



SUREKEY EXAMINATIONS BOARD

PRIMARY SEVEN PLACEMENT SET

2023

MATHEMATICS

PREPARED BY:

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“Don’t speak for Quality, Let the Quality Speak for itself”

SECTION A: 40 MARKS

Answer **all** questions in this Section
Questions **1** to **20** carry two marks each

1. Workout:
$$\begin{array}{r} 3 4 \\ \times 4 \\ \hline 136 \end{array}$$

2. Solve for x : $3 - x = 2x$.

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

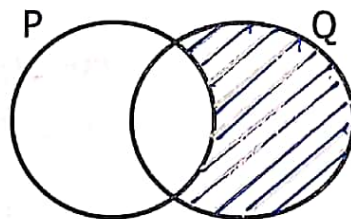
$$3 = 3x$$

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

$$1 = x$$

$$\underline{\underline{x = 1}}$$

3. In the diagram below, shade the region that represents only the members of set Q.



4. Find the missing number in the sequence below:

$$2, 5, 7, 10, 12, \underline{15}, \dots$$

$\begin{array}{cccccc} \swarrow & \searrow & \swarrow & \searrow & \swarrow & \searrow \\ +3 & +2 & +3 & +2 & +3 & \end{array}$

$$\begin{array}{r} 12 \\ + 3 \\ \hline 15 \end{array}$$

5. Workout: $1\frac{1}{12} - \frac{5}{6}$

$$\frac{13}{12} - \frac{5}{6}$$

$$\frac{(13 \times 6) - (5 \times 12)}{12 \times 6}$$

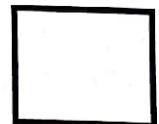
$$\frac{78 - 60}{72}$$

$$\frac{18}{72} \frac{1}{4}$$

$$= \frac{1}{4}$$

2

$$\begin{array}{r} 1 + \frac{1}{12} \\ = \frac{13}{12} \end{array}$$

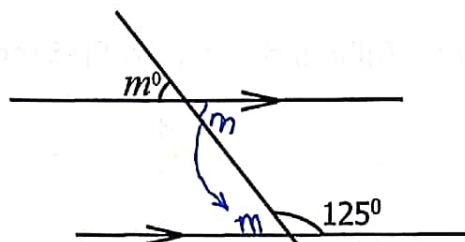


6. Kagolo has a bundle of five thousand shillings notes numbered consecutively from AP534201 to AP534300. How much money does he have?

Number of notes:	Amount
AP534300	Sh. 5,000
AP534201	x 100
099 + 1 note	0 000
= 100 notes.	+ 00 00
	5 00 0
	Sh. 50,000

∴ He has sh. 50,000.

7. Find the value m in the figure below.



$$m^\circ + 125^\circ = 180^\circ \text{ (co-interior angles)}$$

$$m^\circ + 125^\circ - 125^\circ = 180^\circ - 125^\circ$$

$$m^\circ = 55^\circ$$

$$\frac{m^\circ}{1^\circ} = \frac{55^\circ}{1^\circ}$$

$$m = 55$$

OR

$$m^\circ + 125^\circ = 180^\circ \text{ (angles on a straight line)}$$

$$m^\circ + 125^\circ - 125^\circ = 180^\circ - 125^\circ$$

$$m^\circ = 55^\circ$$

$$\frac{m^\circ}{1^\circ} = \frac{55^\circ}{1^\circ}$$

$$m = 55$$

8. If today is Thursday, what day of the week will it be 67 days from now?

S	M	T	W	T	F	S
0	1	2	3	4	5	6

$$\text{Thursday} + 67 = \text{— (finite 7)}$$

$$4 + 67 = \text{— (finite 7)}$$

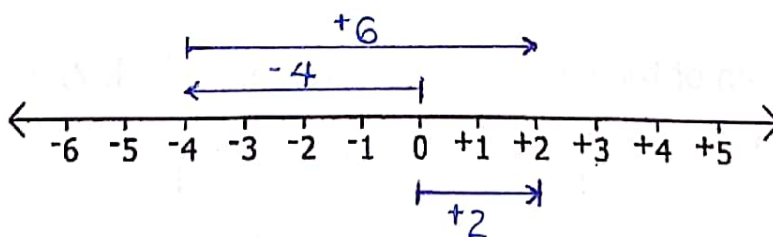
$$71 = \text{— (finite 7)}$$

$$71 \div 7 = 10 \text{ rem } 1 \text{ (finite 7)}$$

$$= 1 \text{ (finite 7)}$$

∴ The day will be Monday.

