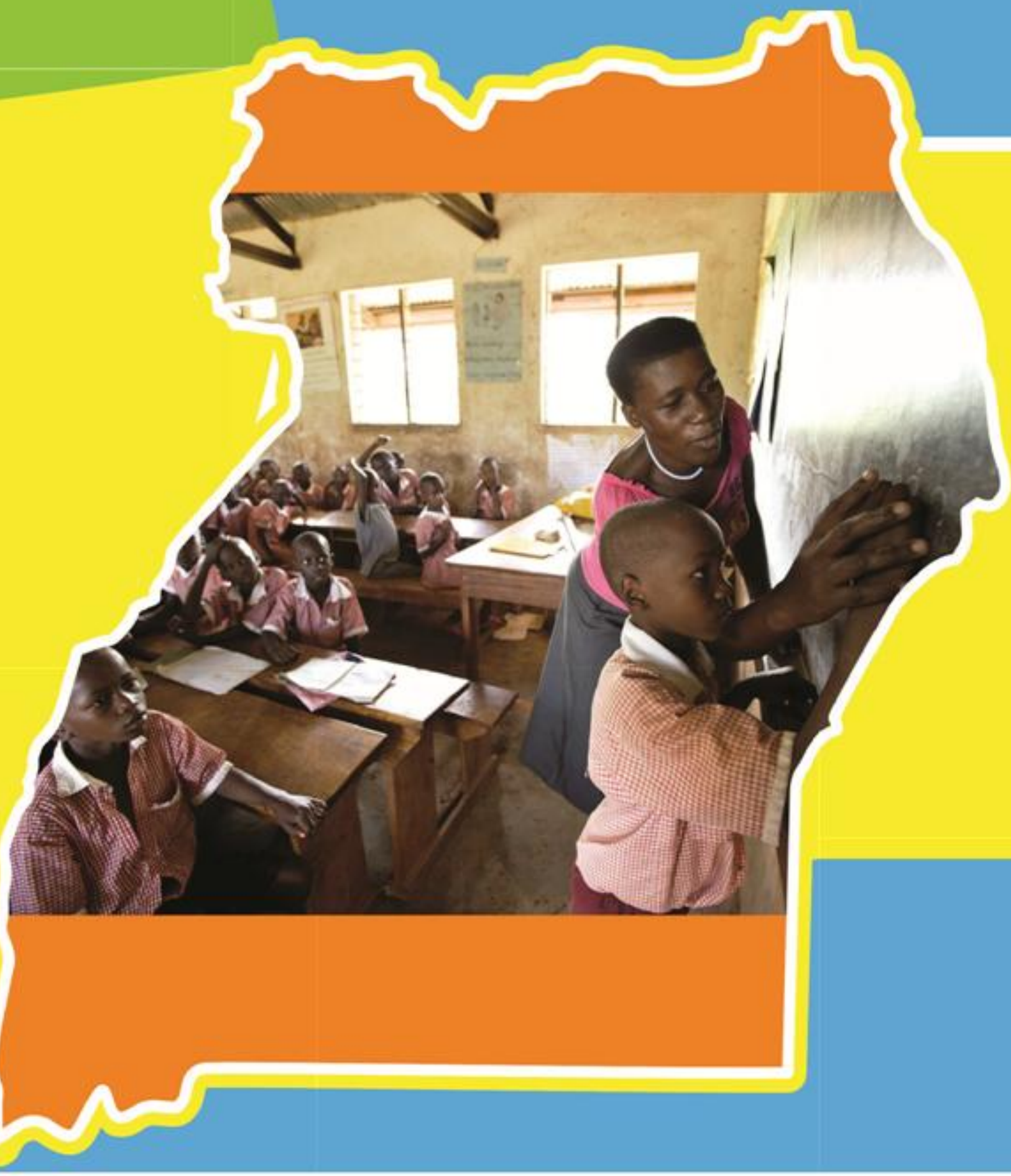
SURE KEY EXAMS

SUREKEY EXAMINATIONS BOARD

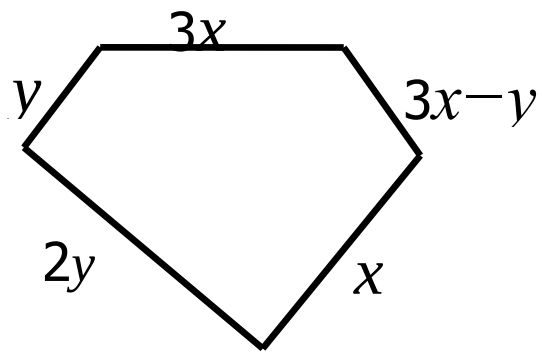


SECTION A: 40 MARKS

1. Subtract: 4 from 301.

$$\begin{array}{r} 301 \\ -\quad 4 \\ \hline 297 \end{array}$$

2. Workout the total distance around the figure below.



Total Distance

$=3x + 3x - y + x + 2y + y$

$=(3x + 3x + x) + 2y + y - y$

$= 7x + 2y$

3. Change 434_{six} to the day to day base.

SS	S	O
4	3	4

144

$= (4X6X6) + (3X6) + (4X1)$

$= 144 + 18 + 4$

$= 166_{ten}$

4. Write in figures; A quarter a million one hundred ten.

A quarter a million $= \frac{1}{4} \times 1000000$

$= 250000$

One hundred Ten $= 110$

$$\begin{array}{r} 250000 \\ +\quad 110 \\ \hline 250110 \end{array}$$

5. Given that $3 + 5 = n$(finite 6). Calculate the value of n.

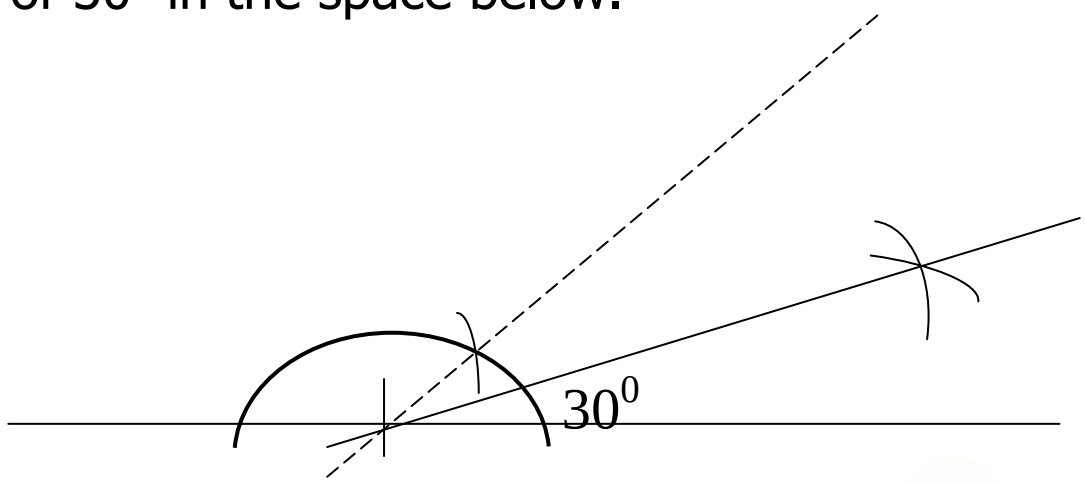
$3 + 5 = n$ (finite 6)

$3 + 5 = 8$

$8 \div 6 = 1$ rem 2

$n = 2$

6. Using a ruler, a sharp pencil and a pair of compasses only, construct an angle of 30^0 in the space below.



7. Fill in the box with the correct missing number.

$$144 \div \boxed{12} = 12$$

Let the box be represented by n

$144 \div n = 12$

$\frac{144}{n} = 12$

$\frac{144}{n} \times n = 12 \times n$

$144 = 12n$

$\frac{144}{12} = \frac{12n}{12}$

$12 = n$

