SUREKEY

2022 PLE MOCK MARKING GUIDE

MATHEMATICS

OFFICIAL MARKING GUIDE

Let Quality speak for itself

 0700758668

SECTION A: 40 MARKS

Answer **all** questions in this Section

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

1. Workout:

$$\begin{array}{r} {\scriptstyle 1\ \ } \\ 2\ \ 3 \\ \times\ \ 4 \\ \hline 9\ \ 2 \\ \hline \end{array}$$

$4 \times 3 = 12$

$4 \times 2 = 8+1$

$= 9$

Topic: Operation on Whole Numbers Class: P.2 Level: K

2. Correct 6.899 to two decimal places.

O	.	t	h	th	
		^{1}			
6	.	8	9	9	thousandths is nearer to hundredths
+				1	(Round up by adding 1)
6	.	9	0		but maintain the decimal places

6 .899 ⌓ 6.90

Add the value of hundredths

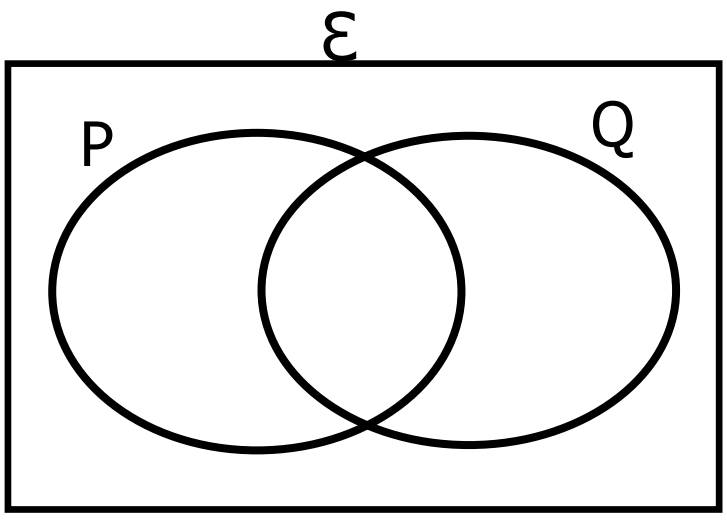
OR:

O	.	t	h	th	
		^{1}			
6	.	8	9	9	
+ 0	.	0	1		
6	.	9	0		

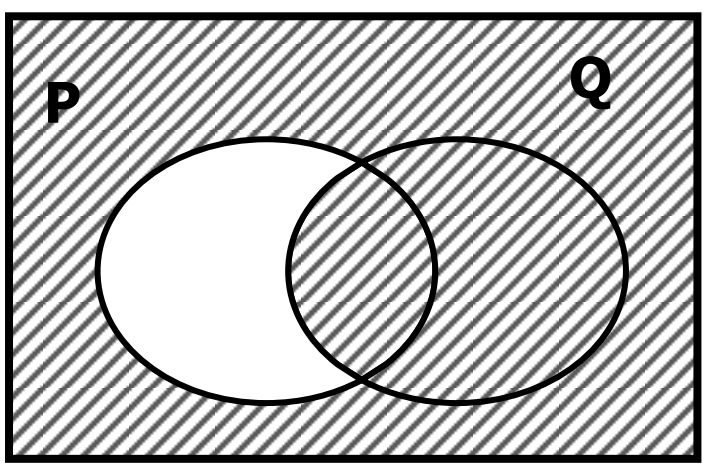
6 .899 ⌓ 6.90

Topic: Operation on Whole Numbers Class: P.5 Level: C

3. In the Venn diagram below, shade $(P-Q)'$



$(P-Q)'$/ apart from P only



Topic: Set Concepts Class: P.6 Level: A

4. Simplify: $18x - 5(3x + 7)$.

$18x - 5(3x + 7).$

$18x - (5 \times 3x + 5 \times 7)$

$18x - (15x + 35)$ **- x + = −**

$18x - 15x - 35$

$= 3x - 35$

Topic: Algebra Class: P.5 Level: C

5. 4 text books cost Sh.24,000. Find the cost of 8 similar text books.

4 text books cost Sh.24,000

1 text book costs Sh.$\frac{24,000}{4}$

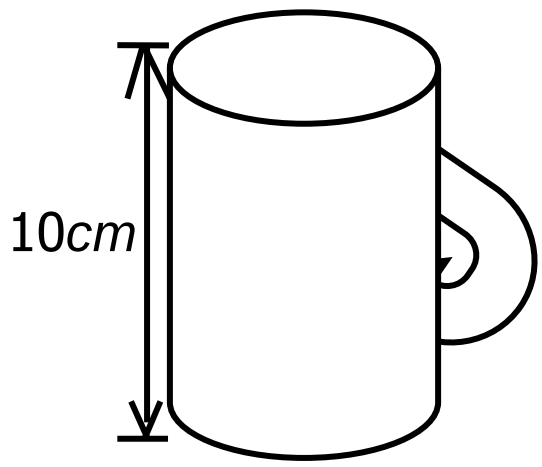
8 text books cost Sh.$\frac{24,000}{4_1} \times \cancel{8}^{2}$

Sh. 24,000 x 2

8 text books cost Sh. 48,000

Topic: Fractions (Proportions) Class: P.6 Level: A

6. Maama Muzeyi prepared 4.5 litres of milk and served it to the children in an orphanage using the cup with a base area of $9cm^2$ shown below.



How many children did she serve?

Volume of the cup

Base area x height

$9cm^2$ x 10cm

$90\ cm^3$

Volume to litres

$1000\ cm^3 = 1$ litre

$90\ cm^3 = \frac{90\ \cancel{cm^3}}{1000\ \cancel{cm^3}}$

$= 0.09$litres

Number of children

4.5 litres ÷ 0.09litres

$\frac{45}{10}$litres ÷ $\frac{9}{100}$ litres

$\frac{\cancel{45}^{5}\ \cancel{litres} \times \cancel{100}}{\cancel{10}\ \ \cancel{9_1\ litres}}$