9. Workout $-4 + +6$ using the numberline below.



$$\underline{\underline{-4 + +6 = +2}}$$

10. Arinaitwe made a profit of sh.80,000 after selling a sofa set to Bruno at sh.520,000. At how much had Arinaitwe bought the sofa set?

$$\text{Buying price} = \text{Selling price} - \text{Profit}$$

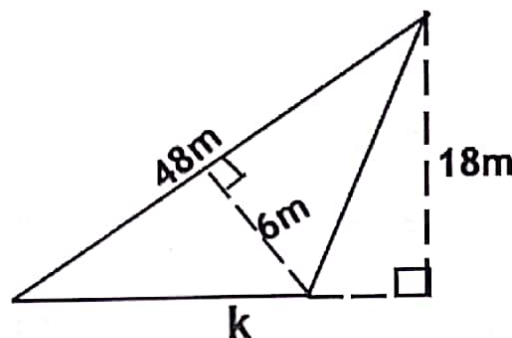
$$\text{Buying price} = \text{Sh. } 520,000 - \text{Sh. } 80,000$$

$$\begin{array}{r} \text{Sh. } 520,000 \\ - \text{Sh. } 80,000 \\ \hline \text{Sh. } 440,000 \end{array}$$



Arinaitwe had bought the sofa set at Sh. 440,000.

11. Study the figure below carefully and use it to find the value of k in metres.

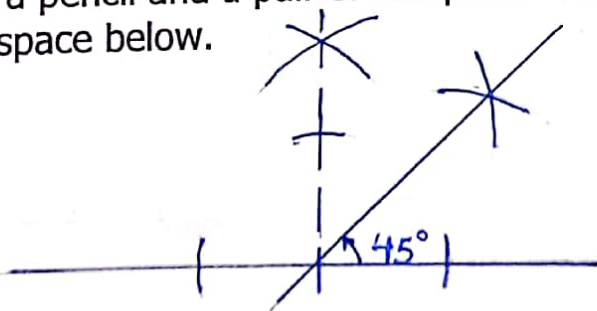


$$\begin{aligned} \text{Area} &= \text{Area} \\ \frac{1}{2} \times b \times h &= \frac{1}{2} \times b \times h \\ \frac{1}{2} \times 48\text{m} \times k &= \frac{1}{2} \times 48\text{m} \times 6\text{m} \\ (9k)\text{m} &= (24 \times 6)\text{m} \\ 9k &= 144 \end{aligned}$$

$$\frac{9k}{9} = \frac{144}{9}$$

$$k = 16\text{m}$$

12. Using a ruler, a pencil and a pair of compasses only, construct an angle of 45° in the space below.



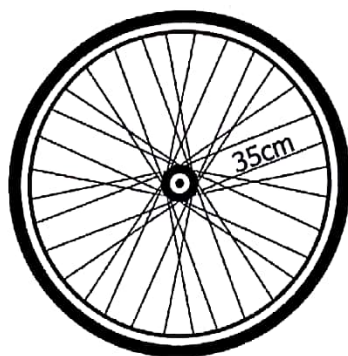
13. Find the median of the following numbers; 3, 0, 5, -4, 2, -6, 4.