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8. Express $\frac{1}{8}$ as a decimal.

$$8\overline{)1} = 0.125$$

-0
10
- 8
20
-16
40
-40
. .

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9. The table below shows the number of candidates who sat for the PLE Preparation Set One Examination.

Marks	20	85	90	95
No. of learners	𝍸	𝍸 |	𝍸 ||	||||

Calculate the average mark of the candidates who sat the examination.

$$\text{Average} = \frac{sum\ of\ data}{number\ of\ data}$$

$$= \frac{(20X3)+(35X6)+(90X7)X(95X4)}{3+6+7+4}$$

$$= \frac{60+510+630+380}{20} = \frac{1580}{20}$$

$$= 79$$

10. Find the least number which when divided by 7, three remain, when divided by 4, two remain, but when divided by 8, six remain.

F_7 = {3,10,17,24,31,38,45,.....}

F_4 = {2,6,10,14,18,22,26,30,34,38,42,.....}

F_8 = {6,14,22,30,38,46,.....}

The least number is 38

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11. Solve: $\frac{2x+2}{5} = \frac{x+4}{4}$

LCM of 5 and 4 is 20

$20(\frac{2X+2}{5}) = (\frac{X+4}{4})20$

$4(2X+2) = 5(X+4)$

$8X+8 = 5X+20$

$8X+8-8 = 5X+20-8$

$8X = 5X+12$

$8X-5X = 5X-5X+12$

$3X = 12$

$\frac{3X}{3} = \frac{12}{3}$

$X = 4$

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12. Given that, A = πr^2, r = 1.4cm and $\pi = 3\frac{1}{7}$. Find the value of A.

