



SURREKEY EXAMINATIONS BOARD
PRIMARY SEVEN TARGET SERIES EXAMINATION
2023
MATHEMATICS

Time Allowed: 2 hours 30 minutes

Index No. _____

Candidate's Name _____

Candidate's Signature _____

School Name: _____

District Name: _____



Read the following

1. Do not forget to write your **school** and **district name** on this paper.
2. This paper has two sections: **A** and **B**.
Section **A** has **20** questions and Section **B** has **12** questions. The paper has **16 printed pages** altogether
3. Answer **all** questions. **All** the working for both sections **A** and **B** must be shown in the spaces provided.
4. **All** working must be done using a **blue** or **black** ball point pen or ink. Any work done in pencil other than graphs and diagrams will **not** be marked.
5. **No calculators** are allowed in the examination room.
6. Unnecessary **changes** in your work and handwriting that cannot easily be read may lead to loss of marks.
7. Do not fill anything in the table indicated: **"For Examiners' Use only"** and boxes inside the question paper.

FOR EXAMINERS' USE ONLY		
Qn.No.	MARKS	EXR'S NO.
1 - 5	10	
6 - 10	07	
11 - 15	10	
16 - 20	07	
21 - 22	06	
23 - 24	05	
25 - 26	06	
27 - 28	07	
29 - 30	05	
31 - 32	10	
TOTAL	73	C3

SECTION A: 40 MARKS

Answer **all** questions in this Section

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

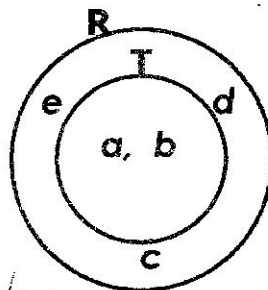
1. Add: 32 to 14.

$$\begin{array}{r} 14 \\ + 32 \\ \hline 46 \end{array} \quad \checkmark \quad B2$$

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

$$\begin{aligned} &= y^{-6} \div y^{-15} \\ &= y^{-6} \cdot y^{15} \quad \text{Don} \\ &= y^{-6+15} \\ &= y^9 \quad \checkmark \quad A7 \end{aligned}$$

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



$$\begin{aligned} n(R-T) &= n(e, c, d) \\ &= 3 \quad \checkmark \quad B2 \end{aligned}$$

4. Multiply: $101_{\text{two}} \times 11_{\text{two}}$

$$\begin{array}{r} 101_{\text{two}} \\ \times 11_{\text{two}} \\ \hline 111_{\text{two}} \\ 101_{\text{two}} \\ \hline 1111_{\text{two}} \end{array}$$

$$\begin{array}{r} 101_{\text{two}} \\ \times 11_{\text{two}} \\ \hline 101 \\ +101 \\ \hline 1111_{\text{two}} \end{array} \quad \checkmark \quad B2$$

5. Find the next number in the sequence:

256, 64, 16, 4, ...

$$\begin{array}{r} \times 2 \\ 4 \mid 8 \mid 16 \mid 32 \mid 64 \mid 128 \mid 256 \end{array}$$

$$\begin{array}{r} 64 \\ \div 4 \\ \hline 16 \end{array} \quad \begin{array}{r} 16 \\ \div 4 \\ \hline 4 \end{array} \quad \begin{array}{r} 4 \\ \div 4 \\ \hline 1 \end{array} \quad \checkmark \quad B2$$

2

$$\begin{array}{r} 256 \\ \div 4 \\ \hline 64 \end{array}$$

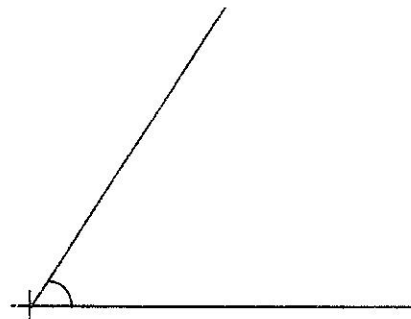
10

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?

$$\begin{array}{l} 3 \text{ girls take } 12 \text{ minutes} \\ 4 \text{ girls} \\ \hline 3 \text{ girls take } 12 \text{ minutes} \\ 4 \text{ girls take } \frac{3 \times 12}{4} \text{ minutes} \\ \quad = 9 \text{ minutes} \end{array}$$

4 girls take 9 minutes to sweep the same classroom.