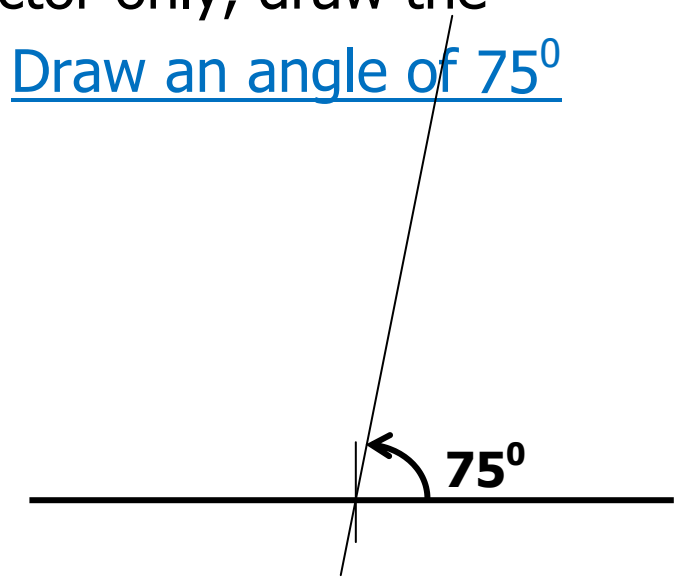
$\frac{5 \times 10}{1 \times 1}$

50 children

Topic: Mass, Length and Capacity Class: P.7 Level: A

7. Using a ruler, a sharp pencil and a protractor only, draw the supplement of 105^0 in the space below.

Draw an angle of 75^0



Let the supplement of 105^0 be k

$105^0 + k = 180^0$

$1050 - 1050 + k = 180^0 - 105^0$

$k = 75^0$

Topic: Lines, Angles and Geometric figures Class: P.6 Level: C

8. $\frac{5}{8}$ of water in a tank lasts a school 45 days. How long will $\frac{2}{3}$ of the water in the tank last the school?

Using proportions

$\frac{5}{8}$ of the tanks lasts 45 days

$\frac{1}{8}$ of the tank will last $45 \div \frac{5}{8}$ days

$\cancel{45}^{9} \times \frac{8}{\cancel{5}_{1}}$ days

9×8

$=72$ days

$\frac{2}{3}$ of the tank will $\cancel{72}^{24} \times \frac{2}{\cancel{3}_{1}}$ days

24×2

$=48$ days

OR: Using parts

$\frac{5}{8}$ parts 45 days

$\frac{8}{8}$ parts $45 \div \frac{5}{8}$ days

$\cancel{45}^{9} \times \frac{8}{\cancel{5}_{1}}$ days

9×8

$=72$ days

$\frac{2}{3}$ parts $\cancel{72}^{24} \times \frac{2}{\cancel{3}_{1}}$ days

24×2

$=48$ days

OR: Finding the total first

Let the total no. of days the tank lasts the school be m

$\frac{5}{8} \times m = 45$ days

$\frac{5}{8} m = 45$ days

$\frac{\cancel{8}^{1}}{\cancel{5}_{1}} \times \frac{\cancel{5}^{1}}{\cancel{8}_{1}} m = \cancel{45}^{9} \times \frac{8}{\cancel{5}_{1}}$

$m = 9 \times 8$ days

$m = 72$ days

$\frac{2}{3}$ of the water will last

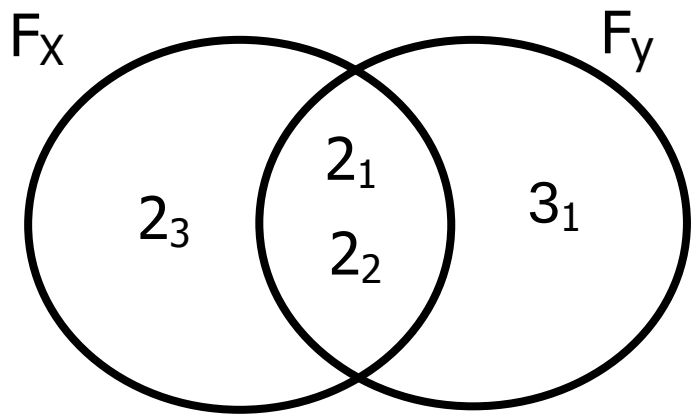
$\frac{2}{\cancel{3}_{1}} \times \cancel{72}^{24}$ days

24×2

$=48$ days

Topic: Fractions (Proportions) Class: P.6 Level: A

9. Factors of **X** and **Y** are given in the Venn diagram below.



Find the value of $F_x \cup F_y$.

$F_x \cup F_y$. is the same as LCM / Union set

L CM = $2_1 \times 2_2 \times 2_3 \times 3_1$
= (2 x 2) x (2 x 3)
= 4 x 6
= 24

Topic: Number Patterns and Sequences Class: P.5 Level: A

10. Given, $1\ 7_n = 15_{ten}$ find the base represented by n.

1 0 **1 0**
$1\ 7_n = 15_{ten}$

$(1 \times n^1) + (7 \times n^0) = (1 \times 10^1) + (5 \times 10^0)$
$n + 7 \times 1 = 1 \times 10 + 5 \times 1$
$n + 7 = 10 + 5$
$n + 7 - 7 = 15 - 7$
$n = 8$

n is representing base eight

OR: **1 0**
$1\ 7_n = 15_{ten}$

$(1 \times n^1) + (7 \times n^0) = 15$
$n + 7 \times 1 = 15$
$n + 7 = 15$
$n + 7 - 7 = 15 - 7$
$n = 8$

n is representing base eight

Topic: Operation on Whole Numbers Class: P.6 Level: C

11. Without dividing, prove whether 4291 is divisible by 9.

Find the sum of the digits given

4 + 2 + 9 + 1
6 + 10
16

Divide the sum by 9

16 ÷ 9 = 1 rem 7

Since the sum gives a remainder, it shows / proves that 4291 is not divisible by 9

Topic: Number Patterns and Sequences Class: P.6 Level: C

12. A torch uses batteries of 1.5 volts. In order for the torch to work, it requires 12 volts. How many such batteries will the torch require?

Number of batteries required

12volts ÷ 1.5volts

$12volts \div \frac{15}{10}\ volts$

$\frac{12^{4}\ \cancel{volts}}{} \times \frac{\cancel{10}^{2}}{\cancel{15}_{3}\ _{1}\ \cancel{volts}}$

4 x 2 batteries

= 8 batteries

Topic: Operation on Whole Numbers Class: P.6 Level: C

13. Workout (42÷6) – (30÷6) using distributive property.

(42÷6) – (30÷6)