Ascending order \Rightarrow -6, -4, 0, 2, 3, 4, 5



\therefore The median is 2

14. Each of the spokes in the bicycle wheel below measures to a radius of 35cm and is connected to the hub in the center of the wheel. Calculate the circumference of the wheel below. (Use π as $\frac{22}{7}$)



$$C = \pi D$$

$$C = \frac{22}{7} \times 70 \text{ cm}$$

$$C = 22 \times 10 \text{ cm}$$

$$\underline{C = 220 \text{ cm}}$$

<u>Diameter</u> $r + r$ $35 \text{ cm} + 35 \text{ cm}$ $= 70 \text{ cm}$
--

15. Change 12400 metres to kilometres.

K H T M d c m
0 0 0 1

$$1000 \text{ m} = 1 \text{ km}$$

$$1 \text{ m} = \frac{1}{1000} \text{ km}$$

$$12400 \text{ m} = \left(\frac{1}{1000} \times 12400 \right) \text{ km}$$

$$= \frac{124}{10}$$

$$= 12.4 \text{ kilometres.}$$

16. Given that $m = 3$, $n = 4$ and $z = 6$. Find the value of $\frac{mn}{z}$.

$$\frac{mn}{z} = \frac{3 \times 4}{6}$$

$$= \frac{12}{6}$$

$$= 2$$

17. The total number of black and blue pens in a box was expressed in roman numeral as **XVIII**. If the probability of picking a blue pen from the box is $\frac{2}{3}$, how many black pens are in the box?

$$XVIII = 18$$

Sample space is 18

$$\text{Probability of picking blue} = \frac{2}{3}$$

$$\text{Probability of picking black} = \frac{3}{3} - \frac{2}{3}$$

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

$$= \frac{1}{3}$$

No. of black pens

$$\frac{1}{3} \times 18$$

$$1 \times 6$$

$$= 6 \text{ black pens}$$

Turn Over

18. The first half of the football match ended at 5:25p.m. after being played for 45 minutes. At what time did the match start?

Starting time = Ending time - Duration.

HRS	MIN	1 hr = 60 min
5	25	(60 + 25) - 45
-	45	85 - 45
4	40	= 40

∴ The match started at 4:40 p.m.

19. Simplify: $\frac{0.12 - 0.06}{0.06}$

(0.12 - 0.06) ÷ (0.06)	
$\begin{array}{r} 0.12 \\ - 0.06 \\ \hline 0.06 \end{array}$	$\begin{array}{l} 0.06 \div 0.06 \\ \frac{6}{100} \div \frac{6}{100} \\ \frac{6}{100} \times \frac{100}{6} \\ \hline 1 \end{array}$

20. A bank gives a simple interest rate of 12% per annum. What will be the interest on sh.4,000,000 banked for 9 months?

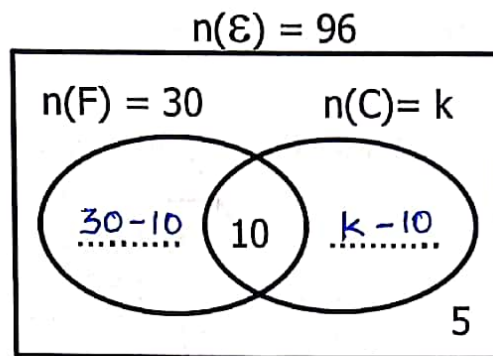
P = Sh. 4,000,000	S.I = P × R × T
R = 12% p.a	S.I = Sh. 4,000,000 × $\frac{12}{100}$ × $\frac{9}{12}$
T = $\frac{9}{12}$ p.a	S.I = Sh. 4,000 × 9
I = ??	S.I = Sh. 36,000

SECTION B: 60 MARKSAnswer **all** questions in this section

Marks for each question are indicated in brackets.

21. In a class of 96 pupils, 30 play Scrabble (S), k play Chess (C) and 10 play both Scrabble and Chess. 5 pupils do not play any of the two games.

(a) Use the above information to complete the Venn diagram. (02 Marks)



(b) Find the value of k .

(02 Marks)

$$\begin{aligned}
 30 + k - 10 + 5 &= 96 \\
 30 + 5 - 10 + k &= 96 \\
 25 + k &= 96 \\
 25 - 25 + k &= 96 - 25 \\
 k &= 71
 \end{aligned}$$

(c) How many pupils play only one game?

(01 Mark)

$$\begin{aligned}
 (30-10) + (k-10) \\
 20 + (71-10) \\
 20 + 61 \\
 81 \text{ pupils}
 \end{aligned}$$

22. Simigo was given Sh.100,000 to buy things on the list shown below to take to school and he was told to keep the change for his pocket money.