7. Use a protractor to measure the angle below.



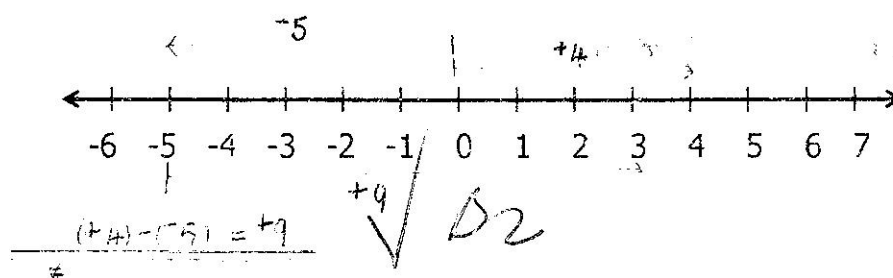
The angle is 56°

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

$$\begin{array}{r} \text{Sh } 7,900 \\ - \text{Sh } 700 \\ \hline \text{Sh } 7,200 \end{array}$$

The cost price of the article is Sh 7,200

9. Work out $(+4) - (-5)$ using the number line below.

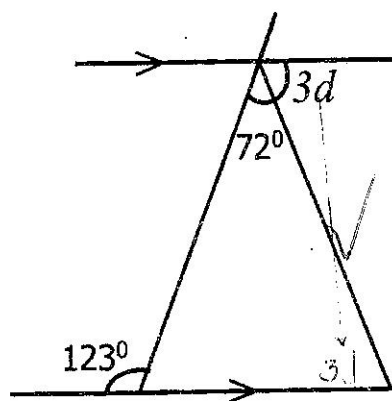


10. Tom had $\frac{3}{4}$ of a sugarcane and gave $\frac{1}{9}$ of it to Bashirah. What fraction did he remain with?

$\frac{3}{4} - \frac{1}{9}$
 $= \frac{3 \text{ of } \frac{1}{4}}{4} = \frac{1}{9} \text{ of } \frac{3}{4}$
 $= \frac{3 \text{ of } \frac{1}{4}}{4} = \frac{1}{9} \times \frac{3}{4}$
 $= \frac{1}{12}$
 Fraction remained
 $= \frac{12}{12} - \frac{1}{12}$
 $= \frac{11}{12}$

07

11. Find the value of d in the figure below



$3d + 72^\circ = 120^\circ$
 $3d + 72^\circ = 120^\circ$
 $3d + 72^\circ - 72^\circ = 120^\circ - 72^\circ$
 $3d = 48^\circ$
 $d = 16^\circ$

$\frac{12}{12} - \frac{5}{5}$
 $= \frac{7}{5}$

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

$1 \times 2 + 1x + 3 = 9$
 $\frac{3x}{2} + 3 = 9$

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

$\frac{3x}{2} = 6$
 $3x + 6 = 18$

$3x + 6 = 18$
 $3x + 6 - 6 = 18 - 6$

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

$x = 4$

13. Write 637 in standard form.

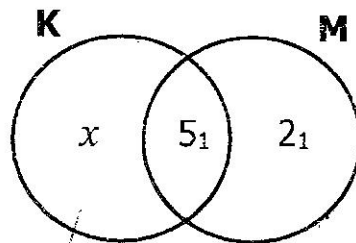
637

$= 6.37 \times 10^2$

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

$$\begin{aligned}
 &= p + q \times r \\
 &= \frac{1}{2} + \frac{2}{3} \times \frac{1}{4} \\
 &= \frac{1}{2} + \left(\frac{2 \times 1}{3 \times 4} \right) \\
 &= \frac{1}{2} + \frac{1}{6} \\
 &= \frac{1 \times 6 + 1 \times 2}{2 \times 6} \\
 &= \frac{6 + 2}{12} \\
 &= \frac{8}{12} \\
 &= \frac{2}{3}
 \end{aligned}$$

