



**EXAMINATIONS COUNCIL OF ZAMBIA**

**JUNIOR SECONDARY SCHOOL LEAVING EXAMINATION (GRADE 9) – 2012**

**MATHEMATICS 401/2**

**PAPER 2**

(INTERNAL AND EXTERNAL CANDIDATES)

WORKING TIME: 2 HOURS

MARKS: 50

READING TIME: 10 MINUTES

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 Cell phones and calculators are not allowed in the examination room.
- 7 Tick (✓) the question you have attempted in the grid provided below.

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

1 (a) Factorise completely  $pq - q^2$ .

[1]

(b) Solve the equation  $3(y - 2) - 4 = 2$ .

[2]

(c) Convert  $1011_{\text{two}}$  to base 10.

[2]

(d) A survey was conducted among 600 television viewers.

The results are listed below.

240 enjoyed watching sports

160 enjoyed listening to music

150 enjoyed watching movies

50 enjoyed listening to news

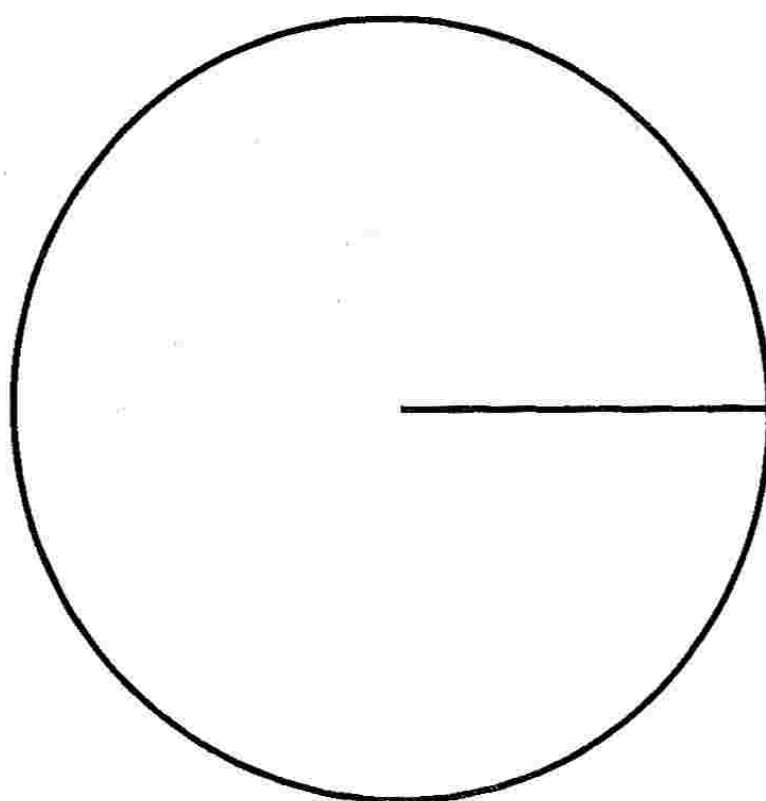
(i) Complete the table below which gives the angle of the sector that would represent each programme on a Pie chart.

Programme	Sports	Music	Movies	News
Angle of Sector	144°			

[3]

(ii) Use geometrical instruments to complete the Pie chart below.

[2]



[Total: 10]

