw the graph to show the region represented by the inequalities. (4 marks)
c. Use the graph to find the number of sweets and biscuits respectively for the vendor to get the maximum profit (3 marks)



11. Solve the equation:

$$\log_2\left(x^2+3x-2\right)=2\log_2\left(x+1\right) \qquad (10 \text{ marks})$$

12. A car starts from rest and accelerates uniformly for 2 seconds to a speed of $6\,m/s$. It maintains this speed for 2 seconds and accelerates uniformly for $5\,m/s^2$ in 2 seconds. It then maintains this speed for 4 seconds after which it comes to rest for further 2 seconds.

a. Using a scale of 2cm to represent 2units on both axes, draw speed time graph for the whole journey

b.Use the graph to find distance covered in the first four seconds. (10 marks)

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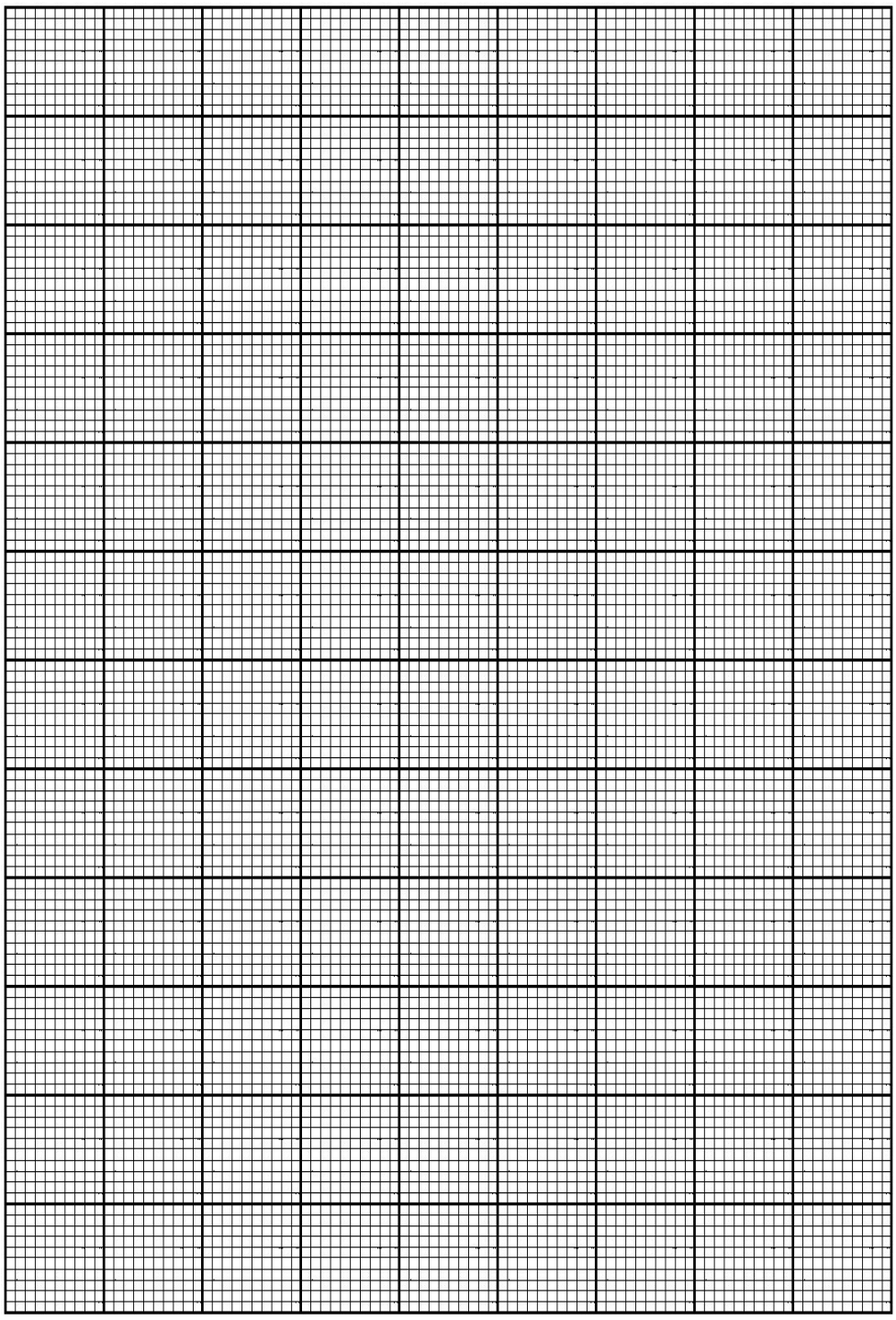

END OF QUESTION PAPER