



EXAMINATIONS COUNCIL OF ZAMBIA

JUNIOR SECONDARY SCHOOL LEAVING EXAMINATION (GRADE 9) – 2010

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

- Write your name, examination number and school/centre in the spaces provided on the question paper.
- There are **eight (8)** questions in this paper. Answer any **five (5)** questions.
- Answer all questions in the spaces provided on the question paper.
- Write down your answers clearly.
- All essential working must be shown. Candidates will be penalized for omitting essential working.
- Cell phones and calculators are not allowed in the examination room.
- 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) Given that $m = 2$ and $n = 6$, calculate the value of

(i) $5m - 3n$,

[2]

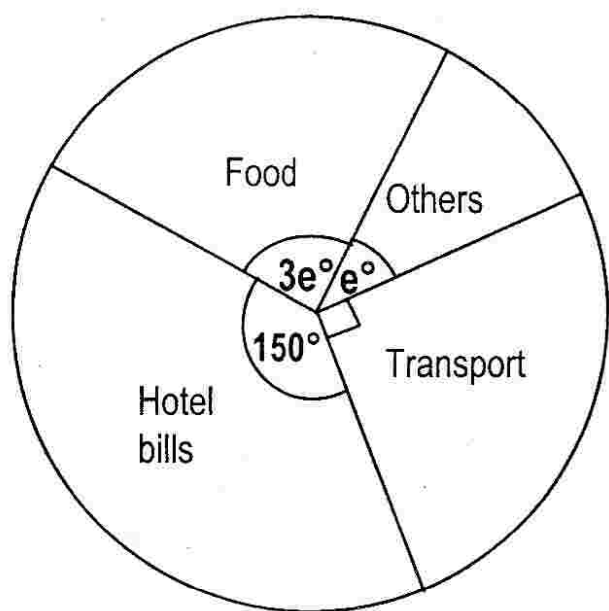
(ii) mn^2 .

[2]

(b) Solve $5 - 2x > 9$.

[2]

- (c) The Pie Chart below shows how Mwanishupa spent K1 600 000 on a holiday tour of South Luangwa National Park.



- (i) Find the value of e . [2]

- (ii) Calculate the total amount spent on transport and food. [2]

[Total: 10]

2 (a) Evaluate $3\frac{1}{2} - 2\frac{2}{3}$. [2]

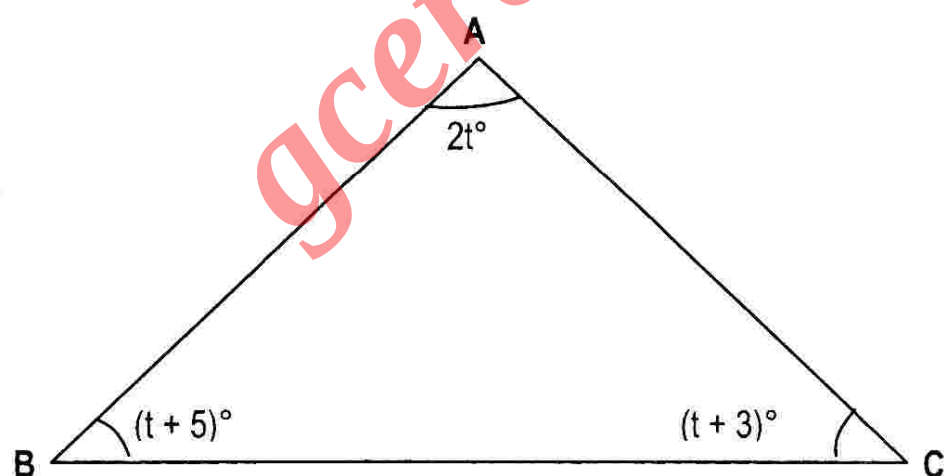
(b) Express 110.682 in standard form correct to three significant figures. [2]

(c) Given that $E = \{x : x < 12, x \in \text{Natural numbers}\}$, list the values of x such that

(i) x is a multiple of 3, [2]

(ii) x is both a prime and an even number. [1]

(d) In the figure below, ABC is a triangle such that angle $ABC = (t + 5)^\circ$, angle $BAC = 2t^\circ$ and angle $ACB = (t + 3)^\circ$.



Calculate the value of t . [3]

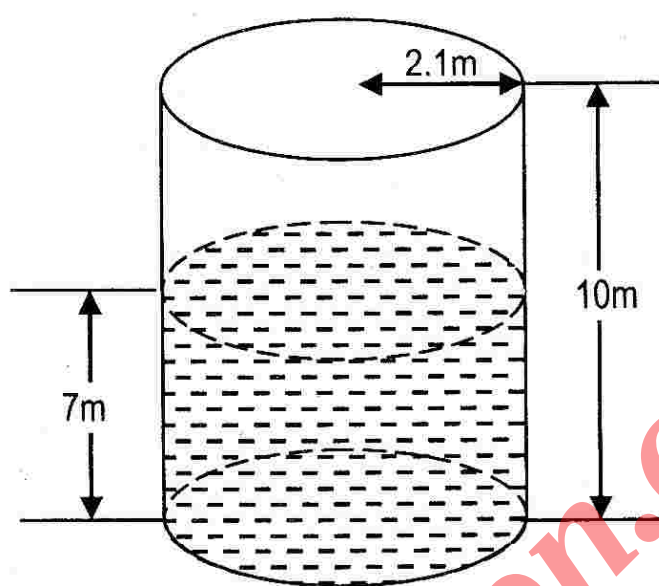
[Total: 10]

3 (a) Write down the next term in each of the following sequences.