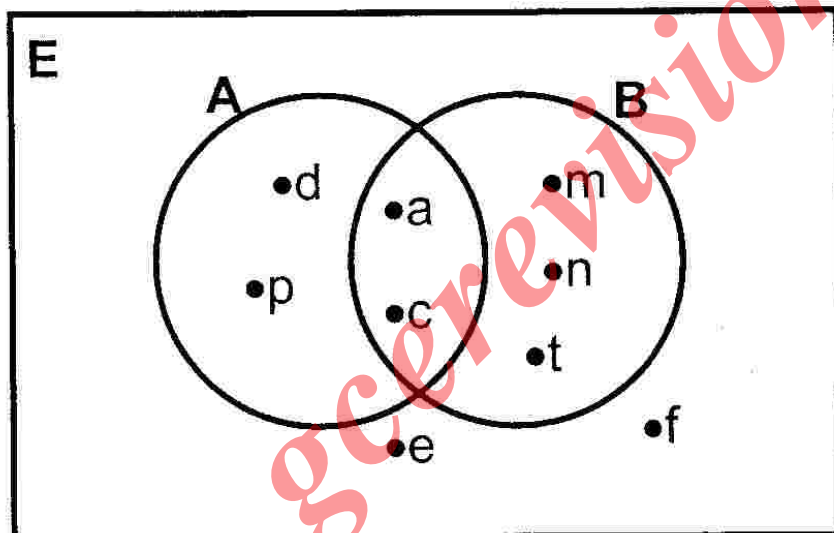
2 (a) Evaluate  $1\frac{1}{4} \div \frac{5}{6}$ .

[2]

(b) Solve the inequation  $3x + 12 \geq 7x$ .

[2]

(c) The Venn diagram below shows set A and B.



(i) Find  $n(A \cup B)'$ .

[1]

(ii) List the set  $A' \cup B$ .

[2]

- (d) A lady's suit in Mrs Machipisa's shop is priced at K450 000. During a sale, she sold it at 25% discount. Calculate the selling price. [3]

[Total: 10]

- 3 (a) The table below shows the bus fare chart for local routes in Kafue town.

<b>KAFUE ESTATES</b>			
K3 000	<b>KAFUE TOWN</b>		
K6 000	K3 000	<b>RIMO</b>	
K7 000	K4 000	K3 000	<b>TURNPIKE</b>

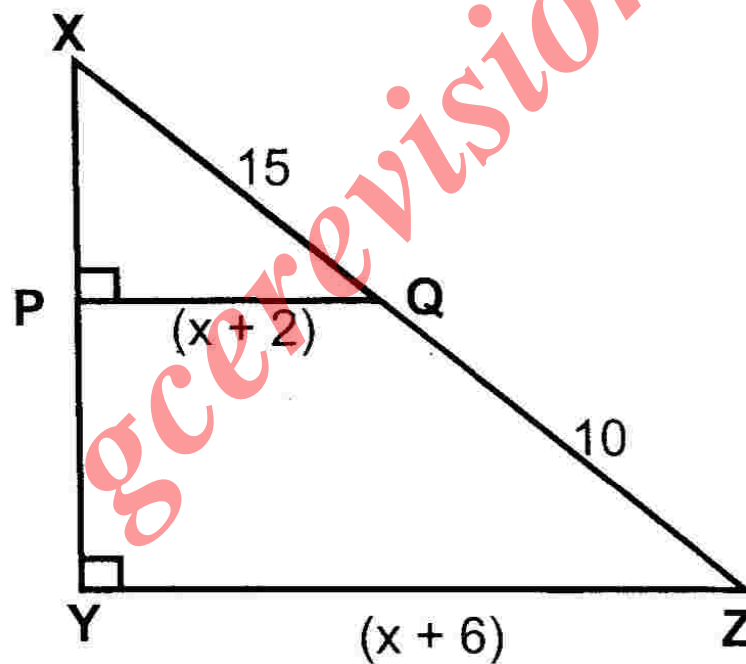
- (i) Chimuka and his three friends travelled from Kafue Estates to Turnpike. Find the total amount they paid. [1]

- (ii) If they gave the conductor a K50 000 note, how much change did he give them? [1]

- (b) A circular sheet of metal has a radius of 14cm. Taking  $\pi$  to be  $\frac{22}{7}$ , calculate its circumference. [2]

- (c) Given that  $d = \frac{c}{c-2}$ , make  $c$  the subject of the formula. [3]

- (d) In the diagram below, angle  $XPQ = \text{angle } XYZ = 90^\circ$ ,  $XQ = 15\text{cm}$ ,  $QZ = 10\text{cm}$ ,  $PQ = (x + 2)\text{cm}$  and  $YZ = (x + 6)\text{cm}$ .



