SECTION A: 40 MARKS

Answer **all** questions in this Section

Questions **1** to **20** carry two marks each

1. Add: 32 to 14.

32 + 14 = 46

$$\begin{array}{r} 32 \\ +14 \\ \hline 46 \end{array}$$

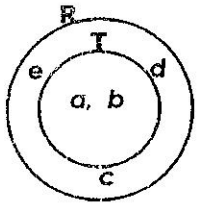
2. Simplify: $y^{-6} \div y^{-15}$.

$y^{-6-(-15)}$

y^{-6+15}

y^{9}

3. Find n(R-T) in the Venn diagram below.



$R - T = \{e, c, d\}$

$n(R - T) = 3$

4. Multiply: 101_{two} x 11_{two}

$$\begin{array}{r} 101 \\ \times\ 11 \\ \hline 101 \\ +101 \\ \hline 1111_{two} \end{array}$$

5. Find the next number in the sequence:

256, 64, 16, 4, ...*1*.....

$256 \div 4 = 64$

$64 \div 4 = 16$

$16 \div 4 = 4$

$4 \div 4 = 1$

6. Three girls can sweep a classroom in 12 minutes. How long will 4 girls take to sweep the same classroom working at the same rate?

$F \times T = F \times T$

$3 \times 12 = 4 \times T$

$36 = 4T$

$\frac{36^{9}}{4} = \frac{4T}{4}$

$9 = T$

$T = 9min$

The 4 girls will take 9 minutes to sweep the same classroom as the same working rate

OR

3 girls take 12minutes

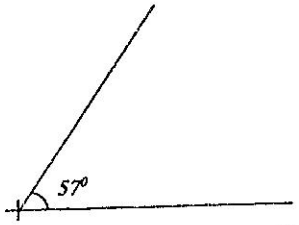
1 girl takes 3 x 12

36 minutes

4 girls take $\frac{36^{9}}{4}$

9minutes

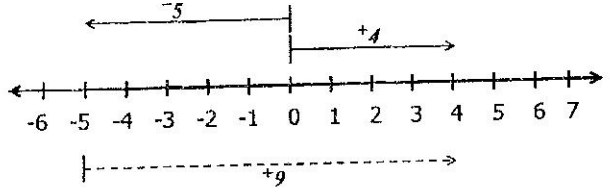
7. Use a protractor to measure the angle below.



8. A trader sold an article at Sh.7,900 making a profit of Sh.700. Calculate the cost price of the article.

$$\begin{array}{rl} CP & = SP - P \\ & \text{sh. } 7900 \\ & -\ \text{sh. } 700 \\ \hline & \text{sh. } 7200 \end{array}$$

9. Workout $(^{+}4) - (^{-}5)$ using the number line below.

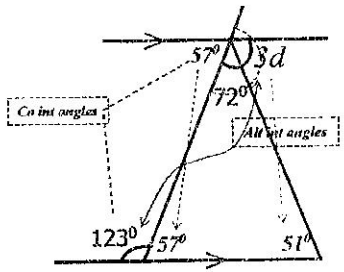


$(^{+}4) - (^{-}5) = {}^{+}4$

10. Tom had $\frac{3}{4}$ of a sugarcane and gave $\frac{1}{9}$ of it to Bashirah. What fraction did he remain with?

Fraction given	*Remaining fraction*	
$\frac{1}{9}$ *of* $\frac{3}{4}$	$\frac{3}{4} - \frac{1}{12}$	$\frac{8^{2}}{12_{3}}$
$\frac{1}{9_{3}} \times \frac{3^{1}}{4}$	$\frac{(3\times3)-(1\times1)}{12}$	$\frac{2}{3}$
$\frac{1}{12}$	$\frac{9-1}{12}$	*Accept other correct approaches*