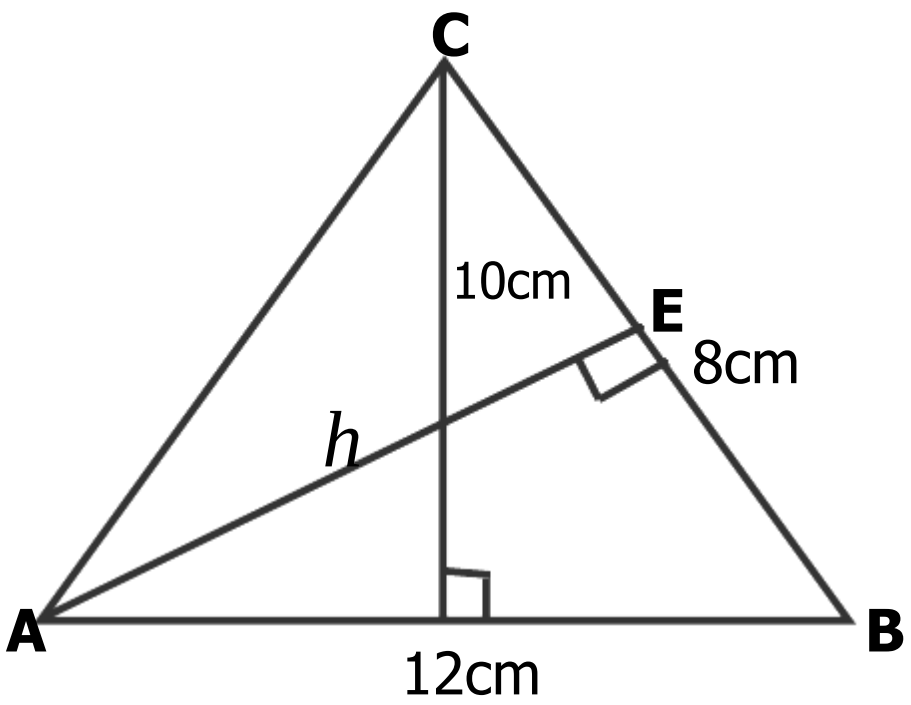
(42 – 30) ÷ 6

12 ÷ 6

= 2

Topic: Operation on Whole Numbers Class: P.6 Level: C

14. Find the length **AE** in the figure below.



Area of AEB = Area of ACB

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

$\frac{\cancel{8}^{4}cm \times h}{\cancel{2}_{1}} = \frac{\cancel{12}^{6}cm \times 10\ cm}{\cancel{2}_{1}}$

4cm x h = 6cm x 10 cm

4h cm = 60 cm x cm

$\frac{\cancel{4}h\ \cancel{cm}}{\cancel{4cm}} = \frac{\cancel{60}^{15}\ \cancel{cm} \times cm}{\cancel{4}_{1}\ \cancel{cm}}$

h = 15 cm

Topic: Length, Mass and Capacity Class: P.6 Level: A

15. The probability of Arsenal FC winning a game is $\frac{3}{5}$. If the team wins 9 games, how many games did Arsenal lose that season?

Find the no. of games played a season

$9 \div \frac{3}{5}$

$9^{3} \times \frac{5}{3_{1}}$

3×5

$= 15$ games

Fraction for losing

$\frac{5}{5} - \frac{3}{5} = \frac{2}{5}$

Games lost

$\frac{2}{5_{1}} \times 15^{3}$

2×3

$= 6$ games

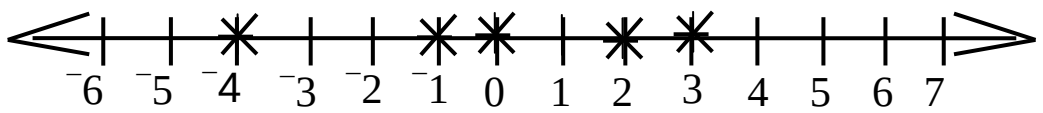
Topic: Data Handling Class: P.5 Level: A

16. The digital clock watch below shows the time Papa set to wake him up for revision in the morning. Use it to fill in the spaces below.

Papa woke up at ..22.. minutes to ..11.. o'clock in the morning.

Topic: Telling Time Class: P.4 Level: C

17. Given, $^{-}4$, 3, $^{-}1$, 0 and 2. Arrange in ascending order.



Ascending order = $\{^{-}4, ^{-}1, 0, 2, 3\}$

Topic: Integers Class: P.5 Level: C

18. The average height of four girls, Sarah, Jane, Mary and Annet is 120cm. Sarah is 100cm and Jane is 130cm tall. Find the height of Mary if Jane is as tall as Annet.

