



**EXAMINATIONS COUNCIL OF ZAMBIA**

**JUNIOR SECONDARY SCHOOL LEAVING EXAMINATION (GRADE 9) – 2016**

**Mathematics 401/2**

**Paper 2**

**(INTERNAL AND EXTERNAL CANDIDATES)**

**READING TIME: 10 MINUTES**

**MARKS: 50**

**WORKING TIME: 2 HOURS**

**CANDIDATE NAME: .....**

**EXAMINATION NUMBER: .....**

**SCHOOL/CENTRE: .....**

**Instructions to candidates**

- 1 Write your name, examination number and school/centre in the spaces provided on the question paper.
- 2 There are **eight (8)** questions in this paper. Answer any **five (5)** questions.
- 3 Answer all questions in the spaces provided on the question paper.
- 4 Write your answers clearly.
- 5 All essential working must be shown. Candidates will be penalized for omitting essential working.
- 6 Tick (✓) the question you have attempted in the grid provided below.

Questions	1	2	3	4	5	6	7	8	Total marks
Tick									
Mark									

**Information for candidates**

**Cell phones and calculators are not allowed in the examination room.**

**DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO**



1 (a) Solve the equation  $x - 8 = 3(4 - x)$ . [2]

(b) Write 0.03568 in standard form correct to 2 significant figures. [2]

(c) Express  $\begin{pmatrix} 5 & 3 \\ -4 & 2 \end{pmatrix} - 2\begin{pmatrix} 2 & 2 \\ 3 & 3 \end{pmatrix}$  as a single matrix. [3]

- (d) Mr. Matanki bought a cylindrical tank to store drinking water. The tank has a height of 70cm and a radius of 20cm. Calculate its volume.

(Take  $\pi = \frac{22}{7}$ ).

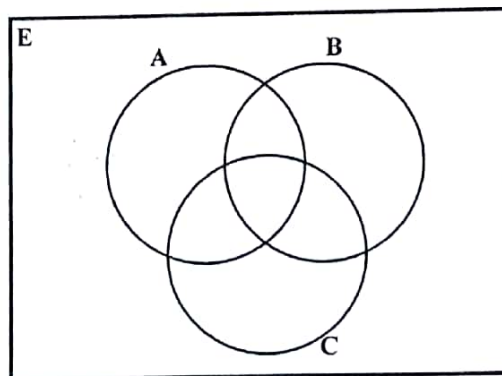
[3]

[Total: 10]

- 2 (a) Given that  $E = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ ,  $A = \{1, 2, 4, 5\}$ ,  
 $B = \{2, 4, 6, 7\}$  and  $C = \{2, 3, 5, 7, 8\}$ ,

- (i) illustrate this information in the Venn diagram below,

[2]



- (ii) list the elements of the set  $(A \cup B)' \cap C$ .

[2]

(b) Solve the simultaneous equations

$$2x - y = 5,$$

$$x + y = 4.$$

[3]

(c) Solve the inequation  $2(x - 1) > 3x - 5$ .

[3]

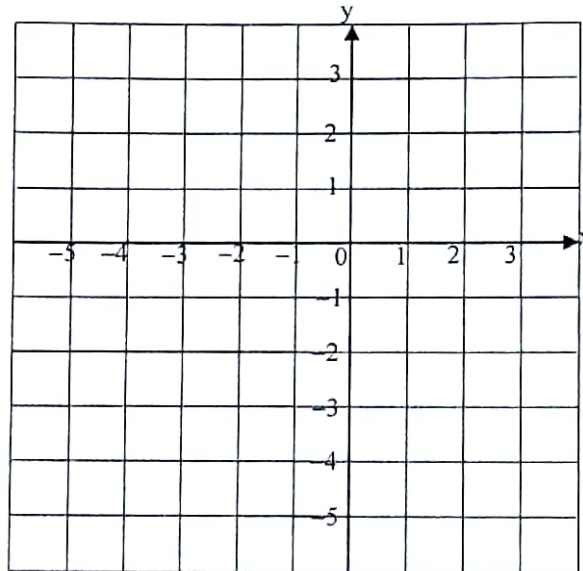
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**[Total: 10]**

3 (a) Find the product of  $432_{\text{five}}$  and  $23_{\text{five}}$ , giving your answer in base five. [3]

(b) Given that  $x = \frac{w+3}{2-w}$ , make  $w$  the subject of the formula. [3]

- (c) On the grid provided below,
- (i) plot the points  $V(-5, -5)$ ,  $W(-5, 1)$ ,  $X(-2, 3)$ ,  $Y(1, 1)$  and  $Z(1, -5)$ , [2]
  - (ii) join the points to form a polygon  $VWXYZ$ , [1]
  - (iii) draw the line  $x = -2$ . [1]



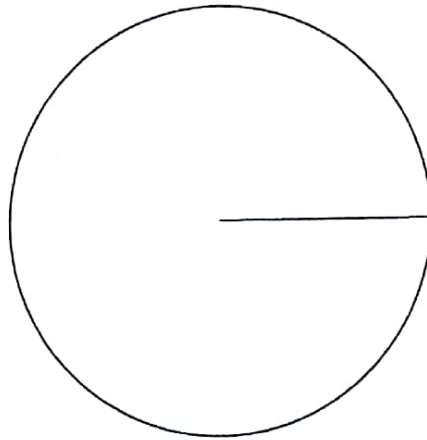
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[Total: 10]

- 4 (a) Simplify  $2x + 3(x - 4) - 4x$ . [2]