11. Find the value of d in the figure below



OR

$3d = 51^0$

$\frac{3d}{3} = \frac{51^{0\,17}}{3}$

$d = 17^0$

$3d + 72^0 = 123^0$

$3d + 72^0 - 72^0 = 123^0 - 72^0$

$3d = 51^0$

$\frac{3d}{3} = \frac{51^{0\,17}}{3}$

$d = 17^0$

OR

$3d + 72^0 + 57^0 = 180^0$

$3d + 129^0 = 180^0$

$3d + 129^0 - 129^0 = 180^0 - 129^0$

$3d = 51^0$

$\frac{3d}{3} = \frac{^{17}51^0}{3}$

$d = 17^0$

12. Solve the equation: $1\frac{1}{2}x + 3 = 9$.

$\frac{3}{2}x + 3 = 9$

$\frac{3x}{2} + 3 - 3 = 9 - 3$

$\frac{3x}{2} = 6$

$\frac{3x}{2} \times 2 = 6 \times 2$

$3x = 12$

$\frac{3x}{3} = \frac{12^{4}}{3}$

$x = 4$

$\frac{3}{2}x + 3 = 9$

$\frac{3x}{2} \times 2 + (3 \times 2) = 9 \times 2$

$3x + 6 = 18$

$3x = 18 - 6$

$3x = 12$

$3x = 12$

$3x = 12$

$\frac{3x}{3} = \frac{12^{4}}{3}$

$x = 4$

13. Write 637 in standard form.

6^{2}	3^{1}	7^{0}
$\times 10^{2}$	$\times 10^{1}$	$\times 10^{0}$

6.37×10^2

OR

$637 \div 10 = 63.7$

$63.7 \div 10 = 6.37$

$637 = 6.37 \times 10^2$

14. Given that $p = \frac{1}{2}$, $q = \frac{2}{3}$ and $r = \frac{1}{4}$. Find the value of $p + qr$.

$\frac{1}{2} + (\frac{2}{3} \times \frac{1}{4})$

$\frac{1}{2} + \frac{1}{6}$ $\quad LCD = 6$

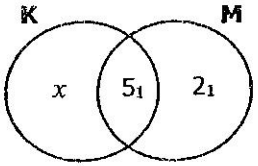
$\frac{(1\times3)+(1\times1)}{6}$

$\frac{3+1}{6}$

$\frac{4^{2}}{6_{3}}$

$\frac{2}{3}$

15. Given that the LCM of K and M is 30. Find the value of x in the Venn diagram below.



$x \times 5 \times 2 = 30$

$10x = 30$

$\frac{10x}{10} = \frac{30^{3}}{10}$

$x = 3_1$

16. A clock shows 5 minutes past 1: 00a.m.now, if the clock loses 6 minutes every hour. What will the real time be after seven hours?

Minutes lost after 7hours	*Real time on the clock*	*Minutes lost after 7hours*	*Real time on the clock*
6 x 7	1 :^{4}05	6 x 7	^{7}8 :^{6}05
42minutes	+ 6 : 18	42minutes	- 0 : 42
Actual duration	7 : 23a.m.	*Time after 7hours*	7 : 23a.m.
^{7}8 :^{6}00		1 : 05	
- 0 : 42		+ 7 : 00	
6 : 18		8 : 05a.m	

17. Express 25m/sec to km/h.

$1000m = 1km$

$25m = \frac{25km}{1000}$

$3600s = 1hr$

$1s = \frac{1\,h}{1000}$

$\frac{25km}{1000} \div \frac{1\,h}{3600}$

$\frac{^{5}25km}{1000} \times \frac{3600^{18}}{1h}$

$\frac{5km \times 18}{h}$

$90km/h$

18. The volume of a cylindrical water tank is 0.034 cubic metres. Express its volume in cubic centimeters.

$1m^3 = (100cm)^3$
$1m^3 = 100cm \times 100cm \times 100cm$
$1m^3 = 1000000cm^3$
$0.034m^3 = \frac{34}{1000} \times 1000000cm^3$
$= 34 \times 1000cm^3$
$= 34000cm^3$

19. The table below shows marks scored in the beginning of term III exams. Study it and answer the question that follows.

Marks scored	60	80	70	90
Number of pupils	1	2	1	3

Workout the median mark of the BOT exams.