Total height of four boys
4 x 120cm
=480cm

Total height of Sarah and Jane
100cm + 130cm
=230cm

Total height of Mary and Annet
480cm – 230cm
=150cm

But Jane is as tall as Annet
Annet = 130cm

Mary's height
150cm – 130cm
= 20cm

Topic: Data Handling Class: P.6 Level: C

19. Nassiwa is m years but 17 years younger than Reachel. How old is Nassiwa if their total age is 31 years?

Nassiwa is m years
Reacheal is m +17 years
Total age 31 years

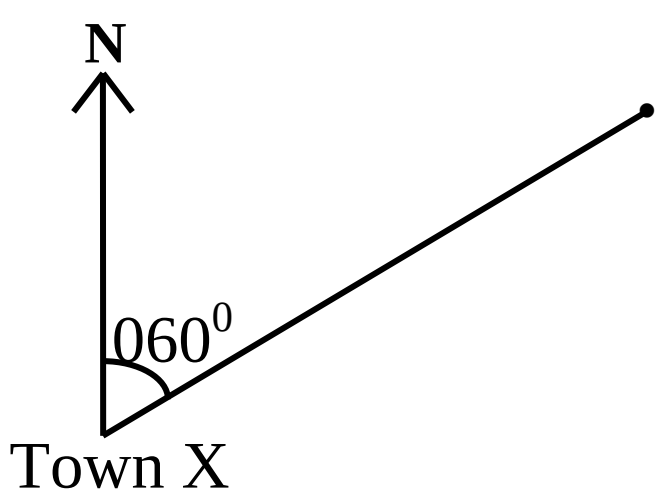
m + m + 17 = 31 years
2m + 17 = 31

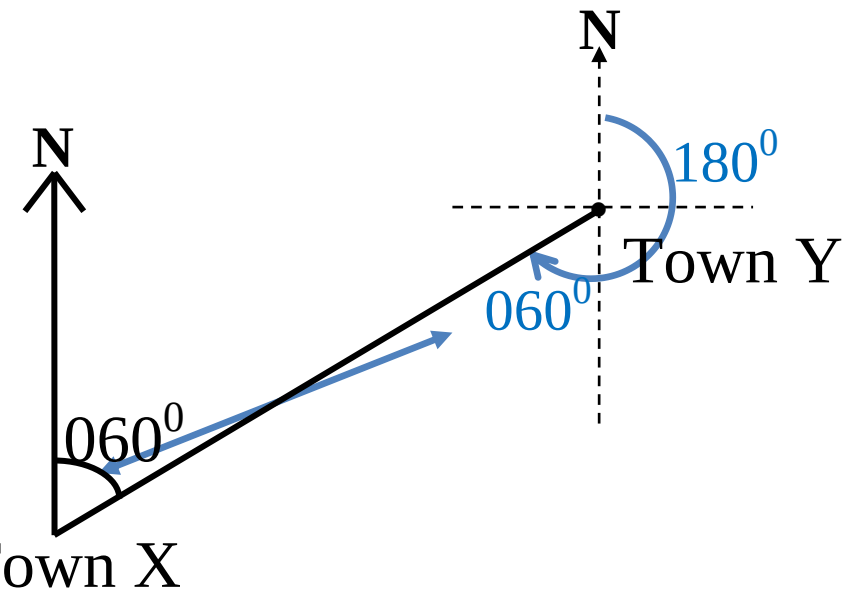
$2m + 17 - 17 = 31 - 17$
$2m = 14$
$\frac{\cancel{2}^{1}m}{\cancel{2}_{1}} = \frac{\cancel{14}^{7}}{\cancel{2}_{1}}$
$m = 7$

Nassiw is 7 years old

Topic: Algebra Class: P.6 Level: A

20. What is the bearing of **Town X** from **Town Y** in the diagram below?





Bearing of X from Y

$180^0 + 060^0$

$= 240^0$

Topic: Lines, Angles and Geometric figures Class: P.7 Level: A

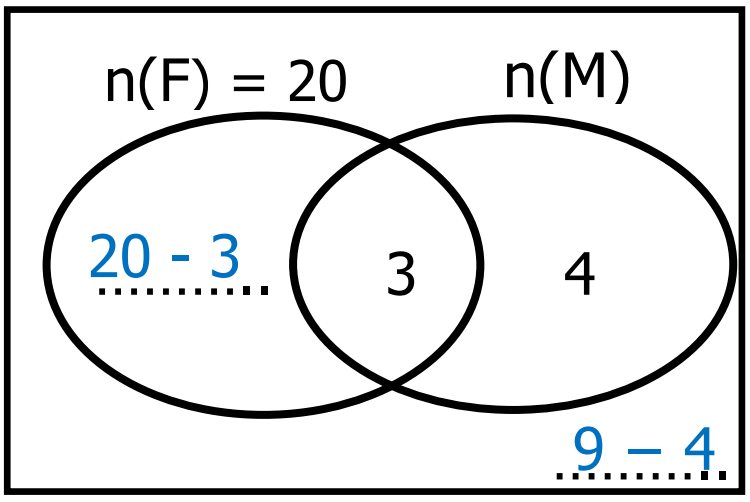
SECTION B: 60 MARKS

Answer **all** questions in this section

Marks for each question are indicated in brackets

21. During a birthday, 20 candidates drank Fanta (F), 4 drank Mrinda (M) only, 3 drank both drinks while 9 candidates did not like Fanta.

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



(b) Find the probability of picking a candidate who drank only one type of Soda. (02 Marks)

$$\text{Probability} = \frac{\text{Expected chances}}{\text{Total chances}}$$

Expected chances	Total chances
(20 – 3) + 4	17 + 3 + 4 + (9 – 4)
17 + 4	24 + 5
21	29

$$P = \frac{n(E)}{n(SS)} = \frac{21}{29}$$

Topic: Set Concept Class: P.6 Level: C & C

22. (a) Workout: $\frac{2}{3} - \frac{1}{4} + \frac{1}{6}$. (03 Marks)

$\frac{2}{3} - \frac{1}{4} + \frac{1}{6}$ BODM**AS**

$\left(\frac{2}{3} + \frac{1}{6}\right) - \frac{1}{4}$ LCD of 3 & 6 = 6

$\left(\frac{4 + 1}{6}\right) - \frac{1}{4}$

$\frac{5}{6} - \frac{1}{4}$ LCD of 6 & 4 = 12

$\frac{10 - 3}{12}$

$= \frac{7}{12}$

(b) Workout: $\frac{2.4 \times 0.6}{0.12}$ (02 Marks)

$(2.4 \times 0.6) \div (0.12)$

$\left(\frac{24}{10} \times \frac{6}{10}\right) \div \left(\frac{12}{100}\right)$

$\frac{\cancel{24}^{2}}{\cancel{10}} \times \frac{6}{\cancel{10}} \times \frac{\cancel{100}}{\cancel{12}_{1}}$

$2 \times 6 \times 1$

$= 12$

Topic: Fractions Class: P.6 Level: C & C

23. John went for shopping and bought the following items

4 bottles of 500ml of Soda at Sh.2,500 each litre.
500g of salt at Sh.9,000 for every 1½kg.
3 sachets of cooking oil at Sh.3,500 for every 7 sachets.

How much did he pay for all the items she bought? (05 Marks)

Soda

1000ml = 1 litre

4 bottles x $\frac{\cancel{500}}{\cancel{1000}}$ x Sh.250$\cancel{0}$

$4 \times 5 \times$ Sh.250

$20 \times$ Sh.250

= Sh.5,000

Cooking Oil

7 sachets cost Sh.3,500

1 sachet cost Sh.$\frac{^{5}\cancel{35}00}{\cancel{7}_{1}}$

= Sh.500

3 sachets will cost 3 x Sh.500

= Sh.1,500

OR: $\frac{3}{\cancel{7}_{1}} \times$ Sh.$\cancel{35}^{5}00$

3 x Sh.500

= Sh.1500

Salt

1000g = 1kg

$\frac{500}{1000}$ x Sh.9000 ÷ 1½

$\frac{500}{1000}$ x Sh.9000 ÷ $\frac{3}{2}$

$\frac{500}{\cancel{1000}}$ x Sh.$\cancel{9}^{3}\cancel{000}$ x $\frac{2}{\cancel{3}_{1}}$