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



$$\begin{aligned}
 LCM &= x \times 5 \times 2 \\
 30 &= x \times 10 \\
 \frac{30}{10} &= x \\
 3 &= x
 \end{aligned}$$

10

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?

$$\begin{aligned}
 &= (6 + 6 + 6 + 6 + 6 + 6 + 6) \text{ mins} \\
 &= 42 \text{ mins} \\
 &1:00 \text{ hr} \\
 &- 0:42 \text{ min} \\
 &\hline
 &6:24
 \end{aligned}$$

$$\begin{aligned}
 &6:55 \text{ hr} \\
 &+ 6:24 \text{ hr} \\
 &\hline
 &13:19 \text{ hr} \\
 &- 12:00 \text{ hr} \\
 &\hline
 &1:19 \text{ pm}
 \end{aligned}$$

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

$$\begin{aligned}
 &25 \times \frac{3600}{1000} \\
 &= 25 \times \frac{36}{10} \\
 &= 25 \times 3.6 \\
 &= 90 \text{ km/h}
 \end{aligned}$$

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

$1 \text{ m}^3 = 1000 \text{ m}^3$
 $1 \text{ m} \times 1 \text{ m} \times 1 \text{ m} = 100 \text{ cm} \times 100 \text{ cm} \times 100 \text{ cm}$
 $1 \text{ m}^3 = 1,000,000 \text{ cm}^3$
 $0.034 \text{ m}^3 = \frac{34}{1000} \times 1,000,000 \text{ cm}^3$
 $= 34,000 \text{ cm}^3$

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.

$90, 90, 90, 80, 80, 70, 60$
 Median mark = 80

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

$1 \text{ m} = 100 \text{ cm}$
 $352 \text{ m} = 352 \times 100 \text{ cm}$
 $= 35,200 \text{ cm}$
 $\frac{35,200}{88} = 400$

$1 \text{ m} = 100 \text{ cm}$
 $352 \text{ m} = 352 \times 100 \text{ cm}$
 $= 35,200 \text{ cm}$
 $\frac{35,200}{88} = 400$
 $= 400$

SECTION B: 60 MARKS

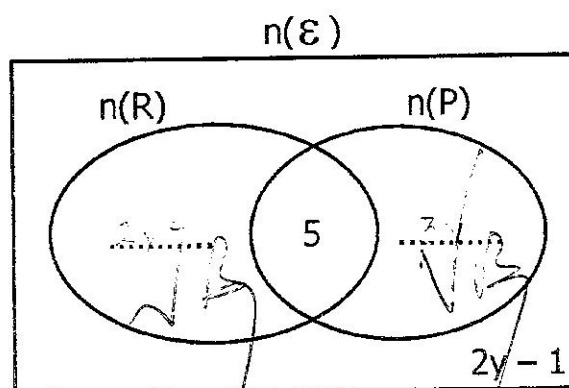
Answer **all** questions in this section

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)

$$2y + 1 + 3y = 31$$

$$2y + 3y + 1 = 31$$

$$5y + 1 = 31$$

$$5y = 30$$

$$y = 6$$

$$2y + 1 + 3y = 31$$

$$2y + 3y + 1 = 31$$

$$5y + 1 = 31$$

$$5y = 30$$

$$y = 6$$

- (c) How many pupils are in the class?