60, 70, 80, 80, 90, 90, 90

Median = 80

20. The circumference of a wheel is 88cm. How many revolutions will it make to travel 352 metres?

$1m = 100cm$
$352m = (100 \times 352)cm$
$= 35200cm$

$$\text{Number of revolutions} = \frac{\text{Distance}}{\text{Circumference}}$$
$$= \frac{35200cm}{88cm}$$
$$= \frac{35200cm}{88cm}$$
$$= 400 \text{ revolutions}$$

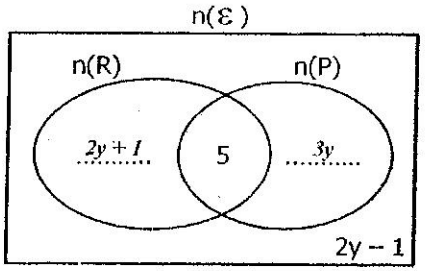
SECTION B: 60 MARKS

Answer **all** questions in this section

Marks for each question are indicated in brackets.

21. In a class, there are (2y + 1) pupils who like Rice (R) only, 3y like Posho (P) only. If 5 like both types of food and (2y – 1) like neither Posho nor Rice.

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



(b) If 31 pupils like either posho or rice. Find the value of y. (02 Marks)

$2y + 1 + 5 + 3y = 31$
$2y + 3y + 6 = 31$
$5y + 6 = 31$
$5y + 6 - 6 = 31 - 6$
$5y = 25$
$\frac{5y}{5} = \frac{25}{5}$
$y = 5$

(c) How many pupils are in the class? (02 Marks)

$2y + 1 + 5 + 3y + 2y - 1$
$(2 \times 5) + 1 + 5 + (3 \times 5) + (2 \times 5) - 1$
$10 + 1 + 5 + 15 + 10 - 1$
$41 - 1$
40pupils

OR
$31 + (2y - 1)$
$31 + (2 \times 5) - 1$
$31 + 10 - 1$
$31 + 9$
40pupils

22. (a) Workout: $14 - 18 \div 3 + 5$ (02 Marks)

BODMAS

14 – 6 + 5
14 + 5 – 6
19 – 6
13

(b) Use distributive property to workout. (02 Marks)
(23 x 200) + (17 x 200)

(23 + 17) x 200
40 x 200
8000

23. In a feeds factory, crushed fish is mixed with maize flour in the ratio 1:3 respectively. The feeds are packed in 80kg bags.

(a) How many kilograms of fish are used in one bag of the feeds? (02 Marks)

Total ratio
1 + 3
4parts
Fish
$\frac{1}{4}$ x 80
$\frac{1}{4}$ x 80
20kg

(b) If one kilogram of maize flour costs Sh.4,000. How much does it cost to buy maize flour to make feeds that weigh 1000kg? (03 Marks)

Maize flour needed to make 1000kg feeds

$\frac{3}{4}$ x 1000kg
$\frac{3}{4}$ x ~~1000~~
3 x 250
750kg

Cost of 750kg
sh. 4000 x 750
sh. 3,000,000
It costs 3,000,000 to buy maize flour to make feeds that weigh 1000kg

OR
Number of bags in 1000kg
~~1000~~
~~80~~
12.5 bags
Maize flour in one bag
80kg – 20kg
60kg
Maize flour in 12.5bags
60 x 12.5
750kg
Cost of 750kg
sh. 4000 x 750
sh. 3,000,000

24. The table below shows the exchange rate of different currencies. Use it to answer the questions that follow.

Currency	Buying rates	Selling rates
1 US dollar	Ug.sh 3,500	Ug.sh 3,550
1 Ksh	Ug.sh 30	Ug.sh 32
1 Rwandese franc	Ug.sh 3.5	Ug.sh 3.7

(a) A businessman has U$ 1,000, how much in Uganda shillings does he have? (02 Marks)

USD1 ⟶ Ugsh. 3500
USD1000 ⟶ Ugsh. 3500 x 1000
Ugsh. 3,500,000

(b) If the business man used some of his money for online shopping and bought a gold watch worth Ksh.74,000 and a refrigerator worth 80,000 Rwandese francs. How much was his change in Ug.sh? (03 Marks)

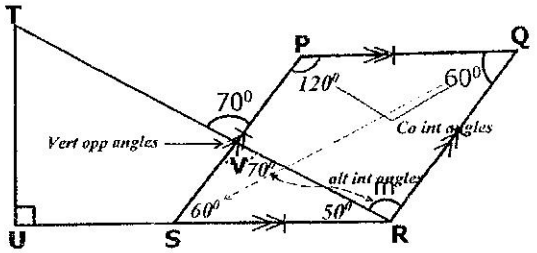
Ksh1 — Ugsh. 30
Ksh 74000 — Ugsh. 7400 x 30
Ugsh. 2,220,000