500 x Sh.3 x 2

Sh.1500 x 2

= Sh.3,000

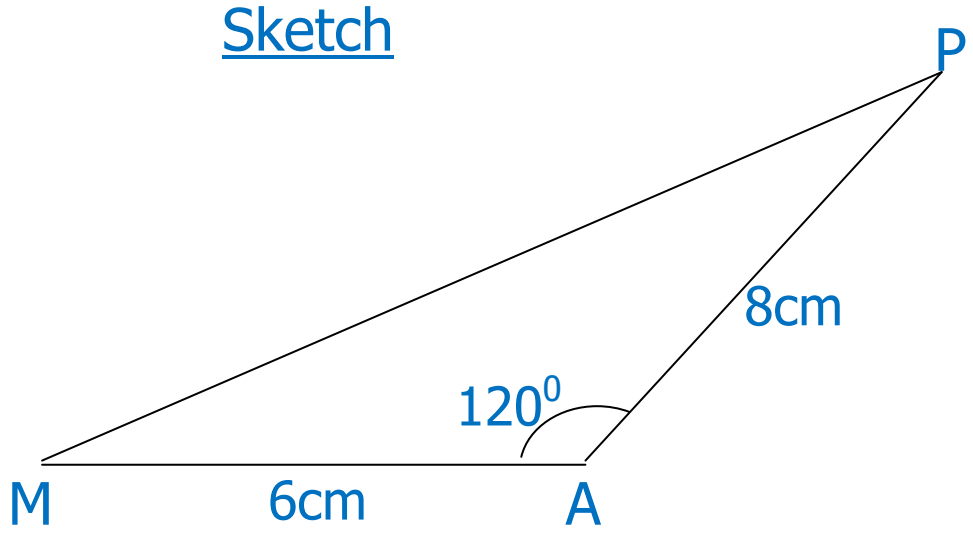
Total Expenditure

Sh.5,000
Sh.3,000
+ Sh.1,500
Sh.9,500

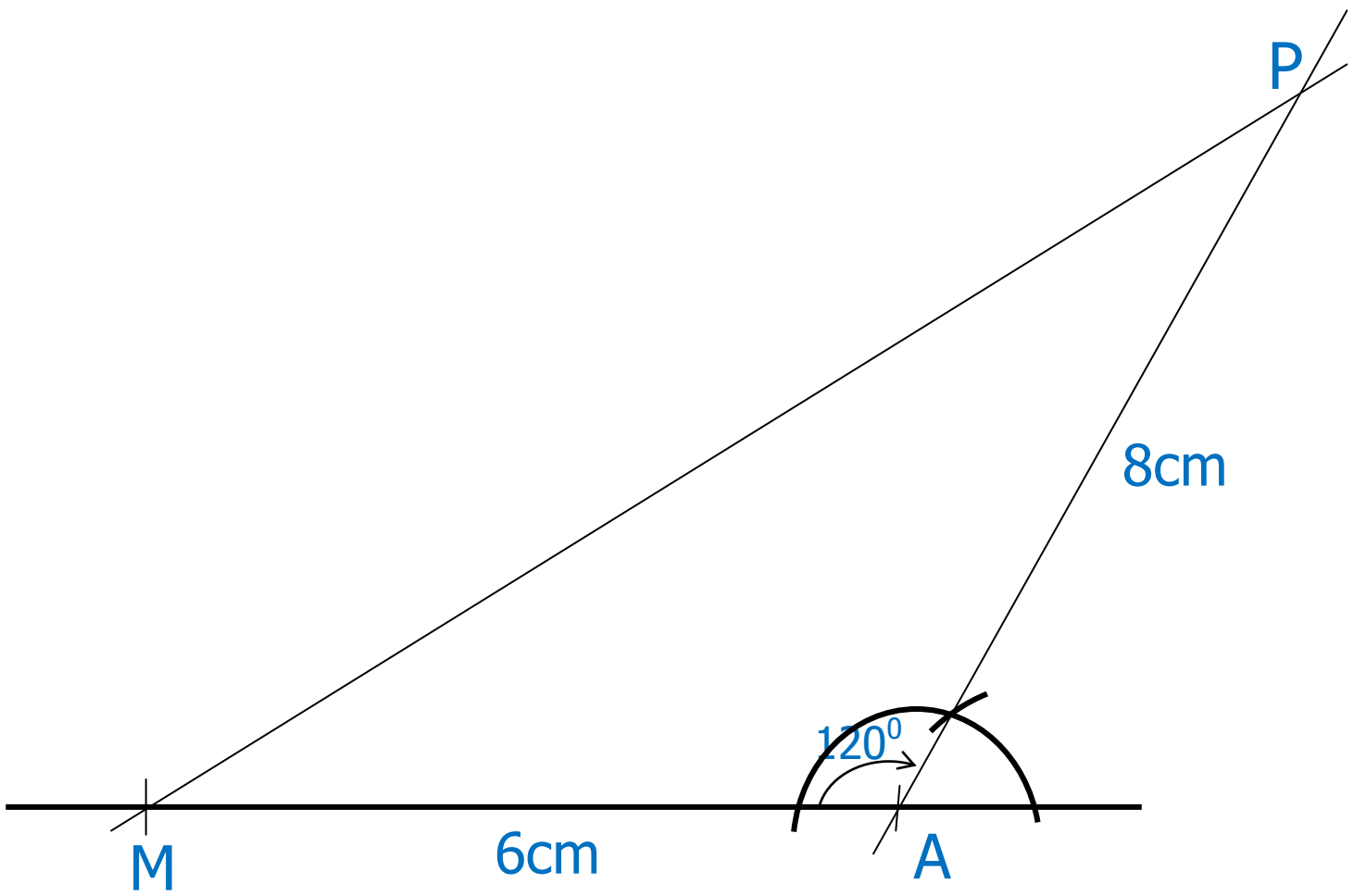
John paid Sh.9,500 for all items

24. (a) Using a ruler, a pencil and a pair of compasses only, Construct triangle MAP such that AP = 8cm, angle MAP = 120^0 and MA = 6cm. (04 Marks)

Sketch



Actual diagram

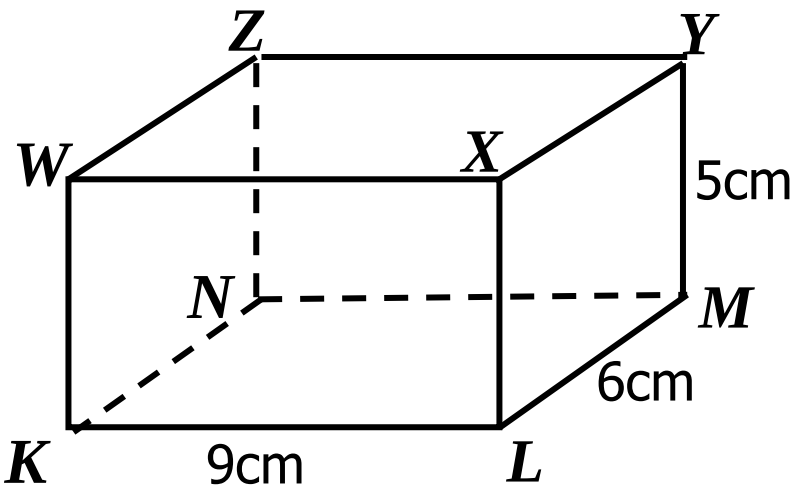


(b) Measure length MP 12, 12.1 or 12.2cm (01 Mark)

(c) Measure angle APM. 25^0 (01 Mark)

Topic: Lines, Angles and Geometric figures Class: P.7 Level: A

25. The diagram below shows a cuboid $KLMNWXYZ$ in which $\overline{KL}$ = 9cm. $\overline{LM}$ = 6cm and $\overline{MY}$ = 5cm.

