25087836

EXAMINATIONS COUNCIL OF ZAMBIA

JUNIOR SECONDARY SCHOOL LEAVING EXAMINATION (GRADE 9) – 2019

Mathematics 401/2

Paper 2

(INTERNAL 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) Divide 10010_{two} by 110_{two}, giving your answer in base two. [2]

(b) Nomsa has 4 red pens and 6 black pens in her bag. She picks a pen at random from the bag. Find the probability that it is black. [2]

(c) A sales agent is paid a salary of K3 000.00 and a commission of 2% on all his sales. Calculate his income for a particular month he sold goods worth K40 000.00. [3]

(d) A pressing iron is valued at K115.00 inclusive of Value Added Tax (VAT). Given that VAT is charged at 15%, calculate the cost of the pressing iron before VAT. [3]

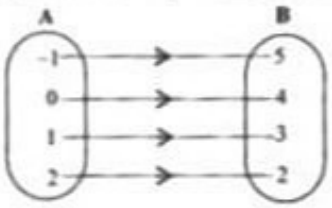
[Total: 10]

2 (a) The tax free allowance for Mr Ndalama is K3 300.00 and he pays income tax at the rate of 30% on the balance of his salary. Calculate the net pay for Mr Ndalama if his monthly salary is K5 500.00. [3]

(c) Given that $M = \begin{pmatrix} 1 & 4 \\ -3 & 5 \end{pmatrix}$ and $N = \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$, find MN. [3]

[Total: 10]

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

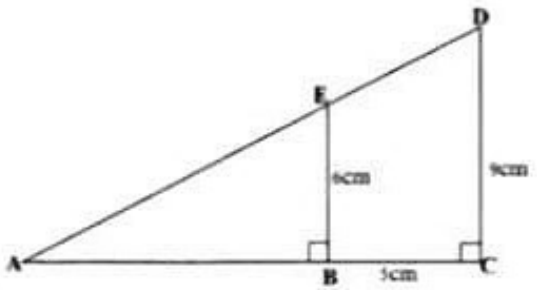


(i) If $x \in A$ and $y \in B$, write the formula for the relation. [2]

(ii) Find the value of y when $x = 5$. [2]

(b) Chesi bought a car at K40 000.00. If it depreciated using the straight line method at 20% per year, calculate its value after 3 years. [3]

(c) In the diagram below, triangles ABE and ACD are similar.

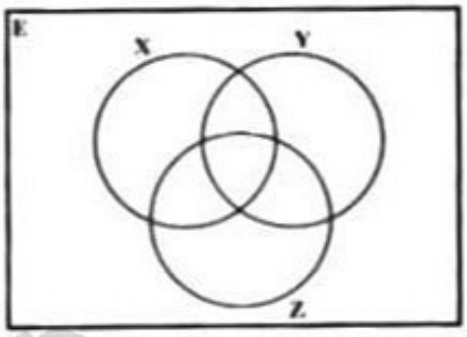


Given that BC = 5cm, CD = 9cm and BE = 6cm, calculate the length of AB. [3]

[Total: 10]

4 (a) Given that E = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12}, X = {3, 6, 9, 12}, Y = {1, 2, 3, 4, 6} and Z = {1, 3, 5, 7, 9, 11}.

(i) illustrate this information in the Venn diagram below. [2]



(ii) list the elements of the set $(X \cup Y \cup Z)'$. [2]

(b) Solve the inequation $4q - 2 < 2(q + 3)$. [3]

(c) Given that $s = \frac{a+r}{1-r}$, make r the subject of the formula. [3]

[Total: 10]

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5 **(a)** Write 2 736.4 in standard form correct to 3 significant figures. [2]

(b) Solve the equation $3(2 - y) = y - 14$. [2]

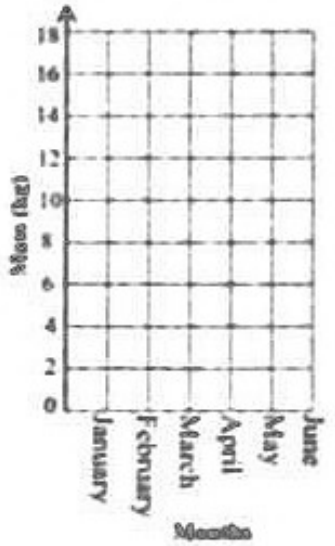
(c) The diagram below shows a cylinder with diameter 7cm and height 10cm. (Take π as $\frac{22}{7}$).

Calculate its volume. [3]

(d) The table below shows the mass of a child over a period of six months.

Month	January	February	March	April	May	June
Mass (kg)	12	8	16	14	16	18

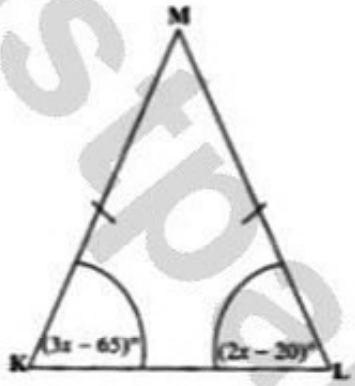
Complete the line graph below to illustrate this information. [3]



[Total: 10]

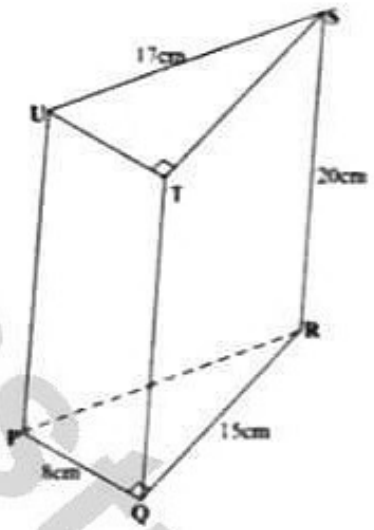
6 (a) Simplify $3(2x - 5) - 7x + 19$. [2]

(b) In the diagram below, KM = ML, angle MKL = $(3x - 65)^\circ$ and angle MLK = $(2x - 20)^\circ$.