$A = \pi r^2$, r = 1.4 , $\pi = 3\frac{1}{7}$

$A = \pi r^2$

$= 3\frac{1}{7}$ X 1.4cm X 1.4cm

$= \frac{22}{7}$ x $\frac{14}{10}$ cm x $\frac{14}{10}$cm

$= \frac{616}{100}$ cm^2

$= 6.16cm^2$

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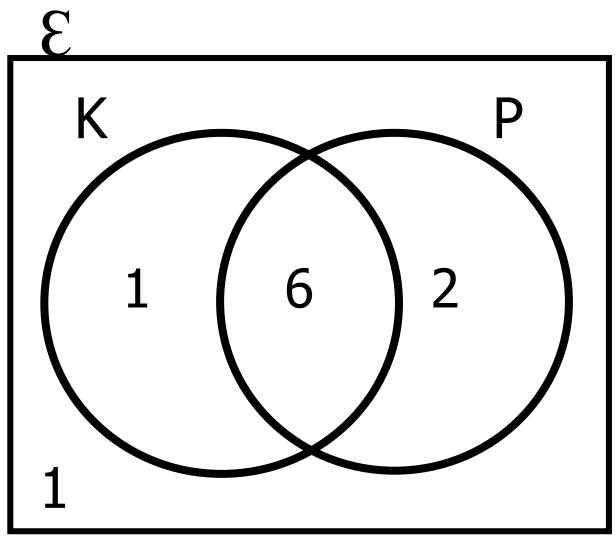
13. The Venn diagram below shows number of elements in a given set.



Find the number of subsets in n(P∩ K)´

n(PnQ)' = 1+2+1

= 4

n(c) = 2^n

= 2^4

= 2x2x2x2

= 16

14. Jane is 4 times as old as Mary. If the difference in their ages is 18 years, how old is Mary?

Let Mary's age be y

Mary	Jane	Difference
y	4y	18

4y – y = 18

3y = 18

$\frac{3y}{3} = \frac{18}{3}$

y = 6

Mary is 6 years old.

15. Give the next number in the sequence below;

256, 225, 196, 169

(16x16) (15x15) (14x14) (13x13)

16. A soda factory produced 8376 bottles of soda. How many crates of soda did it produce if each crate contains 24 bottles?

1 Crate = 24 bottles

8376 bottles $= \frac{8376}{24}$

= 349 crates.

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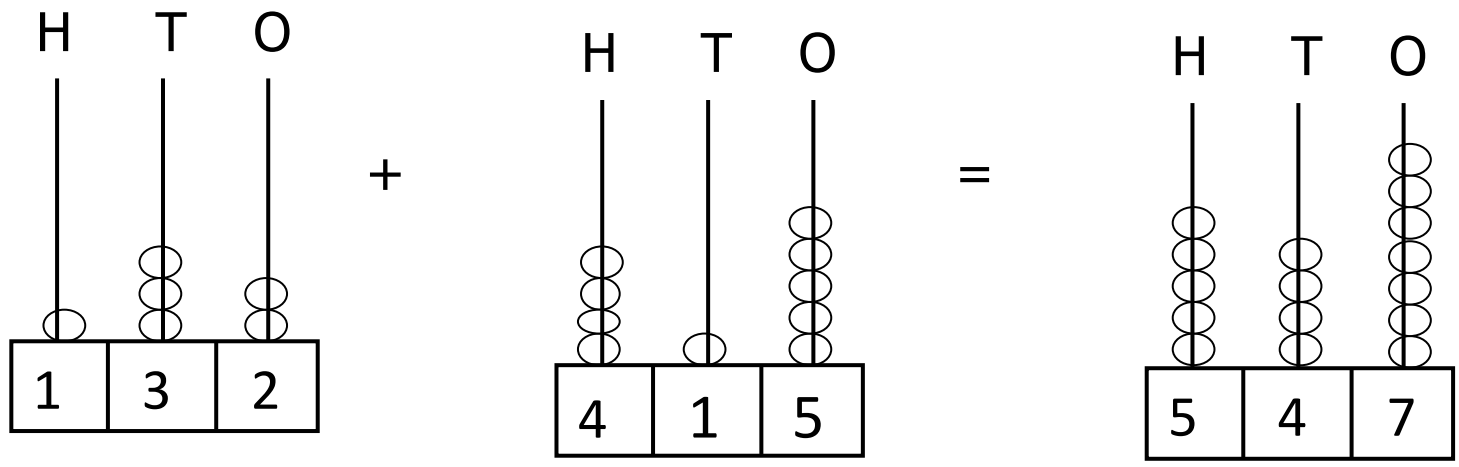
17. Workout: 132 + 415 using the abaci below.



$$\begin{array}{r} 132 \\ +415 \\ \hline 547 \end{array}$$

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18. Divide (0.9)(1.8) by 0.01.