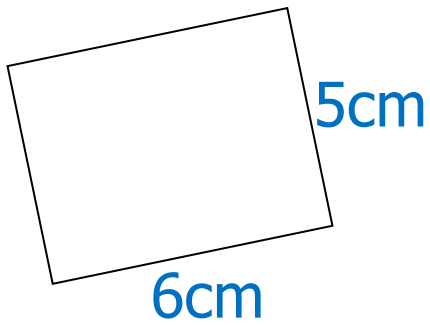


(a) Determine the length of lines KNZ and LMN. (02 Marks)

(i) KNZ = 6cm + 5cm = 11cm

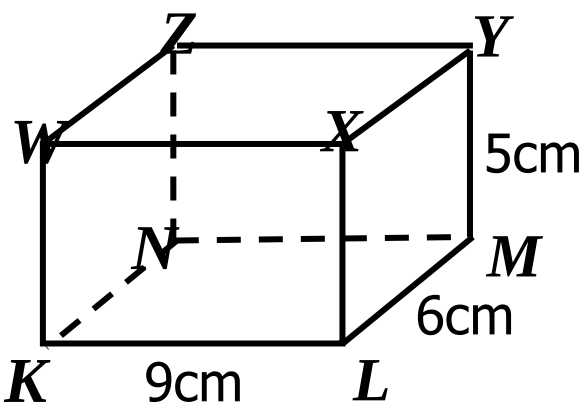
(ii) LMN = 6cm + 9cm = 15cm

(b) Calculate the area of rectangle $LXYM$. (02 Marks)



A = L x W
A = 6cm X 5cm
A = 30cm^2

(c) Workout the volume of the cuboid $KLMNWXYZ$. (02 Marks)



V = L x W x H
V = (9cm x 6cm) X 5cm
V = 54cm^2 x 5cm
V = 270cm^3

Topic: Length, Mass and Capacity Class: P.4 Level: A

26. A trader bought 20 watermelons at Sh.2,000 each but x of them got spoilt. He sold the remaining melons at Sh.3,000 each and made a profit of Sh.8,000. Calculate the value of x. (03 Marks)

Selling price	– Buying price	= Profit
Sh.3,000(20– x)	– Sh.2,000(20)	= Sh.8,000
Sh.60,000 – Sh.3,000 x	– Sh.40,000	= Sh.8,000
Sh.60,000 – Sh.40,000 – Sh.3,000 x		= Sh.8,000
Sh.20,000 – Sh.3000 x		= Sh.8000
Sh.20,000 – Sh.3000 x		= Sh.8000
Sh.20,000– Sh.20,000 – Sh.3000 x		= Sh.8000– Sh.20,000
– Sh.3000 x		= –Sh.12,000

$$\frac{-\text{Sh.3000}\,x}{-\text{Sh.3000}} = \frac{-\text{Sh.12}^{4}\text{,000}}{-\text{Sh.3,000}_{1}}$$

$$x = 4$$

Topic: Money Class: P.7 Level: C

27. The sums of the values in the table below are the same vertically, horizontally and diagonally. Fill in the missing values to complete the table. (05 Marks)

a	b	28	17
25	20	19	c .....
d	24	13	18
26	15	e	29

Considering full diagonal the sum will be,

$17 + 19 + 24 + 26 = 86$

2nd row

$25 + 20 + 19 + c = 86$

$64 + c = 86$

$64 - 64 + c = 86 - 64$

$c = 22$

3rd row

$d + 24 + 13 + 18 = 86$

$d + 55 = 86$

$d + 55 - 55 = 86 - 55$

$d = 31$

4th row

$26 + 15 + e + 29 = 86$

$e + 70 = 86$

$e + 70 - 70 = 86 - 70$

$e = 16$

1st column

a + 25 + 31 + 26 = 86

a + 82 = 86

a + 82 – 82 = 86 – 82

a = 4

2nd column

b + 20 + 24 + 15 = 86

b + 59 = 86

b + 59 – 59 = 86 – 59

b = 27

Topic: Operation on Whole Numbers Class: P.3 Level: C

28. The table below shows the transport fares charged to the 60 passengers travelling to different areas along Mbarara Road by Link bus.

Route	**Transport fare**
Kampala to Lukaya	Sh.10,000
Kampala to Masaka	Sh.12,000
Kampala to Kinoni	Sh.15,000
Kampala to Lyantode	Sh.20,000
Kampala to Mbarara	Sh.25,000

(a) If 6 passengers got out at Lukaya, 18 got out at Masaka and 5 boarded going to Mbarara, then 15 got out when they reached Kinoni. How much money was collected by the bus from Kampala to Kinoni? (02 Marks)

To Lukaya

1 passenger pays Sh.10,000

6 passengers pay Sh.10,000 x 6

= Sh.60,000

To Masaka

1 passenger pays Sh.12,000

18 passengers pay Sh.12,000 x 18

= Sh.216,000

To Kinoni

1 passenger pays Sh.15,000

15 passengers pay Sh.15,000 x 15

= Sh.225,000

Total collection

Sh.225,000

Sh.216,000

+ Sh. 60,000

Sh.501,000

(b) How many passengers reached Mbarara town? (01 Mark)