Find the value of x. [2]

(c) The figure below shows a triangular prism PQRSTU.



Given that US = 17cm, PQ = 8cm, QR = 15cm and SR = 20cm, calculate its total surface area [3]

(d) Solve the simultaneous equations [3]

$3x - 2y = 13$,

$2x + 3y = 0$.

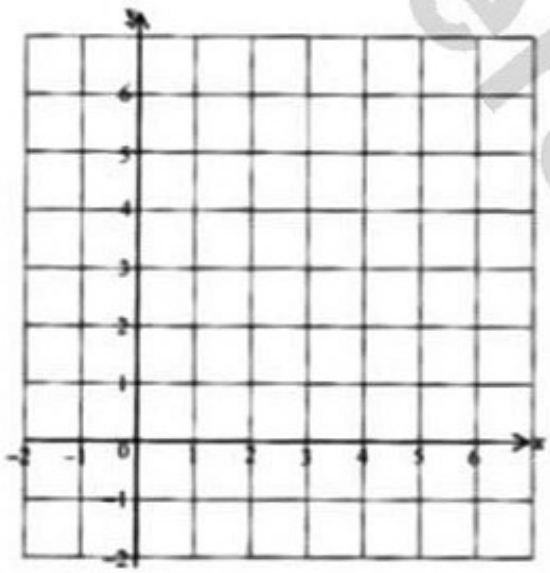
[Total: 10]

7 (a) On the XOY plane below,

(i) plot the points P(1, 1), Q(3, 4) and R(5, 1), [2]

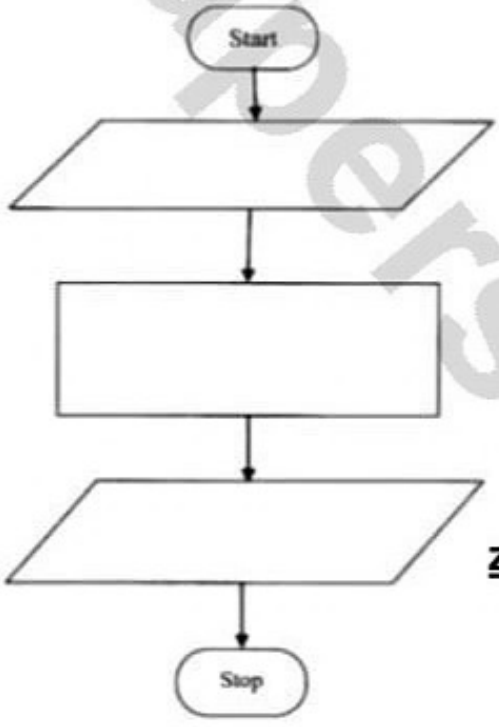
(ii) join the points to form triangle PQR, [1]

(iii) draw the graph of $x = 6$. [1]



(b) Multiply 130_{five} by 21_{five}, giving your answer in base five. [3]

(c) Given the density (D) of a stone and its mass (M), complete the flow chart below for calculating and displaying its volume (V). [3]



[Total: 10]

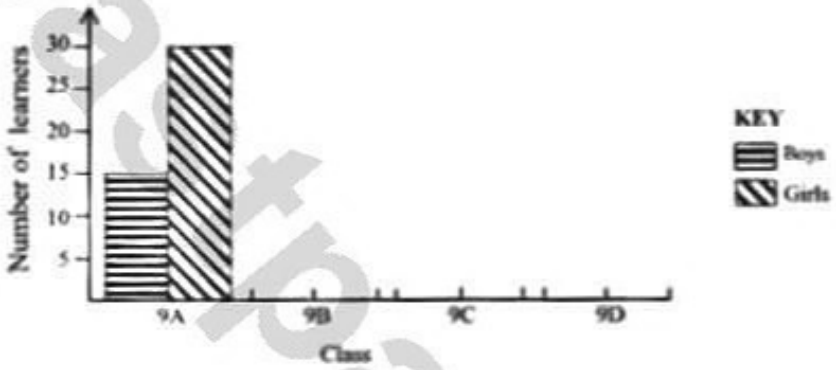
(a) A car in Japan is valued at $4 500. What is its cost in Kwacha if the rate of exchange is $1 = K9.80? [3]

(b) Kalowe is paid at the rate of K32.00 per hour for a 40-hour week. If overtime is paid at the rate of "time and a half ", calculate his total wage in a week in which he worked for 45 hours. [3]

(c) The frequency table below shows the number of learners in each of the classes 9A, 9B, 9C and 9D at Kamwiya Secondary School.

Class	9A	9B	9C	9D
Number of boys	x	20	20	15
Number of girls	30	25	20	25

(i) Complete the compound bar chart below to illustrate this information. [3]



(ii) Find the value of x. [1]

[Total: 10]