(02 Marks)

$$= 2y + 1 + 5 + 3y + 2y - 1$$

$$= 2 \times 6 + 1 + 5 + 3 \times 6 + 2 \times 6 - 1$$

$$= 12 + 1 + 5 + 18 + 12 - 1$$

$$= 47 \text{ pupils}$$

$$\begin{array}{r} 18 \\ 18 \\ + 11 \\ \hline 47 \end{array}$$

BCDMAS

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

(02 Marks)

$$\begin{aligned} &= 14 - (18 \div 3) + 5 \\ &= 14 - (6) + 5 \\ &= 14 - 6 + 5 \\ &= 14 + 5 - 6 \\ &= 19 - 6 \\ &= 13 \end{aligned}$$

- (b) Use distributive property to workout.
 $(23 \times 200) + (17 \times 200)$

(02 Marks)

$$\begin{aligned} &= 200(23 + 17) \\ &= 200(40) \\ &= 200 \times 40 \\ &= 8000 \end{aligned}$$

$$\begin{array}{r} 23 \\ + 17 \\ \hline 40 \end{array}$$



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)

$$\begin{aligned} \text{Total ratio} &= 1+3 \\ &= 4 \\ &= \frac{1}{4} \times 80 \text{ kg} \\ &= 20 \text{ kg} \end{aligned}$$

- (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)

$$\begin{aligned} 1 \text{ kg} &\text{ costs Sh.4000} \\ 1000 \text{ kg} &\text{ costs } m \\ m \times 1 &= 1000 \times \text{Sh.4000} \\ m &= \text{Sh.4000000} \\ 1000 \text{ kg} &\text{ cost Sh.4000000} \end{aligned}$$

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)

$$\begin{aligned}
 1 \text{ US\$} &\rightarrow \text{Ug sh } 3500 \\
 \text{U\$ } 1000 &\rightarrow m \\
 m \times 1 &= \text{sh } 3500 \times 1000 \\
 m &= \text{sh } 3500000 \\
 \text{U\$ } 1000 &= \text{Ug sh } 3500000
 \end{aligned}$$

- (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)

$$\begin{aligned}
 1 \text{ Ksh} &\rightarrow \text{sh} \\
 1 \text{ Ksh} &\rightarrow \text{Ug sh } 30 \\
 \text{Ksh } 74000 &\rightarrow m \\
 m \times 1 &= \text{sh } 74000 \times 30 \\
 m &= \text{sh } 2220000 \\
 1 \text{ Rwandese franc} &\rightarrow \text{Ug sh } 3.5 \\
 80000 \text{ Rwandese francs} &\rightarrow m
 \end{aligned}$$

$$m \times 1 = \text{sh } \frac{35}{10} \times 80000$$

$$m = \text{sh } 280000$$

Total

$$\begin{aligned}
 &\text{Ug sh } 2220000 \\
 + &\text{Ug sh } 280000 \\
 \hline
 &\text{Ug sh } 2500000
 \end{aligned}$$

$$\begin{array}{r}
 74 \\
 \times 30 \\
 \hline
 210
 \end{array}$$

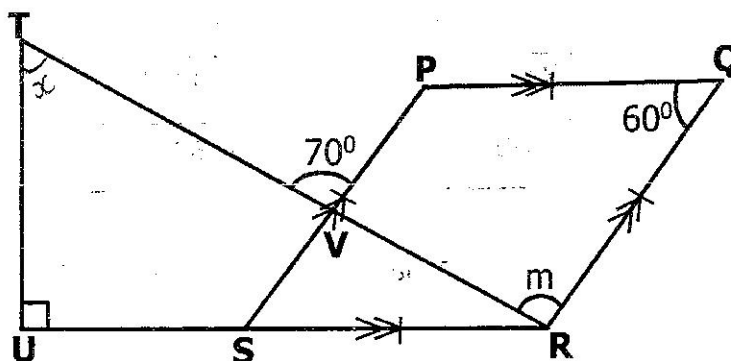
$$\begin{array}{r}
 2 \\
 \times 3.5 \\
 \hline
 280
 \end{array}$$

05

His change in Ug.sh was 2500000
His change was Ug sh 2500000

Turn Over

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



- (a) Find the value of m in degrees.