(0.9)(1.8) ÷ (0.01)

$= (\frac{9}{10} \times \frac{18}{10}) \div (\frac{1}{100})$

$= \frac{9}{10} \times \frac{18}{10} \times \frac{100}{1}$

= 9 x 18

= 162

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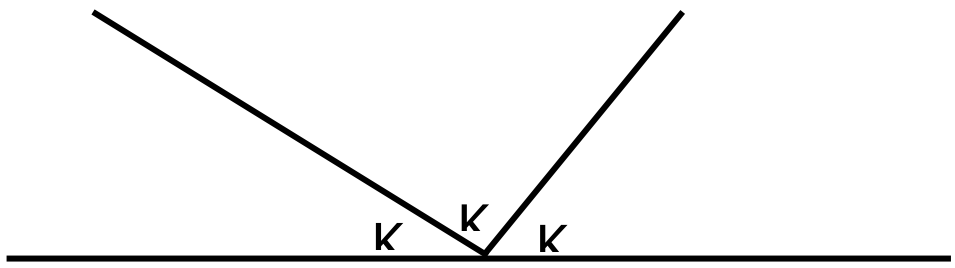
19. Find the size of angle K.



K + K + K $= 180^0$

3K $= 180^0$

$\frac{3K}{3} = \frac{180}{3}$

K = 60

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20. Use distributive property to simplify (4.5 x 145) – (45 x 4.5)

$= (145 - 45) \times 4.5$

$= 100 \times \frac{45}{10}$

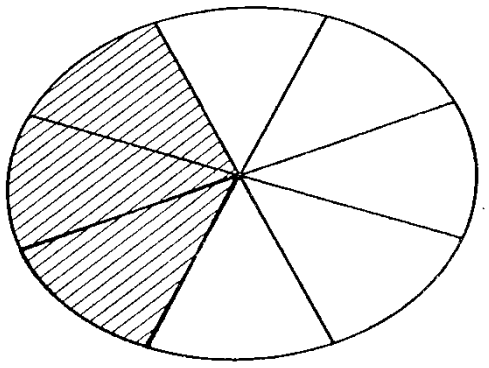
$= 450$

SECTION B: 60 MARKS

Answer **all** questions in this section

Marks for each question are indicated in brackets

21. The shaded part in the figure below represents the number of boys in a school.



If there are 490 girls in the school,

(a) How many pupils are in the school? (03 Marks)

Method I

Fraction of boys $= \frac{3}{8}$

Fraction of girls $= \frac{\mathbf{8}}{\mathbf{8}} - \frac{\mathbf{3}}{\mathbf{8}}$

$= \frac{8-3}{8}$

$= \frac{5}{8}$

Total number of pupils

= No of girls ÷ fraction of girls

$= 490 \div \frac{5}{8}$

$= 490 \times \frac{8}{5}$

$= 98 \times 8$

$= 784$ Pupils.

Method 2

$\frac{5}{8} \longrightarrow 490$

5 Parts $\longrightarrow$ 490 Pupils

1 Part $\longrightarrow \frac{490}{5}$

= 98 pupils

8 Parts $\longrightarrow$ 98 x 8

= 784 pupils

Method 3

Let the total number of pupils be n

$\frac{5}{8} \times n = 490$

$8 \times \frac{5n}{8} = 490 \times 8$

$5n = 3920$

$\frac{5n}{5} = \frac{3920}{5}$

$n = 784$ pupils

(b) How many more girls than boys are in the school? (02 Marks)

Number of boys	Difference
784	490
- 490	- 294
294 boys	196

There are 196 more girls than boys.

22. Robert deposited some money in the bank which offers a simple interest rate of 12% per annum for 15 months. If he received an interest of sh.45,000.

(a) What amount of money did he deposit in the bank? (03 Marks)

Rate = $\frac{12}{100}$, Time = $\frac{15}{12}$, SI = Sh.45000

SI = P X R X T

Sh.45000 = P X $\frac{\mathbf{12}}{\mathbf{100}}$ X $\frac{\mathbf{15}}{\mathbf{12}}$

Sh.45000 = $\frac{\boldsymbol{3P}}{\mathbf{20}}$

Sh.45000 X 20 = $\frac{\boldsymbol{3P}}{\mathbf{20}}$ X 20

Sh.900000 = 3p

$\frac{\boldsymbol{Sh.900000}}{\mathbf{3}}$ = $\frac{\boldsymbol{3P}}{\mathbf{3}}$

Sh.300000 = p

He deposited Sh.300,000 in the bank

(b) Calculate the amount of money he received at the end of 15 months.