✓ 3 dozens of exercise books.
✓ Sugar.
✓ 4 tablets of bathing soap.
✓ 2 tubes of tooth paste.

- (a) Use the information on the above list to complete the table below. (05 Marks)

Item	Quantity	Unit Cost	Total Cost
Books	3 dozens	Sh.9,600	Sh. 28,800
Sugar	4 kg	Sh.4,000	Sh.16,000
Soap	4 tablets	Sh.3,500	Sh. 14,000
Toothpaste	2 tubes	Sh. 2,200	Sh. 4,400
Pocket money			Sh. 36,800
Total Expenditure			Sh.100,000

Books
 $\text{Sh. } 9600 \times 3$
 $= \text{Sh. } 28,800$

Sugar
 $\text{Sh. } 4000 \times 4$
 $= \text{Sh. } 16,000$
 4 kg

Soap
 $\text{Sh. } 3,500 \times 4$
 $= \text{Sh. } 14,000$

Toothpaste
 $\text{Sh. } 2,200 \times 2$
 $= \text{Sh. } 4,400$

Pocket money
 $\text{Sh. } 100,000$
 $-\text{Sh. } 63,200$
 $= \text{Sh. } 36,800$

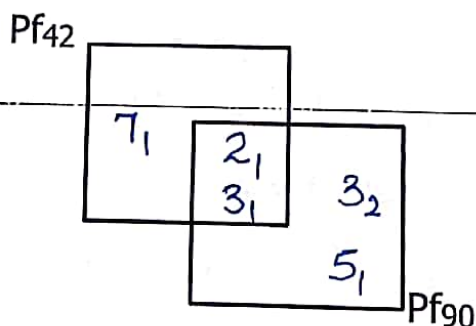
Sub-total
 $\text{Sh. } 28,800$
 $+$
 $\text{Sh. } 16,000$
 $\text{Sh. } 14,000$
 $\text{Sh. } 4,400$
 $= \text{Sh. } 63,200$

23. The prime factors of 42 and 90 are given below.

$$42 = 2_1 \times 3_1 \times 7_1$$

$$90 = 2_1 \times 3_1 \times 3_2 \times 5_1$$

- (a) Represent the above factors on the diagram below. (03 marks)



- (b) Using the above diagram, workout the GCF of the above numbers.

$$\text{G.C.F.} = 2 \times 3$$

$$= 6$$

24. (a) Workout: $324_{\text{five}} + 223_{\text{five}}$.

(02 Marks)

$$\begin{array}{r} \overset{1}{3} \overset{1}{2} 4_{\text{five}} \\ + 223_{\text{five}} \\ \hline 1102_{\text{five}} \end{array}$$

$$\begin{array}{l} 4+3=7 \\ 7 \div 5 = 1 \text{ rem } 2 \\ 5 \div 5 = 1 \text{ rem } 0 \\ 6 \div 5 = 1 \text{ rem } 1 \end{array}$$

- (b) Given that $34_g = 112_{\text{four}}$ find the value of g .

(03 Marks)

$$\begin{array}{|c|c|} \hline g^1 & g^0 \\ \hline 3 & 4 \\ \hline \end{array}$$

$$\begin{array}{|c|c|c|} \hline 4^2 & 4^1 & 4^0 \\ \hline 1 & 1 & 2 \\ \hline \end{array}$$

$$\begin{aligned} (3 \times g^1) + (4 \times g^0) &= (1 \times 4^2) + (1 \times 4^1) + (2 \times 4^0) \\ 3g + 4 \times 1 &= 1 \times 4 \times 4 + 1 \times 4 + 2 \times 1 \\ 3g + 4 &= 16 + 4 + 2 \\ 3g + 4 - 4 &= 22 - 4 \\ 3g &= 18 \\ \underline{3g} &= \underline{18} \\ g &= 6 \end{aligned}$$



25. During a burial ceremony, the family head bought bunches of matooke of the same size each at sh.23,000. Each bunch had 12 clusters and each cluster had 16 fingers on it.