60 – (6 + 18 + 15) + 5

60 – (39) + 5

60 + 5 – 39

65 – 39

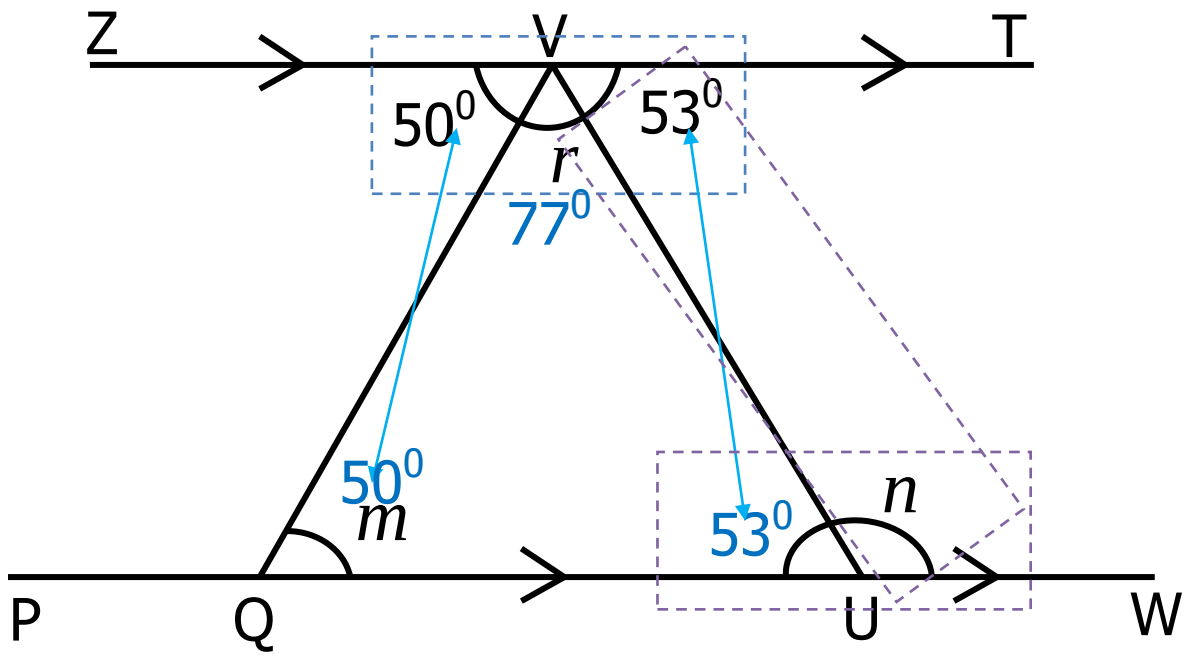
26 passengers reached Mbarara town

(c) How much was the DOS supposed to pay if he travelled with 4 other teachers from Kampala to Kinoni? (02 Marks)

DOS + 4 teachers
1 passenger pays Sh.15,000
5 passengers pay Sh.15,000 x 5
= Sh.75,000

Topic: Money Class: P.5 Level: A

29. In the figure below, ZVT is parallel to PQUW. Angle ZVQ = 50^0 and angle TVU = 53^0.



(a) What is the size of angle r in degrees? (02 Marks)

$50^0 + r + 53^0 = 180^0$ (angles on a straight line)
$r + 103^0 = 180^0$
$r + 103^0 - 103^0 = 180^0 - 103^0$
$r = 77^0$

OR:

$50^0 + 53^0 + r = 180^0$ (angles sum of a△)
$103^0 + r = 180^0$
$103^0 - 103^0 + r = 180^0 - 103^0$
$r = 77^0$

(b) Find the value of n. (01 Mark)

$n + 53^0 = 180^0$ (angles on a straight line)
$n + 53^0 - 53^0 = 180^0 - 53^0$
$n = 127^0$

OR:

$53^0 + n = 180^0$ (co-interior angles)
$53^0 - 53^0 + n = 180^0 - 53^0$
$n = 127^0$

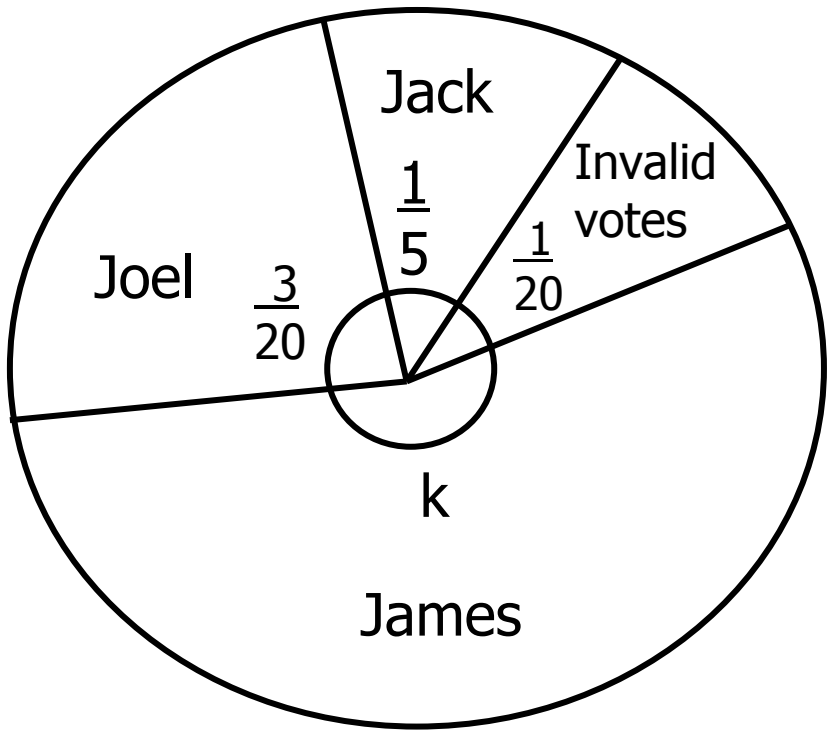
(c) Calculate the size of angle VQU. (02 Marks)

$77^0 + 53^0 + m = 180^0$ (int angles sum of a△)
$130^0 + m = 180^0$
$130^0 - 130^0 + m = 180^0 - 130^0$
$m = 50^0$

OR:

$m = 50^0$ (alternate angles)
Angle VQU (m) $= 50^0$

30. The Pie-Chart below shows how each of the 3 boys got the votes in the Prefectorial Elections.



(a) If James got 324 more votes than Joel, how many invalid votes were counted? (05 Marks)

Value of k

$\frac{1}{5} + \frac{1}{20} + \frac{3}{20} + k = 1$ LCD = 20

$\frac{1}{\cancel{5}_1} \times \cancel{20}^{4} + \frac{1}{\cancel{20}_1} \times \cancel{20}^{1} + \frac{3}{\cancel{20}_1} \times \cancel{20}^{1} + k \times 20 = 1 \times 20$

$4 + 1 + 3 + 20k = 20$

$8 + 20k = 20$

$8 - 8 + 20k = 20 - 8$

$20k = 12$

$\frac{{}^{1}\cancel{20}k}{\cancel{20}_1} = \frac{\cancel{12}^{3}}{\cancel{20}_5}$

$k = \frac{3}{5}$

Diff in fractions

James - Joel

$\frac{3}{5} - \frac{3}{20}$ LCD = 20

$\frac{(4x3) - (1x3)}{20} = \frac{12 - 3}{20} = \frac{9}{20}$

Total number of votes

$324 \div \frac{9}{20}$

$\cancel{324}^{36} \times \frac{20}{\cancel{9}_1}$

36 x 20

720 votes

Invalid votes

$\frac{1}{\cancel{20}_1} \times \cancel{720}^{36}$

1 x 36

36 votes

(b) How many votes did Jack get? (01 Mark)

$\frac{1}{\cancel{5}_1} \times \cancel{720}^{144}$

1 x 144

144 votes

31. Shukuran kneaded a rectangular piece of dough of length 84cm and width 56cm shown below to cut out circular pancakes.