- Find the value of  $x$ . [3]

[Total: 10]

4 (a) Using Geometrical Instruments,

- (i) Construct triangle ABC in which  $AB = 9\text{cm}$ ,  $BC = 7\text{cm}$  and  $AC = 6\text{cm}$ . [1]
- (ii) Measure and write the size of angle ABC. [1]
- (iii) Construct the bisectors of angle CAB and angle ABC. [2]
- (iv) Using the point of intersection of these bisectors as the centre, draw a circle which touches all the three sides of triangle ABC. [1]

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(b) Simplify  $2(5c - d) - 3(2d - 3c)$ . [2]

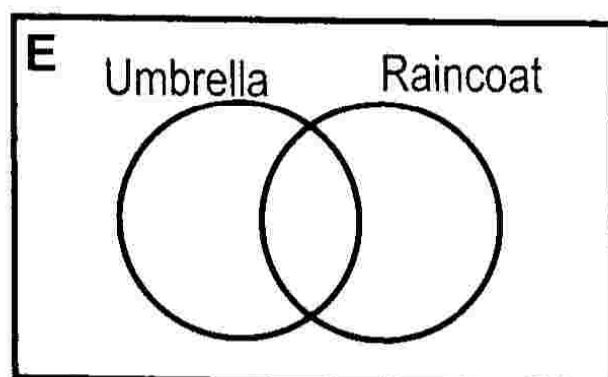
- (c) Bridget earns K6 400 000 per month. She pays 25% of her earnings for water and electricity. She spends the remaining amount on food, school fees and transport in the ratio 4:3:1 respectively. Find the amount spent on food. [3]

[Total: 10]

- 5 (a) What is the name of a polygon with 5 sides? [1]

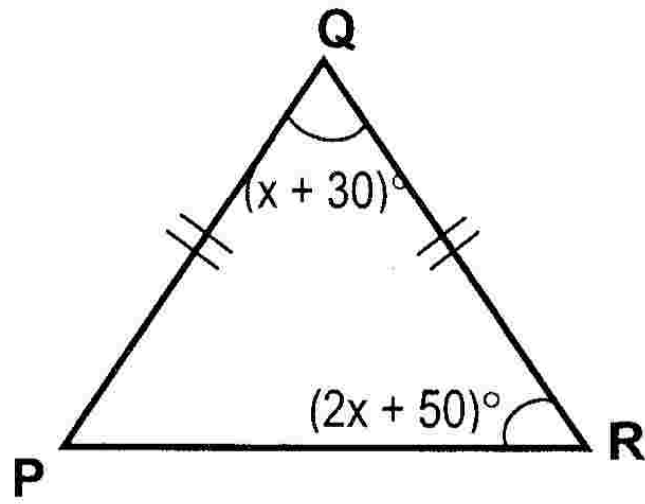
- (b) Find the sum of  $531_{\text{eight}}$  and  $77_{\text{eight}}$ , giving your answer in base eight. [2]

- (c) In a group of 24 people, 12 had umbrellas, 10 had raincoats, 7 had both and the rest had neither. Illustrate this information on the Venn diagram below. [3]





- (d) In the diagram below,  $PQ = QR$ , angle  $PQR = (x + 30)^\circ$  and angle  $PRQ = (2x + 50)^\circ$ .



- (i) Find the value of  $x$ .

[3]

- (ii) Find the size of angle RPQ.

[1]