Amount = principal + SI (02 Marks)

= Sh.300000

+ Sh.45000

Sh.345000

23. The sum of 4 consecutive even numbers is 60, If the highest number is k, Calculate their range. (04 Marks)

1st	2nd	3rd	4th	Sum
k-6	k-4	k-2	k	60

$K - 6 + k - 4 + k - 2 + k = 60$

$K + k + k + k - 6 - 4 - 2 = 60$

$4k - 12 = 60$

$4k - 12 + 12 = 60 + 12$

$4k = 72$

$\frac{4k}{4} = \frac{72}{4}$

$k = 18$

Highest number $= k$

$= 18$

Lowest number $= k - 6$

$= 18 - 6$

$= 12$

Range = Highest - Lowest

$= 18 - 12$

$= 6$

24. Nakalanzi bought the following items at a shop.

$3\frac{1}{2}$ kg of beans at sh.1,200 per kilogram.

$1\frac{1}{2}$ kg of salt at sh.1,000 per kilogram.

4 bars of soap at sh.7,000 per bar.

(a) If Nakalanzi was given a discount of 20% on her total expenditure. how much was the discount? (04 Marks)

Beans	Salt	Soap	Total
$= 3\frac{1}{2}\ X\ Sh.1200$ $= \frac{7}{2}\ X\ Sh.1200$ = 7 x Sh.600 = Sh.4200	$= 1\frac{1}{2}\ X\ Sh.1000$ $= \frac{3}{2}\ X\ Sh.1000$ = 3 x Sh.500 = Sh.1500	Sh.7000 X 4 Sh.28000	**Sh.28000** **Sh.4200** **+ Sh.1500** **Sh.33,700**

Discount

= 20% x Sh.33, 700

$= \frac{20}{100}\ \boldsymbol{X\ Sh.33,700}$

$= 20 \times \boldsymbol{Sh.33,7}$

= Sh.6740

(b) How much did Nakalanzi pay? (01 Mark)

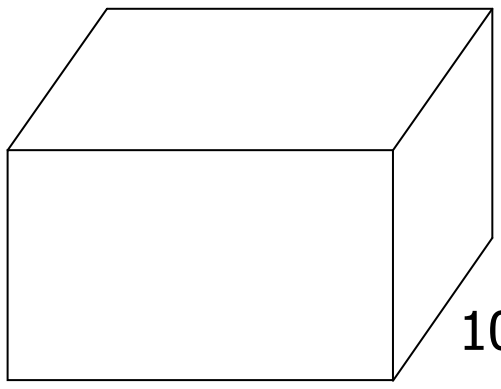
Amount paid = Total - Discount

Sh.33, 700

- Sh. 6740

Sh.26, 960. Nakalanzi paid Sh.26,960

25. A milk seller has 36 litres of milk. He sells milk using a container measuring,6cm by 10cm by 4cm at sh.500 per full container. How much money does he get after selling the milk? (04 Marks)



Volume

V = Base Area x Height

= 6cm x 10cm x 4cm

= 240cm^3

Capacity

= ($\frac{volume\ (cc)}{1000\ cc}$)

= ($\frac{240\ cc}{1000\ cc}$) L

= 0.24 L

Number of Containers

= 36 ÷ 0.24

= 36 ÷ $\frac{24}{100}$

= 36 x $\frac{100}{24}$

= 3 x 50

=150Containers

Amount of money got after selling

1 container costs Sh.500

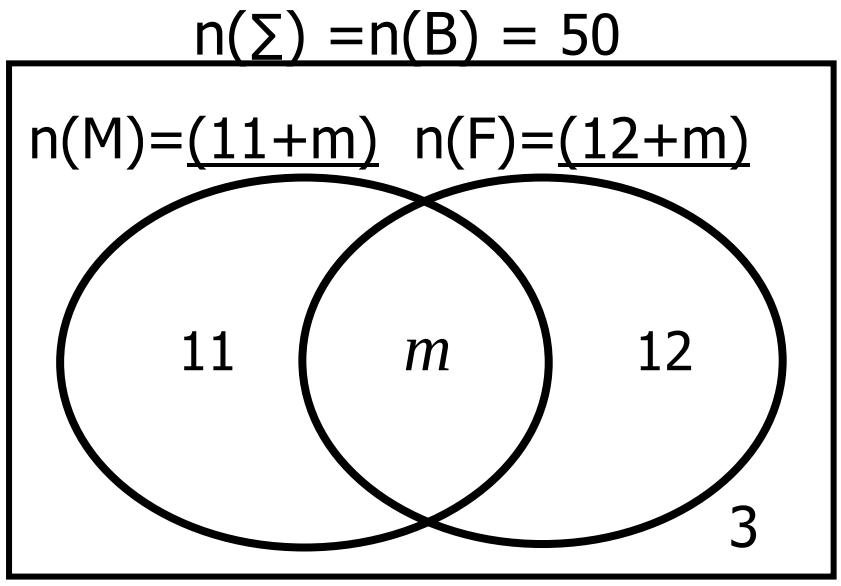
150 container cost Sh.500 x 150

= Sh.75, 000

Sh.500
x 150
000
2500
+ 500
Sh.75000

26. In a class of 50 pupils, all of them eat beans (B), 11 pupil eat meat (M) but not fish (F), 12 pupils eat fish but not meat.$m$pupils eat all the three dishes and 3 pupils eat only beans.