(02 Marks)

$$\begin{aligned}
 m + m + 60^\circ + 60^\circ &= 180^\circ \\
 2m + 120^\circ &= 180^\circ \\
 2m + 120^\circ - 120^\circ &= 180^\circ - 120^\circ \\
 \frac{2m}{2} &= \frac{60^\circ}{2} \\
 m &= 30^\circ
 \end{aligned}$$

- (b) Calculate the size of angle UTR.

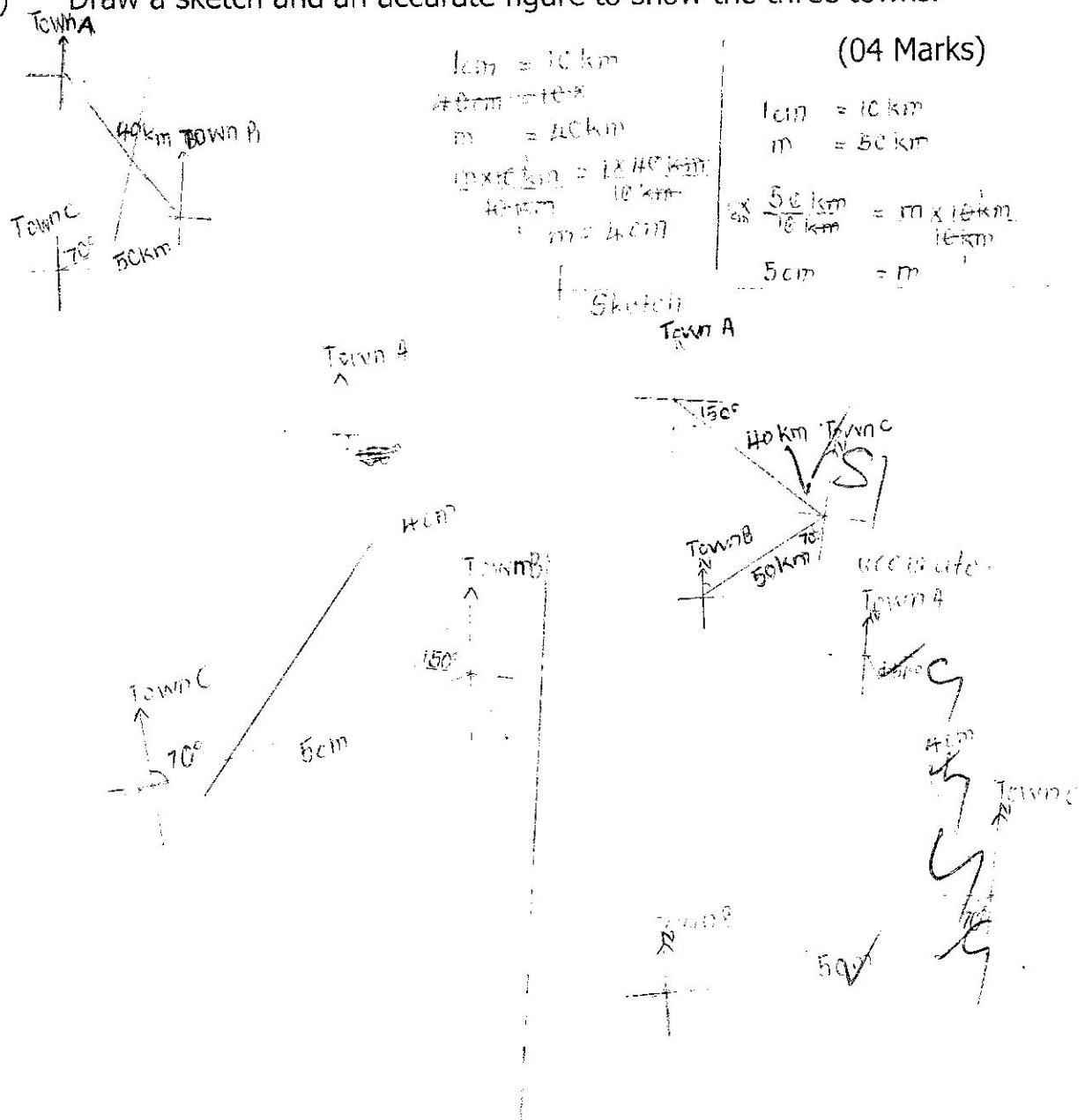
(02 Marks)

$$\begin{aligned}
 30^\circ + 60^\circ + x &= 180^\circ \\
 90^\circ + x &= 180^\circ \\
 180^\circ - 90^\circ + x &= 180^\circ - 90^\circ \\
 x &= 90^\circ
 \end{aligned}$$