- (a) If 2,880 fingers of matooke were peeled by the village ladies, how Many bunches did the family head buy? (03 Marks)

$$\begin{array}{r} \text{No. of clusters peeled} \\ \underline{2880} \\ 16 \\ \hline 180 \text{ clusters} \end{array}$$

$$\begin{array}{r} \text{No. of bunches peeled} \\ \underline{15} \\ 12 \\ \hline 15 \text{ bunches} \end{array}$$

The family head bought 15 bunches

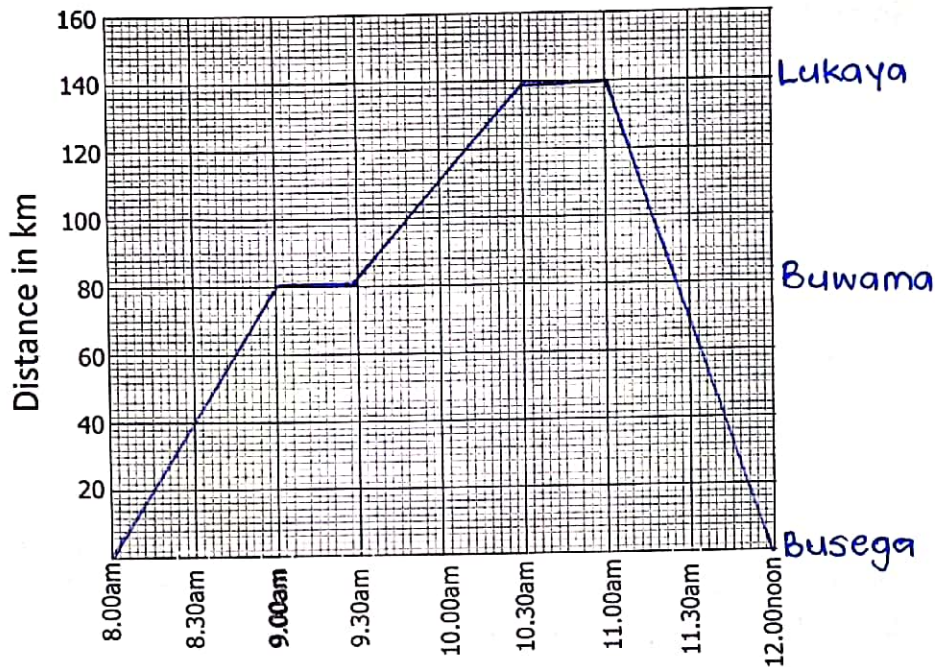
- (b) How much money was spent on buying the bunches of matooke?

(02 Marks)

$$\begin{aligned} 1 \text{ bunch} &\rightarrow \text{sh. } 23,000 \\ 15 \text{ bunches} &\rightarrow \text{sh. } 23,000 \times 15 \\ &= \text{sh. } 335,000 \end{aligned}$$

26. Mugabi left Busega at 8.00a.m driving at 80km/hr for one hour to Buwama. He rested for half an hour at Buwama and then left for Lukaya driving at 60km/hr for one hour. He rested for half an hour at Lukaya and drove back to Busega at a steady speed of 140 km/hr.

(a) Draw Mugabi's journey on the graph provided below. (03 Marks)



Busega to Buwama

$$\begin{aligned} D &= S \times T \\ &= 80 \frac{\text{km}}{\text{hr}} \times 1 \text{ hr} \\ &= 80 \text{ km} \end{aligned}$$

Time

Buwama to Lukaya

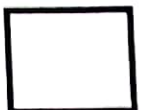
$$\begin{aligned} D &= S \times T \\ &= 60 \frac{\text{km}}{\text{hr}} \times 1 \text{ hr} \\ &= 60 \text{ km} \end{aligned}$$