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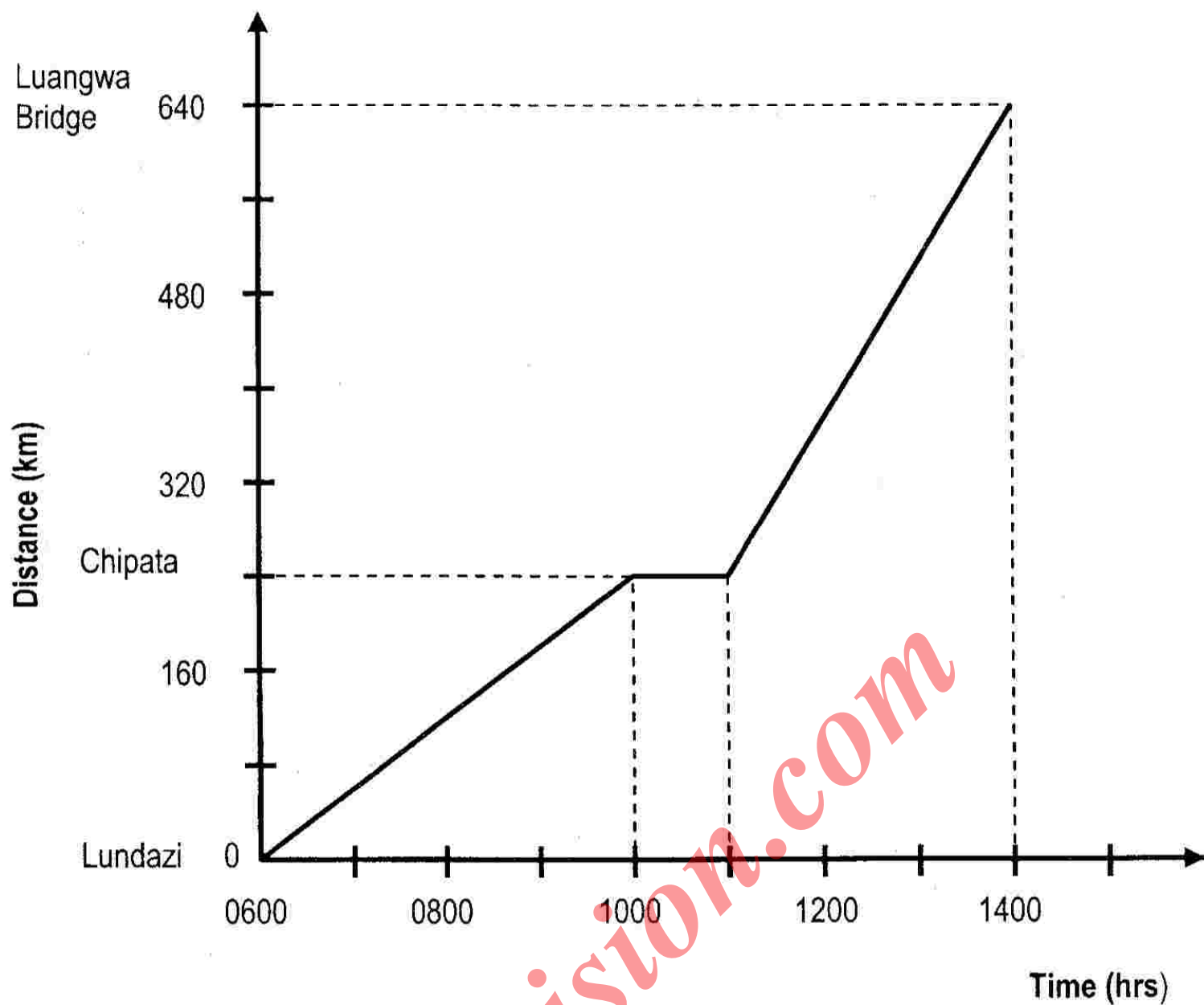
[Total: 10]

- 6 (a) Mr Wailesi bought a radio for K500 000 and he later sold it for K650 000. Calculate the percentage profit. [2]

(b) Express  $\frac{2r}{3} - \frac{5-2r}{4}$  as a single fraction in its simplest form. [3]

- (c) The perimeter of a square field is 40m. Find the area of the field. [2]

- (d) The graph below shows Mr Chikolopete's journey by car from Lundazi to Luangwa Bridge.



Calculate:

- (i) the distance travelled before he stopped in Chipata, [1]

- (ii) the average speed for the whole journey. [2]

[Total: 10]

7 (a) Evaluate  $2\frac{1}{4} \times 1\frac{2}{3} \div 1\frac{7}{8}$ .

