

Centre Number	Examination Number										



7729833



# EXAMINATIONS COUNCIL OF ZAMBIA

Examination for General Certificate of Education Ordinary Level



## Mathematics

Paper 1

4024/1

Thursday

8 AUGUST 2024

Additional materials:  
Geometrical instruments

Time: 2 hours

Marks: 80

### Instructions to Candidates

- 1 Write the **centre number** and your **examination number** on **every page** of this question paper.
- 2 There are **twenty-three** questions in this paper.
- 3 Answer **all the** questions.
- 4 Write your answers in the **spaces provided** in this question paper.
- 5 If working is needed for any question, it must be shown in the space below that question.
- 6 **Electronic calculators and mathematical tables should not be used in this paper.**

### Information for Candidates

- 1 No paper for rough work is to be provided.
- 2 **Omission of essential working** will result in loss of marks.
- 3 The number of marks is given in brackets [ ] at the end of each question or part question.
- 4 Cell phones and other electronic devices are **not allowed** in the examination room.

### For Examiner's Use Only

Question	Mark obtained	Examiner's Initials
1		
2		
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<b>Total</b>		

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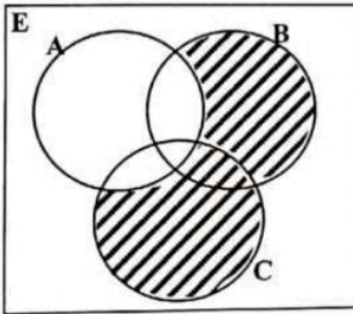
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4 Factorise completely  $7x^2 - 7$ .

Answer: ..... [2]

5 Use set notation to describe the shaded region in the Venn diagram below.



Answer: ..... [2]

6 A businessman got 800 shares worth K7 200.00. What was the cost of each share?

Answer: ..... [2]

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7 The sequence 20, 17, 14, ..., is an Arithmetic progression. Find the

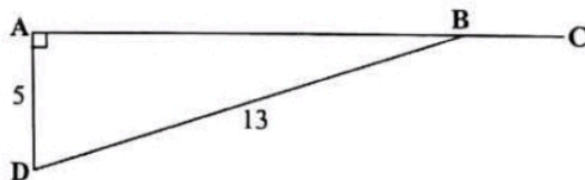
- (a) 9<sup>th</sup> term,
- (b) sum of the first 10 terms.

Answer: (a) ..... [1]

(b) ..... [2]

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- 8 (a) A fair die is rolled once. Find the probability of a 4 showing up.  
 (b) In the diagram below, ABC is a straight line, AD = 5cm, BD = 13cm and angle BAD = 90°.



Find the value of  $\tan \hat{D}BC$ .

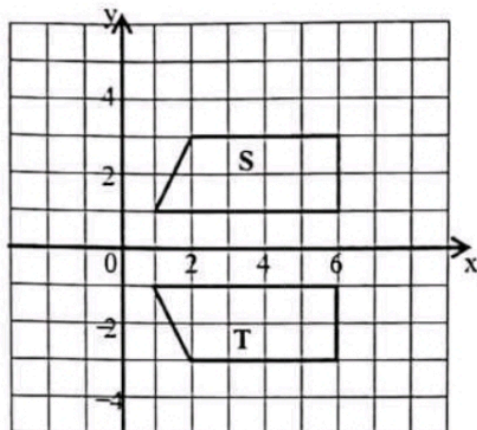
Answer: (a) ..... [1]

(b) ..... [2]

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- 9 (a) Given that the universal set  $E = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ ,  $P = \{2, 4, 6, 8\}$  and  $Q = \{2, 3, 5, 7\}$ . List  $P' \cap Q$ .
- (b) The diagram below shows trapezium S and trapezium T.



Describe fully a single transformation which maps trapezium S onto trapezium T.

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Answer: (a) ..... [1]  
 (b) ..... [2]

- 10 (a) Given that  $A = \begin{pmatrix} 2 & -1 & 3 \end{pmatrix}$ , find  $A^T$ .
- (b) Given that  $A = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$  and  $B = \begin{pmatrix} 1 & -2 \end{pmatrix}$ , find  $AB$ .

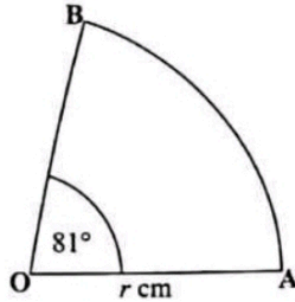
Answer: (a) ..... [1]  
 (b) ..... [2]



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- 12 (a) The diagram shows a sector AOB whose area is  $34.65\text{cm}^2$ . The angle subtended at the centre is  $81^\circ$  and the radius is  $r$  cm. ( $\pi = \frac{22}{7}$ )



Find the radius ( $r$ ) of the sector.

- (b) The ratio of the areas of two similar solids is 9:25. If the volume of the bigger solid is  $375\text{cm}^3$ , what is the volume of the smaller solid?

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Answer: (a) ..... [2]

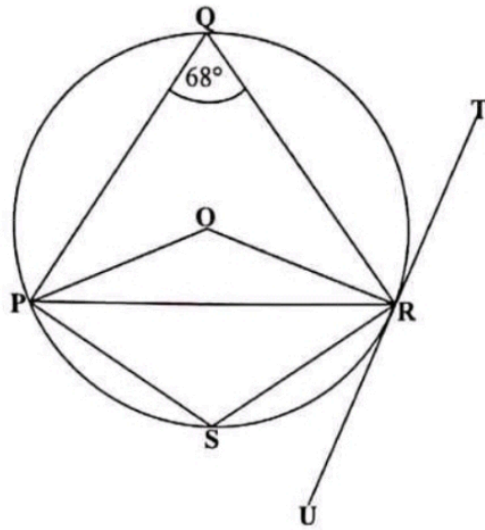
(b) ..... [2]



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14 In the diagram, P, Q, R, S are points on the circle with centre O and  $\angle PQR = 68^\circ$ . TRU is a tangent at R.