(a) If she cut 6 pancakes along the length and 4 pancakes of the same size along the width. Find the circumference of one of the circular pancake she cut out. (02 Marks)

(Use $\pi = \frac{22}{7}$)

Diameter
$\cancel{84}^{14}$cm
$\cancel{6}_{1}$
14cm

Circumference
πD
$\frac{22}{7} \times \cancel{14}^{2}$cm
$\cancel{7}_{1}$
22 x 2cm
= 44cm

(b) Calculate the area of the unused piece of dough after Shukuran cut out all the pancakes. (03 Marks)

Area of the rectangular dough
Length x Width
84cm x 56cm
= 4704cm^2

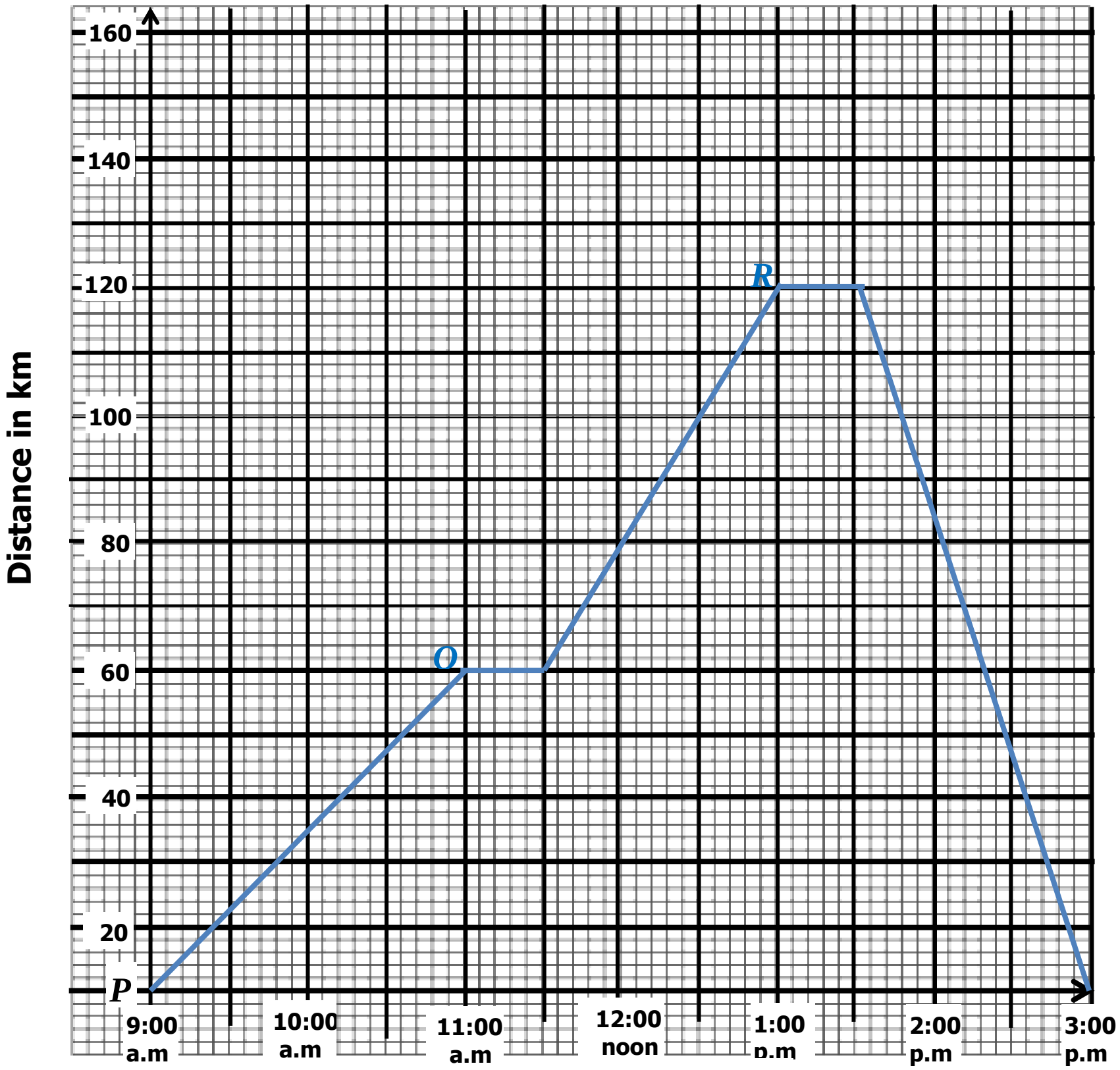
No. of pancakes
6 x 4 = 24 pancakes

Area of the circular pancakes
πr^2 x 24 pancakes
$\frac{22}{7}_{1} \times \cancel{14}^{2}$cm x $\cancel{14}^{7}$cm x $\cancel{24}^{12}_{1}$
22 x 2cm x 7cm x 12
44cm x 84cm
= 3696cm^2

Area of the unused dough
4704 cm^2
– 3696 cm^2
1008 cm^2

32. Mary left town ***P*** at 9:00a.m. and drove at 30 km/h for 2 hours to town ***Q***. She rested for half an hour at town *Q*. She left town Q and drove for 1½ hours at 40 km/h to town ***R***. She rested for half an hour at town R. She then left town R and drove back to town P at 80Km/h.

(a) Represent Mary's journey on the graph below. (03 Marks)



Distance covered **P to Q**

Speed x time

$30\frac{km}{h} \times 2\cancel{h}$

30km x 2

= 60km

Distance covered **Q to R**

Speed x time

$\cancel{40}^{20}\frac{km}{\cancel{h}} \times \frac{3\cancel{h}}{\cancel{2}_{1}}$

20km x 3

= 60km

Time for the return journey **Q back to P**

$\frac{\text{Distance}}{\text{Speed}}$

$\frac{\cancel{120}^{3}\cancel{km}}{\cancel{80}^{2}\ \cancel{km}/h}$

$\frac{3}{2}$h or 1½hours

(b) Calculate her average speed for the whole journey. (02 Marks)

$$\text{Average speed} = \frac{\text{Total distance}}{\text{Total time}}$$

$$\frac{120\text{km} + 120\text{km}}{6 \text{ hours}}$$

$$\frac{\cancel{240}^{40}\text{km}}{\cancel{6}_{1} \text{ h}}$$

$$= 40\text{km/h}$$