Return journey

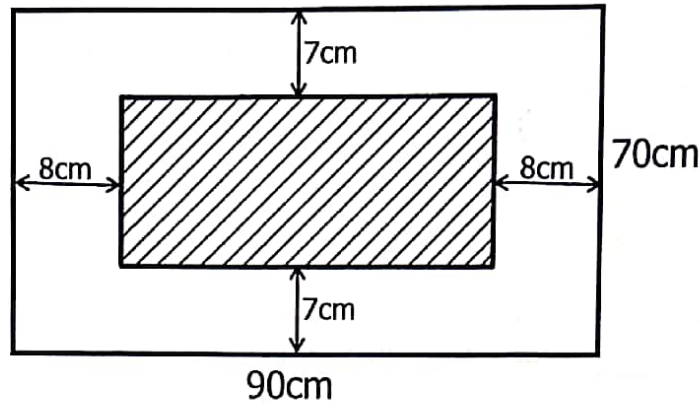
$$\begin{aligned} T &= \frac{D}{S} \\ &= 140 \text{ km} \div 140 \frac{\text{km}}{\text{hr}} \\ &= 1 \text{ hr} \end{aligned}$$

(b) Work out Mugabi's average speed for the whole journey. (03 Marks)

$$\begin{aligned} \text{Average speed} &= \frac{\text{Total distance}}{\text{Total time taken}} \\ &= \frac{350 \text{ km}}{1 \frac{1}{2} \text{ hr}} \\ &= 35 \text{ km/hr} \end{aligned}$$



27. A piece of cloth is laid on a table 90cm long and 70cm wide as shown in the picture below. The area covered by the piece of cloth is shaded.



- (a) Find the length and width of the piece of cloth. (02 Marks)

<u>Length</u> $90\text{cm} - (8\text{cm} + 8\text{cm})$ $90\text{cm} - 16\text{cm}$ <u>$= 74\text{cm}$</u>	<u>Width</u> $70\text{cm} - (7\text{cm} + 7\text{cm})$ $70\text{cm} - 14\text{cm}$ <u>$= 56\text{cm}$</u>
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- (b) Find the area of the table that is not covered by the piece of cloth.

Area uncovered = Area of the table - Area of the cloth (03 Marks)

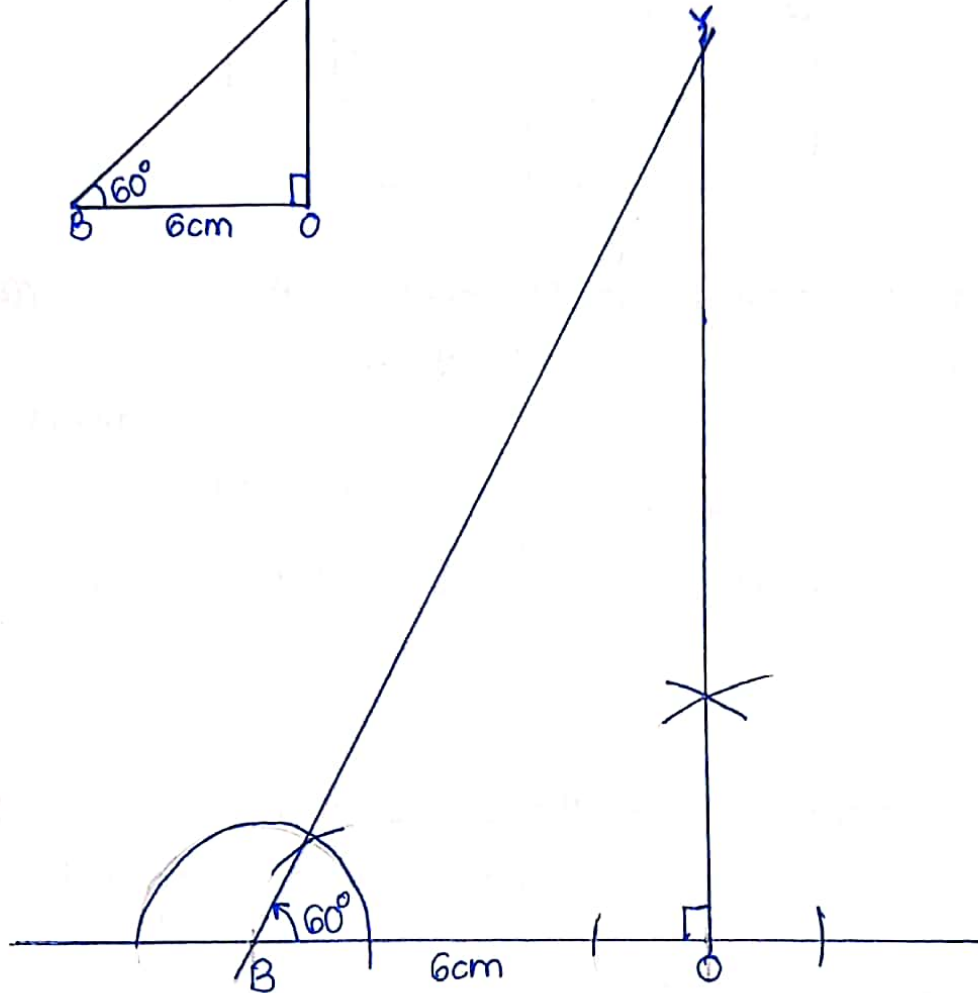
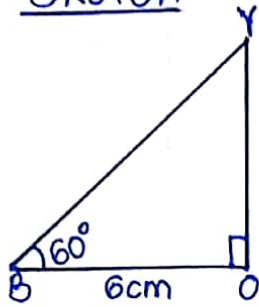
<u>Area of the table</u> $L \times W$ $90\text{cm} \times 70\text{cm}$ 6300cm^2	<u>Area of the cloth</u> $L \times W$ $74\text{cm} \times 56\text{cm}$ 4144cm^2
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Area of the table uncovered