(a) Complete the Venn diagram below using the above information. (02 Marks)



(b) How many pupils eat all the three dishes? (02 Mark

$11+m+12+3 = 50$

$m+11+12+3 = 50$

$m+26 = 50$

$m+26-26 = 50-26$

$m = 24$

24 Pupils eat all the three dishes

(c) Find the probability that a pupil picked at random does not eat fish. (02 Marks)

$$\text{Probability} = \frac{\textit{Expected outcomes}}{\textit{Sample space}}$$

$$= \frac{11+3}{56}$$

$$= \frac{14}{50}$$

27. Given the number 7654.3210,

(a) Find the quotient of the place values of 4 and 3. (02 Marks)

Place value of 4 = Ones (1)

Place value of 3 = Tenths (0.1)

Quotient

$= 1 \div 0.1$

$= 1 \div \frac{1}{10}$

$= 1 \times \frac{10}{1}$

$= 10$

(b) Workout the sum of the value of 6 and the place value of 1.
(02 Marks

Value of 6	Place value of 1	sum
= 6 x 100	= Hundredths	600.000
= 600	= 0.001	+ 0.001
		600.001

(c) Calculate the cube root of the place value of 7 in the above number
(02 Marks)

Place value of 7
Thousands
1000

Cube root

2	1000
2	500
2	250
5	125
5	25
5	5

= (2x2x2) x (5x5x5)
= 2 x 5
= 10

28. John and his young daughter travelled from Kampala to Nairobi by bus. John paid K.shs 1,500 and the daughter paid K.shs 750.

1 Kenya shillings (K.shs = 24 Uganda shillings)

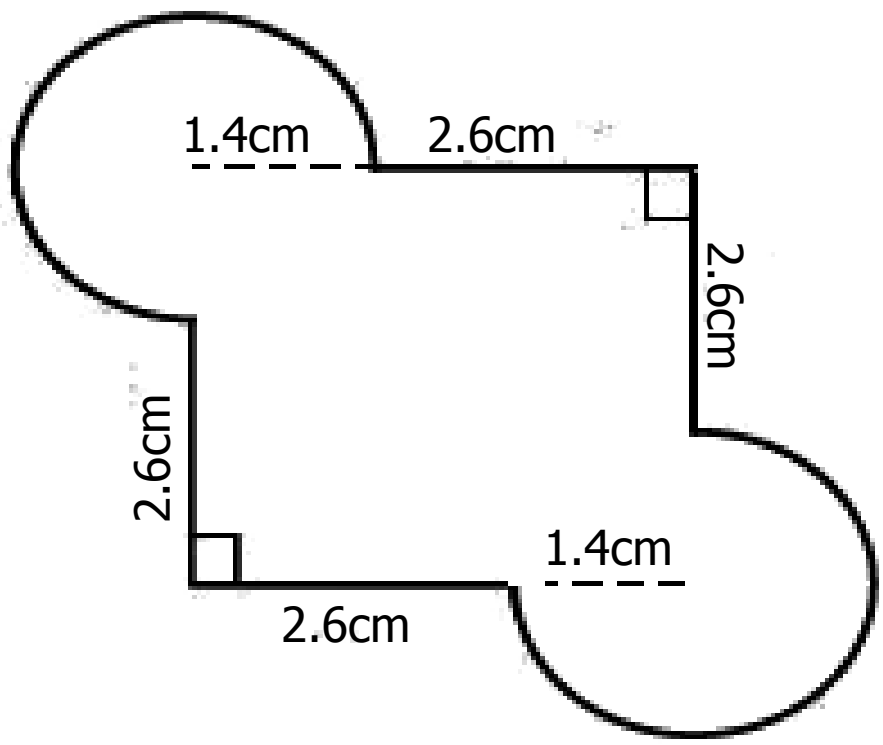
(a) Workout the bus fare in Uganda shillings which each of them paid.
(03 Marks)

John	1500	Daughter	750
1 KSh ⟶ UgSh.24	x 24	= Sh.24 X 750	x 24
1500KSh ⟶ UgSh.24 X 1500	6000	=UgSh.18000	3000
= UgSh.36000	+3000		+1500
	36000		18000

(b) If John had Ugsh.100,000 at the beginning of the journey, what was his balance in Kenya shillings after paying bus fare for himself and the daughter? (02 Marks)

Total Amount Paid in UgSh	Balance in UgSh	Balance in KSh
UgSh.36000	UgSh.100,000	$= \frac{46000}{24}$
+ UgSh.18000	- UgSh. 54,000	= KSh.1,916.7
UgSh.54000	UgSh. 46,000	

29. The figure below is of a plot of land with straight edges of length 2.6cm and arcs of circles of radii 1.4cm. (Use $\pi = \frac{22}{7}$)