RF1 — Ugsh. 3.5
RF 80,000 — Ugsh.80,000 x $\frac{35}{10}$
Ugsh. 8000 x 35
Ugsh. 280,000

Total
Ugsh. 2,220,000
+ Ugsh. 280,000
Ugsh. 2,500,000

Change
Ugsh. 3,500,000
- Ugsh. 2,500,000
Ugsh.1,000,000

25. The diagram below is a rhombus PQRS where PQR is 60^0, TRU is a right angled triangle where angle PVT is 70^0. Study it carefully and answer the questions that follow.



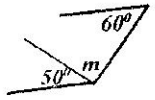
(a) Find the value of **m** in degrees. (02 Marks)

$m = 70^0$ *(alt int angles)*

OR

$m + 50^0 = 120^0$
$m + 50^0 - 50^0 = 120^0 - 50^0$
$m = 70^0$

OR



$m + 50^0 + 60^0 = 180^0$ *(Co int angles)*
$m + 110^0 = 180^0 - 110^0$
$m + 110^0 - 110^0 = 120^0 - 110^0$
$m = 70^0$

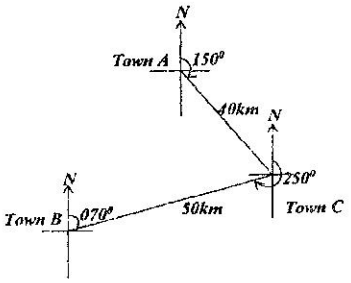
(b) Calculate the size of angle **UTR**. (02 Marks)

$UTR = 180^0 - (90^0 + 50^0)$
$= 180^0 - 140^0$
$= 40^0$

26. Town **C** is on a bearing of 150^0 from town **A** which is 40km away and town **C** is 50km from town **B** on a bearing of 070^0. Using a scale of 1cm = 10km.

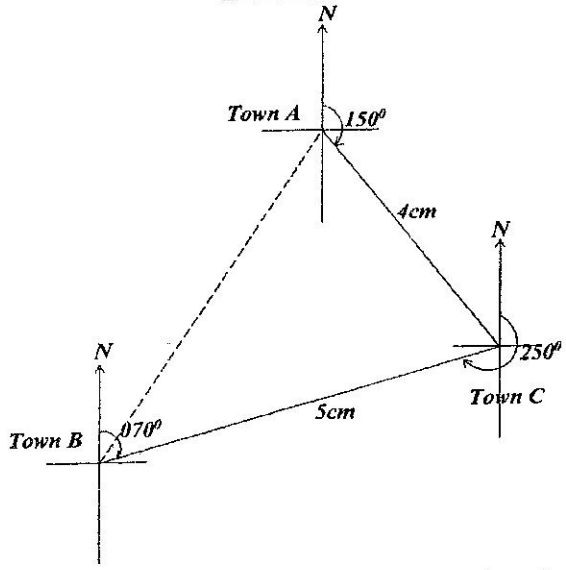
(a) Draw a sketch and an accurate figure to show the three towns. (04 Marks)

Sketch



C to B
~~*50km*~~
~~*10km*~~
5cm
A to C
~~*40km*~~
~~*10km*~~
4cm

Accurate drawing



(b) What is the shortest distance from A to B? (02 Marks)

$= 5.8cm \times 10km$
$= \frac{58}{\cancel{10}} \times \cancel{10}$
$= 58km$

Accept +/- (1) on the above value

27. Two drivers **A** and **B** left Soroti at 7:30am travelling to Kampala a distance of 300km away. Driver **A** drove at a speed of 60km/hr and driver **B** drove at a speed of 75km/hr.