(i) 1, 4, 7, 10, _____. [1]

(ii) 20, $17\frac{1}{2}$, 15, $12\frac{1}{2}$, 10, _____. [2]

(b) Mr Chishima dug a cylindrical well for his vegetable garden as shown in the diagram below. The radius of the well is 2.1m and its depth is 10m. It contains water to height of 7m.



Taking $\pi = \frac{22}{7}$, calculate the volume

(i) of the well in m^3 , [2]

(ii) of water in the well, giving your answer in litres.
($1\text{m}^3 = 1000$ litres)

[3]

(c) Simplify $2a - 5b - 2(a - 3b)$.

[2]

[Total: 10]

4 (a) Use geometrical instruments to construct

(i) a triangle PQR in which $PR = 6\text{cm}$, angle $PRQ = 90^\circ$ and angle $QPR = 45^\circ$,

[2]

(ii) the perpendicular bisectors of PR and PQ,

[2]

(iii) a circle to pass through P, Q and R.

[2]

(b) Given that $t = \frac{2w + 5}{x}$,

(i) find t when $w = -2$ and $x = 2$. [2]

(ii) make w the subject of the formula. [2]

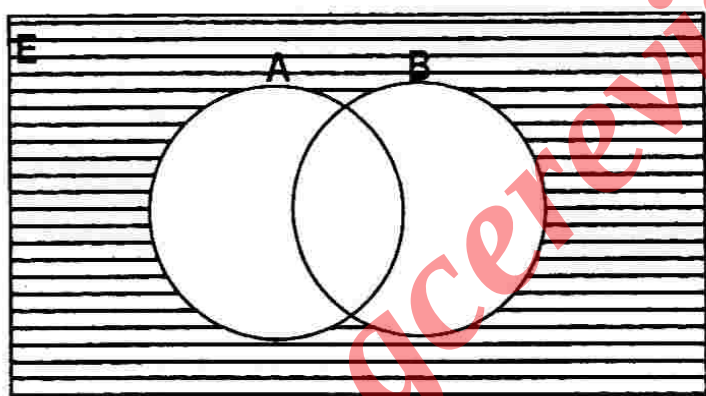
[Total: 10]

5 (a) Find the product of 111_{two} and 11_{two} , giving your answer in base two. [3]

(b) Mr Mafoni bought a cell phone at K720 000 and later sold it at a profit of 25%. Calculate the selling price. [3]

- (c) Mrs Lubono invested K280 000 000 for 9 months at the rate of 12% per annum. Calculate the simple interest. [3]

- (d) Using set notation, describe the shaded region in the diagram below.



[1]

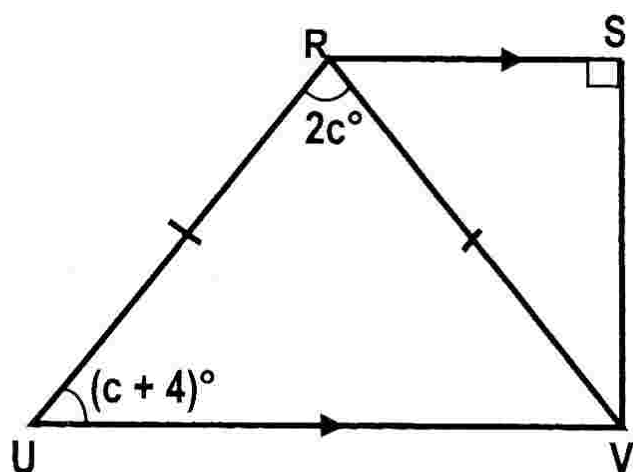
[Total:10]

6 (a) Express 400g to 3kg as a ratio in its simplest form. [1]

(b) Solve the equation $5x - 2(x + 4) = 4$. [2]

(c) Express $\frac{y+3}{7} - \frac{2y-1}{3}$ as a single fraction, in its simplest form. [3]

- (d) In the figure below, RS and UV are parallel lines. Triangle RUV is such that $RU = RV$, angle $URV = 2c^\circ$, angle $RUV = (c+4)^\circ$ and angle $RSV = 90^\circ$.



- (i) Find the value of c .

[2]

- (ii) Calculate

- (1) angle RVU,

[1]

- (2) angle RVS.

[1]

[Total: 10]

7 (a) The size of an exterior angle of a regular polygon is 40° .