(a) Workout its area. (03 Marks)

Area = (S X S) + ($\frac{3}{4}\pi r^2$ x 2)

<u>Length of one side of the square</u> = 2.6 cm <u>+ 1.4 cm</u> <u>4.0 cm</u> <u>Area of the square</u> Area = S X S = 4.0 cm X 4.0 cm = <u>16.0cm^2</u>	<u>Area of the Quadrants</u> A = $\frac{3}{4}\pi r^2$ x 2 = $\frac{3}{4}$ X $\frac{22}{7}$ X 1.4 cm x 1.4 cm X 2 = $\frac{3}{4}$ x $\frac{22}{7}$ x $\frac{14}{10}cm$ x $\frac{14}{10}cm$ X 2 = $\frac{3\ X\ 22\ X\ 14\ X\ 2}{100}$ = $\frac{924}{100}$ cm^2 = <u>9.24 cm^2</u>

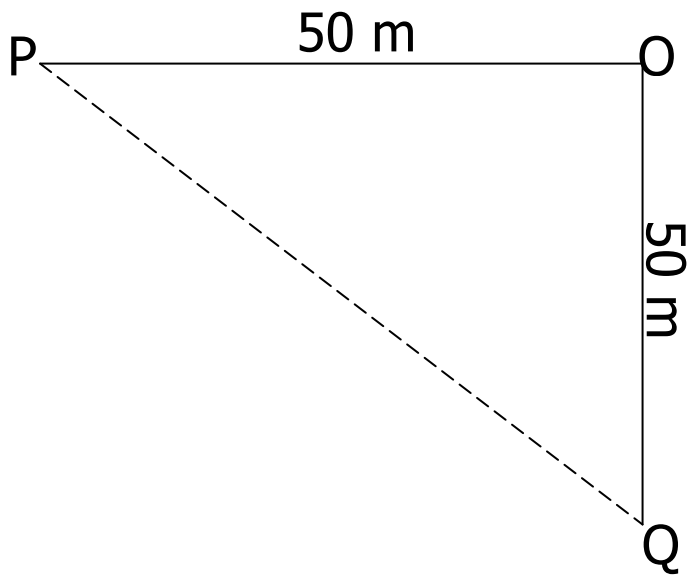
<u>Area of the figure</u>
= 16.00 cm^2
<u>+ 9.24cm2</u>
25.24cm^2

(b) Calculate its perimeter. (02 Marks)

Length of the 2 arcs	Perimeter
Length $= \frac{3}{4}\pi D$ X 2	= 2.6cm + 2.6cm + 2.6cm+2.6cm+13.2cm
$= \frac{3}{4}$ X $\frac{22}{7}$ X 2.8 cm x 2	= 23.6cm
= 3 x 11 x 0.4 cm	
= 13.2cm	

30. Peter and John walked from the same point O. Peter walked 50 metres Westwards to point P and John walked 50 metresSouthwards to point Q.

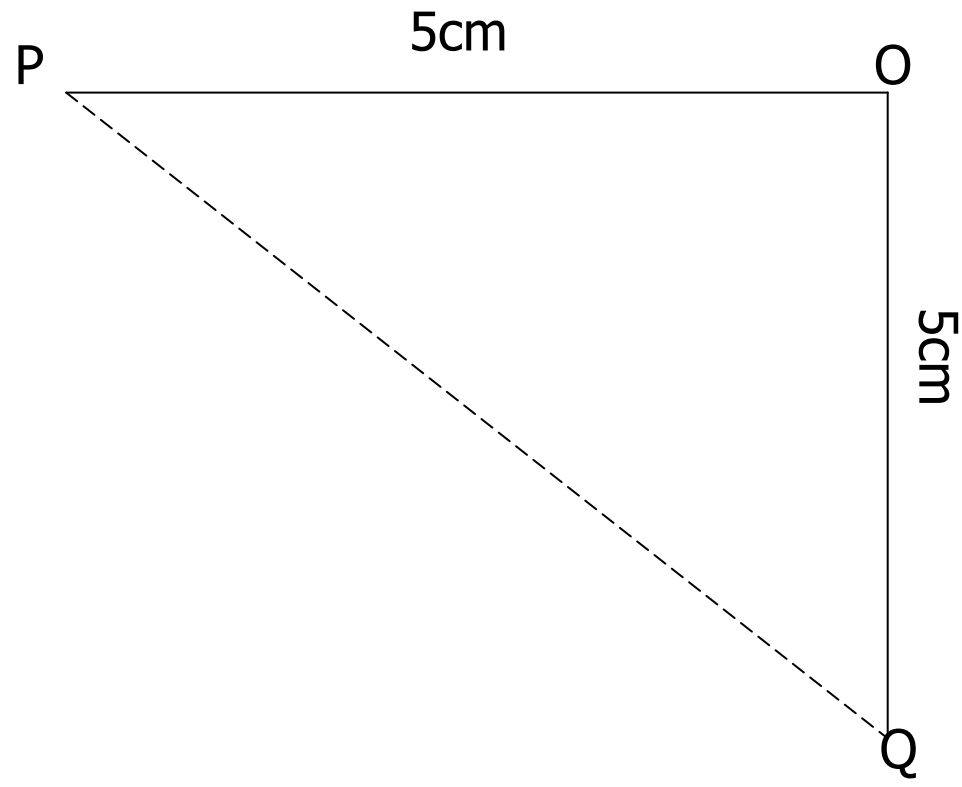
(a) Sketch a diagram to show the above information. (01 Mark)