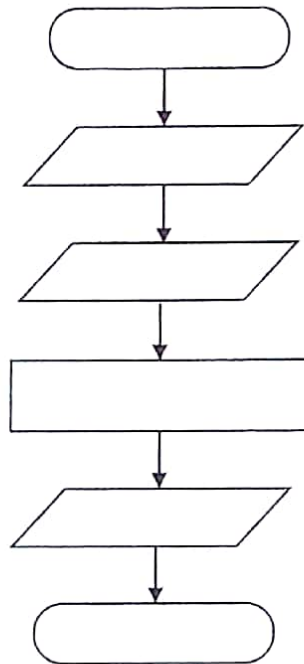
- (b) The angles of a quadrilateral are  $3y^\circ$ ,  $(2y + 10)^\circ$ ,  $4y^\circ$  and  $y^\circ$ .  
Find the value of  $y$ . [2]

- (c) A marketer made K200.00 profit from *Kalembula*, K150.00 profit from *Chibwabwa* and K250.00 profit from tomatoes. Illustrate this information on the pie chart below. [3]





- (d) Given that the base of a triangle is  $b$  and its perpendicular height is  $h$ , complete the flow chart below, which is for calculating and displaying its area  $A$ . [3]



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[Total: 10]

- 5 (a) A bag contains 15 white and 9 green balls. If a ball is picked at random from the bag, find the probability that it is green. [2]



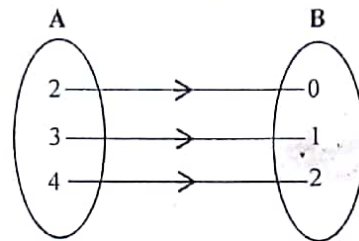
- (b) A company salesman is paid a salary of K2 000.00 per month. He also receives a commission of 2% of the value of the goods sold. Calculate his total income if he sold goods worth K25 000.00. [3]

- (c) (i) Construct triangle ABC in which  $AB = 4\text{cm}$ ,  $BC = 5\text{cm}$  and  $AC = 6\text{cm}$ . [1]
- (ii) Bisect the sides AB and AC and let them meet at O. [2]
- (iii) With centre O and radius OA, draw a circle. [2]

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[Total: 10]

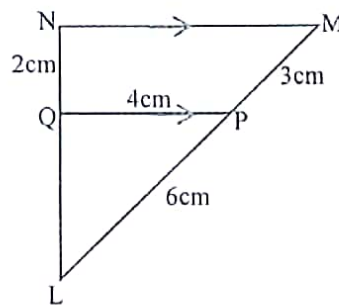
- 6 (a) The arrow diagram below represents a relation from set A to set B.



- (i) If  $x \in A$  and  $y \in B$ , write the formula for the relation. [2]

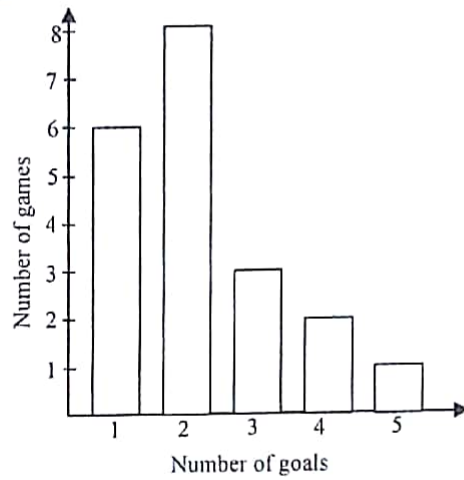
- (ii) Find the value of  $x$  when  $y = -1$ . [2]

- (b) In the diagram below, triangles LMN and LPQ are similar.



- Given that  $LP = 6\text{cm}$ ,  $PM = 3\text{cm}$ ,  $PQ = 4\text{cm}$  and  $NQ = 2\text{cm}$ , calculate the length of LQ. [3]

- (c) The bar chart below shows the number of goals scored by a football team.



- (i) How many games did the team play? [2]

- (ii) Complete the frequency table below. [1]

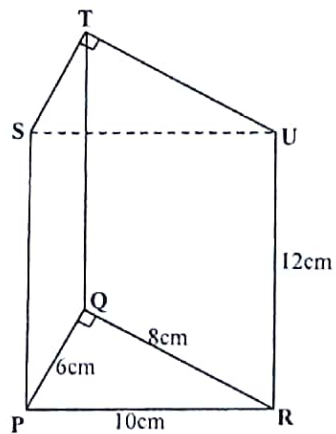
Number of goals					
Number of games					

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[Total: 10]

- 7 (a) Find the value of  $1100_{\text{two}} \div 100_{\text{two}}$ , giving your answer in base two. [2]

- (b) The diagram below shows a wooden triangular prism PQRSTU.



Given that  $\hat{PQR} = \hat{STU} = 90^\circ$ ,  $PR = 10\text{cm}$ ,  $PQ = 6\text{cm}$ ,  $QR = 8\text{cm}$  and  $RU = 12\text{cm}$ , calculate the total surface area of the prism PQRSTU. [3]

(c) Landila gets an annual salary of K24 480.00. What is his monthly gross salary if his housing allowance is K400.00? [2]

(d) Chiti is preparing to go to London. He has K19 600.00 to convert to British pounds. How much will he get if the exchange rate is £1= K9.80? [3]

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**[Total: 10]**

8 (a) The sum of interior angles of a regular polygon is  $1080^\circ$ . Calculate the size of each interior angle. [3]

(b) A freezer costing K4 000.00 is depreciated using the straight line method at 5% per year. Find its book value after 4 years. [3]

(c) Hanchito's wage for a 5 day working week is K360.00. Given that he works 8 hours per day, calculate

(i) his wage per year if there are 52 weeks in a year, [2]

(ii) his rate per hour. [2]

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[Total: 10]