\therefore The size of angle UTR is 90° .

26. Town **C** is on a bearing of 150° from town **A** which is 40km away and town **C** is 50km from town **B** on a bearing of 070° . Using a scale of $1\text{cm} = 10\text{km}$.

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



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

5.8cm

$1\text{cm} \rightarrow 10\text{km}$

$5.8\text{cm} \rightarrow m$

$m \times 1 = \frac{5.8 \times 10}{1}$

$m = 58\text{km}$

The shortest distance from A to B is 5.8cm

06

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)

$$\begin{aligned}
 \text{Time} &= D \div S \\
 &= 300 \text{ km} \div 60 \text{ km/hr} \\
 &= 300 \text{ km} \times \frac{1}{60 \text{ km/hr}} \\
 &= 5 \text{ hrs}
 \end{aligned}$$

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

$$\begin{aligned}
 \text{Distance} &= S \times T \\
 &= 60 \text{ km/hr} \times 4 \text{ hr} \\
 &= 240 \text{ km}
 \end{aligned}$$

$$\begin{aligned}
 T &= D \div S \\
 &= 300 \text{ km} \div 75 \text{ km/hr} \\
 &= 4 \text{ hr}
 \end{aligned}$$

$$\begin{array}{r}
 15 \\
 15 \\
 15 \\
 15 \\
 \hline
 60
 \end{array}$$

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's age be x

Daughter	Mother	Total
x	$4x$	50

$$\begin{aligned}
 x + 4x &= 50 \\
 5x &= 50 \\
 \frac{5x}{5} &= \frac{50}{5} \\
 x &= 10
 \end{aligned}$$

The daughter is 10 years old.

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

$$= 14 \times 10 \text{ years}$$

$$= 140 \text{ years}$$

$$40 \text{ years}$$

$$+ 30 \text{ years}$$

$$70 \text{ years}$$

The mother will be 70 years old.

86 + 1

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)

$$\frac{1}{2}$$

$$= \frac{1}{2}$$

$$= \frac{3}{4} - \frac{1}{2} = \frac{3 \times 2}{4 \times 2} - \frac{1 \times 2}{2 \times 2} = \frac{6}{8} - \frac{2}{8} = \frac{4}{8}$$

$$= \frac{1}{2}$$

$$= \frac{1}{2}$$

The fraction of water removed

$$= \frac{1}{2}$$

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

$$1 \text{ part} \rightarrow 9 \text{ litres}$$

$$4 \text{ part} \rightarrow m$$

$$m \times 1 = 4 \times 9 \text{ litres}$$

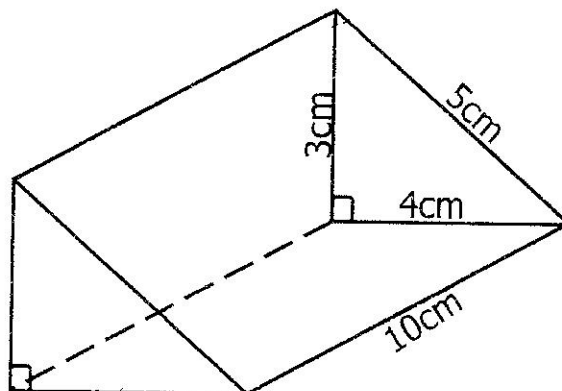
$$m = 36 \text{ litres}$$

$$V = 36$$

$$V = 36 \times 1000 \text{ cm}^3$$

$$V = 36000 \text{ cm}^3$$

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

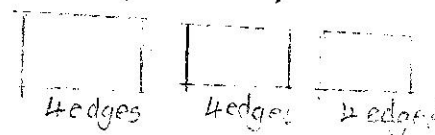
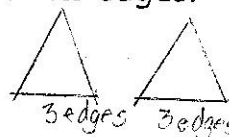


- (a) Find the sum of the length of all its edges.