(a) How many hours did driver **A** take to reach Kampala? (02 Marks)

$T = \frac{D}{S}$

$= \frac{300km}{60km/hr}$

$= 5hr$

Driver A took 5hrs to reach Kampala

(b) Find the distance driver **A** was left with to reach Kampala by the time driver **B** arrived in Kampala. (04 Marks)

Time taken by Driver B

$T = \frac{D}{S}$

$= \frac{300km}{75km/hr}$

$= 4hr$

Distance covered by Driver A in 4hours

$D = S \times T$

$= 60km \times \frac{4hr}{hr}$

$= 240km$

Distance left to reach Kampala

$300km - 240km$

$60km$

28. A mother is four times as old as her daughter. Their total age is 50 years.

(a) How old is the daughter? (02 Marks)

Let the daughter be y

Mother will be $4 \times y$

$4y$

$4y + y = 50$

$5y = 50$

$\frac{5y}{5} = \frac{50}{5}$

$y = 10$

The daughter is 10years

(b) How old will the mother be when the daughter is 30 years from now? (02 Marks)

$= 30 \times 4$

$= 120years$

29. A tank is $\frac{3}{4}$ full of water, if 9 litres of water are removed, it becomes $\frac{1}{2}$ full of water.

(a) Find the fraction of water removed. (02 Marks)

$\frac{3}{4} - \frac{1}{2}$ *LCD = 4*

$\frac{3-2}{4}$

$\frac{1}{4}$

(b) What is the volume of the full tank? (03 Marks)

Number of litres held by the tank

$9 \div \frac{1}{4}$

$9 \times \frac{4}{1}$

36litres

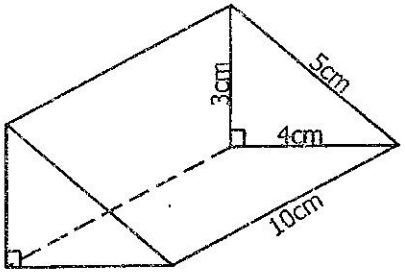
Volume of tank

1 litre $= 1000cm^3$

36l $= 1000 \times 36$

$= 36000cm^3$

30. Use the triangular prism below to answer the questions that follow.



(a) Find the sum of the length of all its edges. (03 Marks)

Sum of edges

= $2(S_1 + S_2 + S_3) + L \times 3$
= $2(3 + 4 + 5)cm + (10 \times 3)cm$
= $(2 \times 12) + 30cm$
= $24cm + 30cm$
= $54cm$

(b) Find the volume of the triangular prism. (02 Marks)

$V = \frac{1}{2} \times b \times h \times l$
$= \frac{1}{2} \times 4cm \times 3cm \times 10cm$
$= 60cm^3$

31. Mr. Obra received 120 shares from his father at a simple interest rate of 10% per annum. If each share is valued at sh.5,000.

(a) Find the interest after 3 years. (03 Marks)

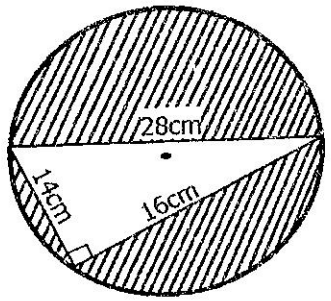
1share *sh. 5000*
120shares *sh.5000 x 120*
Sh.600,000

$I = P \times R \times T$
$= sh.600,000 \times \frac{10}{100} \times 3$
$= sh.6000 \times 30$
$= sh.180000$

(b) Calculate the total amount of money Obara gave back to his father after the three years. (02 Marks)

Amount = $P + I$
= *sh. 600,000 + sh. 180,000*
= *sh.780,000*

32. The diagram below shows a circular cardboard and a triangle was cut out of it. Study and use it to answer questions that follow.



$R = \frac{D}{2}$
$= \frac{28cm}{2}$
$= 14cm$

(a) Calculate the area of the circle. (02 Marks)
(Use π as $\frac{22}{7}$)

$A = \pi r^2$
$= \frac{22}{7} \times 14cm \times 14cm$
$= 22 \times 2cm \times 14cm$
$= 616cm^2$

(b) Workout the area of the cardboard that remained after cutting out the triangle. (03 Marks)

Area of triangle

$A = \frac{1}{2} \times b \times h$
$A = \frac{1}{2} \times 14cm \times 16cm$
$= 7cm \times 16cm$
$= 112cm^2$

Area of card board that remained

$616cm^2 - 112cm^2$
$504cm^2$