[2]

(b) Solve the following simultaneous equations

$$3x + 4y = 32,$$

$$x = 4y.$$

[3]

(c) It takes 13 workers to do a piece of work in 14 days. How long will 26 workers take to complete the same piece of work, if they are working at the same rate?

[2]

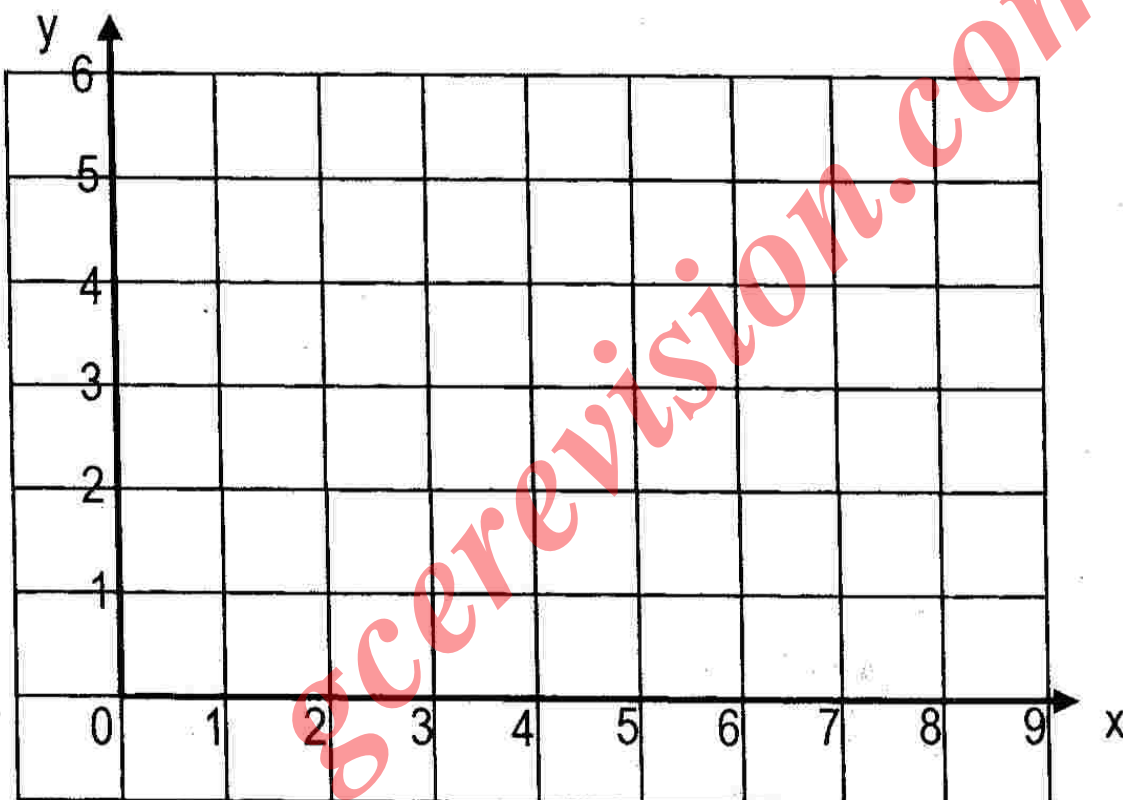
- (d) Find the surface area of a closed cylinder of base radius 7cm and height 5cm. (Take  $\pi = \frac{22}{7}$ ).

[3]

[Total: 10]

- 8 (a) (i) On the diagram below, plot the points P(1,2), Q(3,5), R(7,5), S(9,2) and join them in the same order.

[3]



- (ii) Name the shape formed in (i) above.

[1]

- (iii) Draw the line of symmetry of the shape PQRS.

[1]

- (b) The ratio of boys to girls in a Grade 9 class is 5:6 respectively. If there are 30 girls, find the total number of pupils in this class. [2]

(c) Simplify  $\frac{10x^2y}{3xy^2} \times \frac{6xy^2}{5x^3y} \div \frac{4y}{x}$ . [3]

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[Total: 10]

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