(03 Marks)

$$= 3 + 3 + 4 + 4 + 4 + 4$$

$$= 18 \text{ edges}$$



- (b) Find the volume of the triangular prism.

(02 Marks)

$$V = \frac{1}{2} \times L \times b \times h$$

$$= \frac{1}{2} \times 10 \text{ cm} \times 4 \text{ cm} \times 3 \text{ cm}$$

$$= \frac{1}{2} \times 10 \text{ cm} \times 4 \text{ cm} \times 3 \text{ cm}$$

$$= 5 \text{ cm} \times 4 \text{ cm} \times 3 \text{ cm}$$

$$= 60 \text{ cm}^3$$

$$\frac{25}{25}$$

$$\frac{25}{25}$$

$$\frac{25}{25}$$



31. Mr. Obara 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)

$$\begin{aligned}
 & \text{sh } 5000 \\
 & \times 120 \\
 & \hline
 & = \text{sh } 600000 \\
 & = \text{sh } 600000 \\
 & I = P \times R \times T \\
 & = \text{sh } 600000 \times 10\% \times 3 \\
 & = \text{sh } 600000 \times \frac{10}{100} \times 3 \\
 & = \text{sh } 180000
 \end{aligned}$$

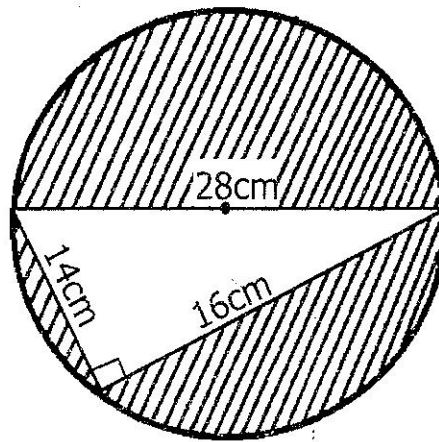
$$\begin{array}{r}
 12 \\
 \times 5 \\
 \hline
 60
 \end{array}$$

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

(02 Marks)

$$\begin{aligned}
 A &= P + I \\
 &= \text{sh } 600000 \\
 &+ \text{sh } 180000 \\
 &\hline
 &= \text{sh } 780000
 \end{aligned}$$

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.



- (a) Calculate the area of the circle. (02 Marks)

$$A = \pi r^2$$

$$= \pi$$

$$= \frac{22}{7} \times 14 \text{ cm} \times 14 \text{ cm}$$

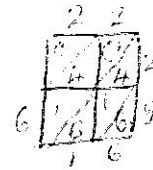
$$= 616 \text{ cm}^2$$

$$R = \frac{D}{2}$$

$$= \frac{28}{2} \text{ cm}$$

$$= 14 \text{ cm}$$

(Use π as $\frac{22}{7}$)



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

Area of the circle

$$A = \pi r^2$$

$$= \frac{22}{7} \times 14 \text{ cm} \times 14 \text{ cm}$$

$$= 616 \text{ cm}^2$$

Area of the triangle

$$A = \frac{1}{2} \times b \times h$$

$$= \frac{1}{2} \times 14 \text{ cm} \times 16 \text{ cm}$$

$$= 112 \text{ cm}^2$$

$$= 112 \text{ cm}^2$$

Area of the cardboard remained

$$A = 616 \text{ cm}^2$$

$$- 112 \text{ cm}^2$$

$$= 504 \text{ cm}^2$$

$$\begin{array}{r} 616 \\ - 112 \\ \hline 504 \end{array}$$