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Find

- (a)  $\hat{PQR}$ ,
- (b)  $\hat{PSR}$ ,
- (c)  $\hat{PRO}$ .

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- Answer: (a) ..... [1]  
 (b) ..... [1]  
 (c) ..... [2]







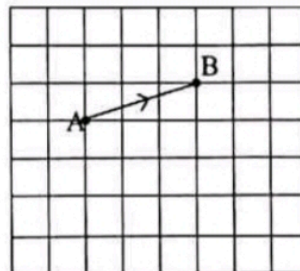
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- 19 (a) In the answer space below, draw  $\vec{AC}$ , given that  $\vec{AB} = \begin{pmatrix} 3 \\ 1 \end{pmatrix}$  and  $\vec{BC} = \begin{pmatrix} 1 \\ -3 \end{pmatrix}$ .
- (b) The straight line  $y = \frac{1}{2}x + p$  passes through the point  $(-2, 2)$ . Find the coordinates of the  $y$ -intercept.

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Answer: (a) [2]

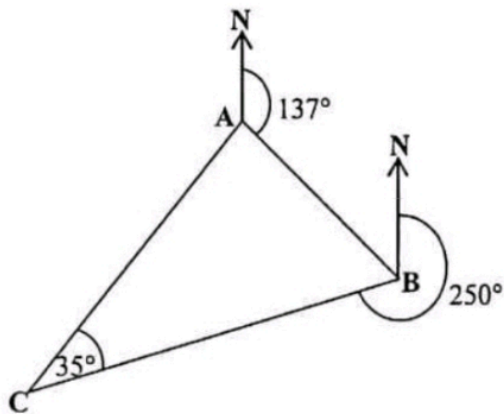


(b) ..... [2]

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- 20 In the diagram, A, B and C are three points on level ground. The bearing of B from A is  $137^\circ$ , the bearing of C from B is  $250^\circ$  and angle  $ACB = 35^\circ$ .

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Find the bearing of

- (a) A from B,
- (b) A from C.

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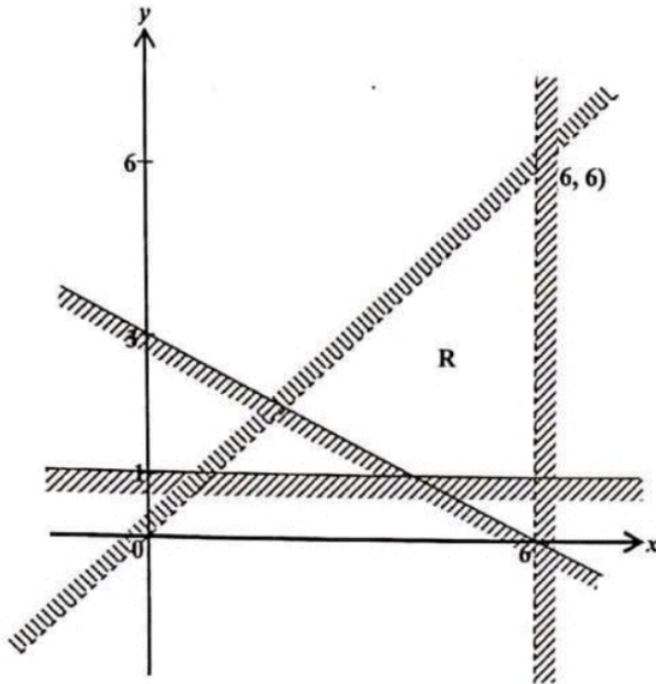
Answer: (a) ..... [2]

(b) ..... [2]

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21 Write the four inequalities that define the unshaded region R, on the diagram below.

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Answer:

.....  
 .....  
 .....  
 .....

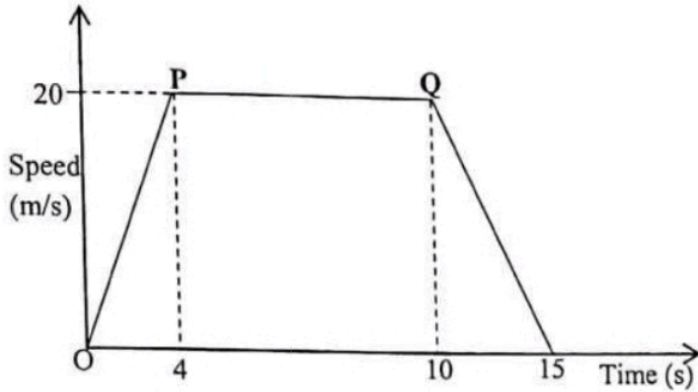
[5]



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23 The diagram below shows the speed-time graph of an object. The object accelerates uniformly from O to P until it reaches a speed of 20m/s in 4 seconds and then moves steadily from P to Q for 6 seconds and finally comes to rest.



Find the

- (a) acceleration in the first 4 seconds,
- (b) total distance covered by the object,
- (c) average speed in the last 4 seconds.

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Answer: (a) ..... [1]  
 (b) ..... [2]  
 (c) ..... [3]