$$\begin{array}{r}
 6300\text{cm}^2 \\
 - 4144\text{cm}^2 \\
 \hline
 2156\text{cm}^2
 \end{array}$$

28. (a) Using a ruler, a pencil and a pair of compasses only, construct triangle **BOY** such that angle **BOY** = 90° , line **BO** = 6cm and angle **OBY** = 60° . (04 Marks)

Sketch.



- (b) Measure the length **BY**.13.3 | 13.4.....cm (01 Mark)



29. Three boys, Amos, Abbey and Arnold are aged $(2x + 5)$, $(3x - 10)$ and $(x + 3)$ respectively. If their total age is 34 years.

(03 Marks)

- (a) Find the value of x .

$$(2x + 5) + (3x - 10) + (x + 3) = 34 \text{ years}$$

$$2x + 3x + x + 5 + 3 - 10 = 34$$

$$6x + 8 - 10 = 34$$

$$6x - 2 = 34$$

$$6x - 2 + 2 = 34 + 2$$

$$6x = 36$$

$$\frac{6x}{6} = \frac{36}{6}$$

$$x = 6$$

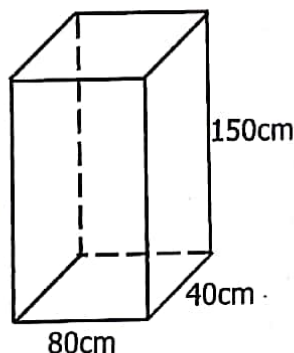
- (b) How old is the youngest boy?

(02 Marks)

Amos	Abbey	Arnold
$2x + 5$	$3x - 10$	$x + 3$
$2 \times 6 + 5$	$3 \times 6 - 10$	$6 + 3$
$12 + 5$	$18 - 10$	
17 years	8 years	9 years

\therefore The youngest boy is 8 years old.

30. A rectangular container measures 80cm long, 40cm wide and 150cm high as shown below.



What is the capacity of the container in litres?

(04 Marks)

$$\begin{aligned} \text{Volume of the container} \\ V &= L \times W \times H \\ &= (80\text{cm} \times 40\text{cm}) \times 150\text{cm} \\ &= 3200\text{cm}^2 \times 150\text{cm} \\ &= 480,000\text{cm}^3 \end{aligned}$$

$$\begin{aligned} \text{Capacity} &= \frac{\text{Volume}}{1000\text{cm}^3} = 1 \text{ litre} \\ &= \frac{480,000\text{cm}^3}{1000} \\ &= 480 \text{ litres} \end{aligned}$$



31. Last year, $\frac{3}{4}$ of the pupils in Primary Six (P.6) were promoted to Primary Seven (P.7) and the rest were retained in P.6.