(i) Calculate the size of the interior angle. [1]

(ii) Find the number of sides of the polygon. [2]

(iii) Name the polygon. [1]

(b) Simplify $\frac{52x^4y^3}{13x^3y}$. [1]

(c) Find the sum of 101_{five} and 124_{five} , giving your answer in base ten. [2]

(d) A film show at Kanema Hall started at 21 50 hours and lasted for 1 hour 48 minutes. At what time did the show end? [1]

(e) At Matula Guest House, a 50kg bag of rice can feed 200 guests for 15 days. How many days can the same bag take to feed 150 guests if the consumption rate is the same? [2]

Total: [10]

8. (a) Solve the simultaneous equations

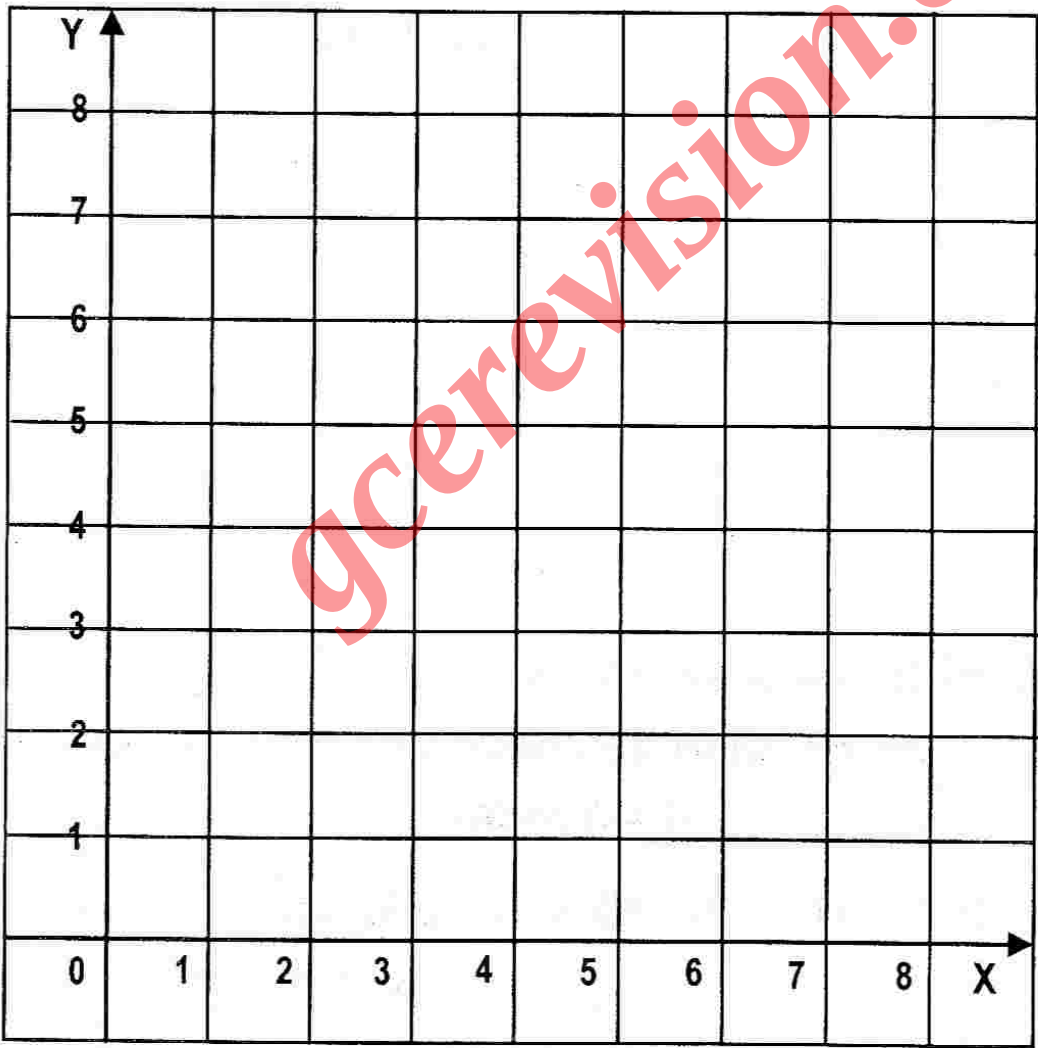
$3x - 2y = 6,$

$x + 2y = 6.$

[3]

(b) On the diagram below, plot the points (2,2), (4,0), (6,2) and (4,8).

(i)



[2]

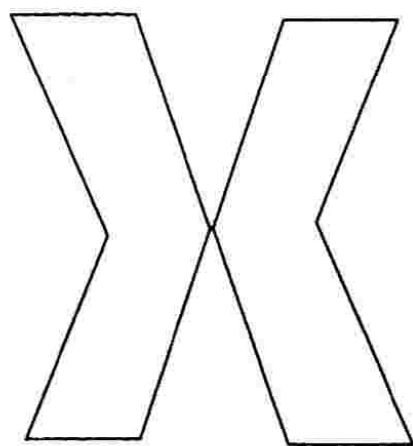
(ii) Join these points in the same order.

[1]

(iii) Name the shape formed.

[1]

(c) How many lines of symmetry does the shape below have? [1]



(d) In a Mathematics club, $\frac{3}{5}$ of the members are boys and the rest are girls. Calculate the number of girls, given that the club has 45 members. [2]