(b) Draw an accurate diagram to show the movement of the two boys. Use a scale of 1cm to represent 10 metres. (04 Marks)

Scale

10m rep 1cm
50m rep $\frac{50}{10}$ cm
5cm



(c) Measure the distance between P and Q and give your answer in metres. (02 Marks)

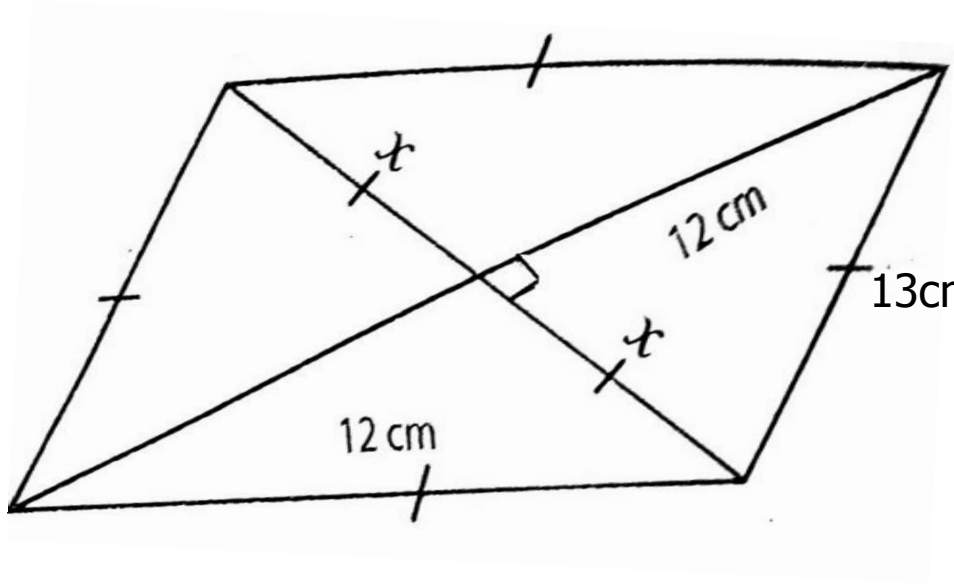
$\overline{PQ}$ = 7cm

1 cm = 100m

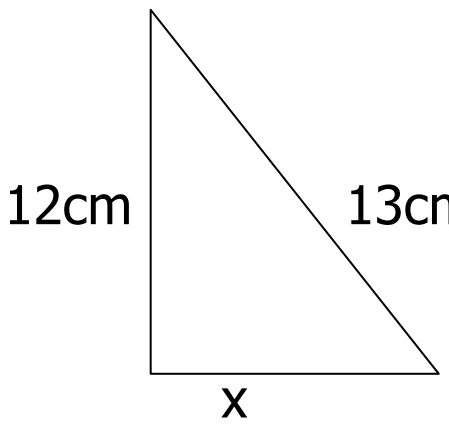
7cm = 7 X 100cm

= 700cm

31. Study the rhombus below and use it to answer the Questions that follow.



(a) Find the value of x. (02 Marks)



$X^2 = (13cm)^2 - (12cm)^2$

$X^2 = 169cm2 - 144cm^2$

$\sqrt{x^2} = \sqrt{25cm^2}$

X = 5cm

(b) Calculate its area. (02 Marks)

Area = $\frac{1}{2}$ x d_1 x d_2

= $\frac{3}{4}$ x 24cm x 10cm

= 3 x 6 x 10cm

= $120cm^2$

d_1 **=12cm + 12cm**

= 24cm

d_2 = 5cm +5cm

= 10 cm

32. (a) Convert 80,000cm^2 to m^2. (02 Marks)

1m = 100cm

1m^2 = 100cm x 100cm

1m^2 = 10000cm^2

80,000cm^2 = $\left(\frac{\mathbf{80000}}{\mathbf{10000}}\right)$ m^2

= 8m^2

(b) How many litres are in 8400 millitres? (02 Marks)

1 litre = 1000ml

8400ml = $\left(\frac{\mathbf{8400}}{\mathbf{1000}}\right)$ litres

= 8.4 litres

END