- (a) If 30 pupils were retained in P.6, find the number of pupils who were promoted to P.7. (04 Marks)

Fraction of pupils retained

$$\frac{4}{4} - \frac{3}{4} = \frac{4-3}{4} = \frac{1}{4}$$

Total no. of pupils in P.6

$$30 \div \frac{1}{4}$$

$$30 \times \frac{4}{1}$$

$$= 120 \text{ pupils}$$

No. of pupils who were promoted

$$\frac{3}{4} \times 120$$

90 pupils

- (b) What percentage of pupils were retained in P.6? (01 Mark)

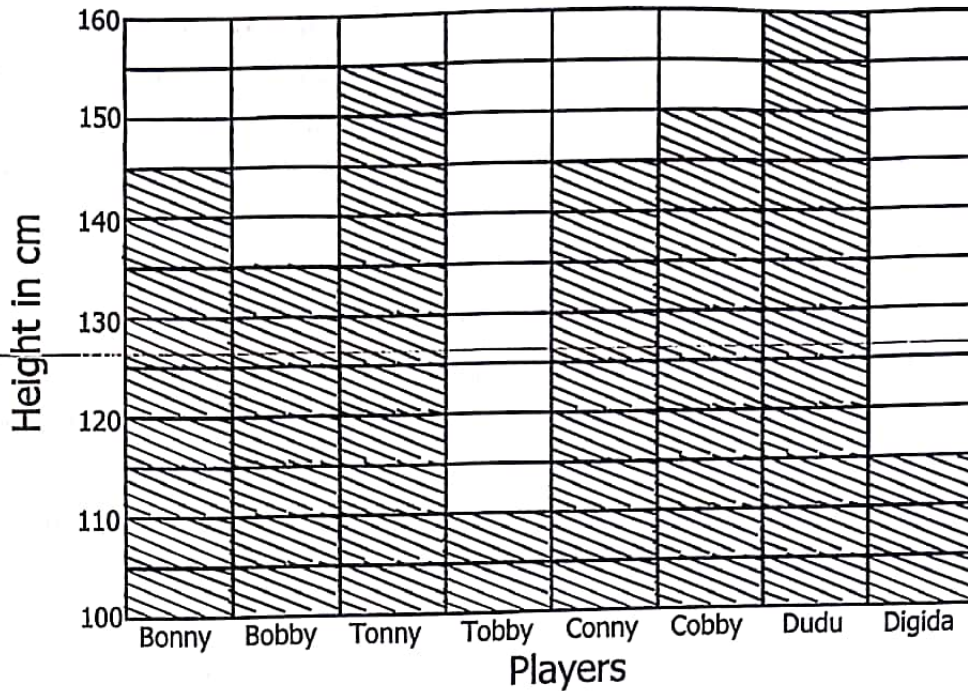
$$\left(\frac{\frac{10}{30}}{\frac{90}{90}} \times 100 \right) \%$$

$$\left(\frac{10 \times 10}{3} \right) \%$$

$$\left(\frac{100}{3} \right) \%$$

$$= 33\frac{1}{3} \%$$

32. The bar graph below shows record of the height of 8 basketball players of the Golden Arrows team.



- (a) Who is the tallest player on the team? (01 Mark)
Dudu is the tallest player on the team.
- (b) Which two players had the same height according to the graph above? (01 Mark)
Bonny and Conny
- (c) What was the range of the players height. (01 Mark)

$$\begin{aligned} \text{Range} &= \text{Tallest} - \text{Shortest} \\ &= 160\text{cm} - 110\text{cm} \\ &= \underline{\underline{50\text{cm}}} \end{aligned}$$
- (d) Calculate the average height for Dudu, Tobby and Cobby. (03 Marks)

$$\begin{aligned} \text{Average} &= \frac{\text{Sum}}{\text{No.}} \\ &= \frac{160\text{cm} + 110\text{cm} + 150\text{cm}}{3 \text{ players}} \\ &= \frac{420}{3} \\ &= \underline{\underline{140\text{cm}}} \end{aligned}$$



END

