P.7 B.O.T 1 MATHEMATICS GUIDE 2023

1.
$$\begin{array}{r} 347 \\ +\ 152 \\ \hline 499 \end{array}$$
$7+2=9$
$4+5=9$
$3+1=4$

2. Eleven thousand, eleven

3.
$-7 - {}^{+}2$
$-7 - (+2)$
$-7 - 2$
-9

-ves
= =
=
=
=
=
=
-9

4. 1, 2, 6, 15, 31, 56, 92

$1+1=2$ $\quad 15+16=31$
$2+4=6$ $\quad 31+25=56$
$6+9=15$ $\quad 56+36=92$
(Addition of square numbers.)

5. $(R \cup S)' = \{8, 9\}$

$n(R \cup S)' = 2$

6. $5 \times 5 + 1$ mangoes
$25 + 1$ mangoes
26 mangoes

7. 150 min as hours
60 min = 1 hr.
1 min = $\frac{1}{60}$
150 min = $\left(\frac{1}{\cancel{60}_{2}} \times \cancel{150}^{5}\right)$ hrs
$\frac{5}{2}$ hrs
$\therefore$ 150 min = $2\frac{1}{2}$ hrs

8. $\frac{3}{4} - \frac{2}{5}$ (LCM = 20)
$\frac{\frac{3}{\cancel{4}_{1}} \times \cancel{20}^{5} - \frac{2}{\cancel{5}_{1}} \times \cancel{20}^{4}}{20}$
$\frac{15-8}{20} = \frac{7}{20}$

9. Accept the correct angle measured using a protractor.

10. 1 dozen = 12 books
$\frac{1}{2}$ dozen = $\frac{1}{\cancel{2}_{1}} \times \cancel{12}^{6}$ books
= 6 books
Cost for 6 books
Sh. 5000
$\times$ 6
Sh. 30,000

11. No of notes
AR 4327 2016
− AR 4327 1107
99 + 1
100 notes
Amount
Sh. 50,000 × 100
Sh. 5,000,000

12. LCM of 6 and 9

2	6	9
3	3	9
3	1	3
	1	1

$2 \times 3 \times 3$
6×3
18

13. $4m - n + m - 3n$
$4m + m - 3n - n$
$5m - 4n$

14. Time = $\frac{D}{S} \times$
$\frac{\cancel{200}^{5}\ km}{\cancel{80}_{2}\ km/hr}$
$\frac{5}{2}$ hrs
$\therefore$ Time = $2\frac{1}{2}$ hours

15. $3y + 36^\circ = 90^\circ$
$3y + 36^\circ - 36^\circ = 90^\circ - 36^\circ$
$3y = 54^\circ$
$\frac{\cancel{3}^{1}}{\cancel{2}_{1}} y = \frac{\cancel{54}^{18}}{\cancel{3}_{1}}^\circ$
$y = 18^\circ$

16.

Old	New
100%	125%
Sh. 120,000	?

100% rept Sh. 120,000
1% repts Sh. $\frac{120,0\cancel{00}}{1\cancel{00}}$
1% repts Sh 1200
New Salary
Sh. 1200 × 125
$\begin{array}{r} 12500 \\ \times\ 12 \\ \hline 025000 \\ +\ 125000 \\ \hline 150,000 \end{array}$
Sh. 150,000

17.
3 kg cost Sh. 12,000
1 kg costs Sh. $\frac{\cancel{12,000}^{4000}}{\cancel{3}_{1}}$
1 kg costs Sh. 4000
Cost for $1\frac{1}{2}$ kg
Sh. $\cancel{4000}^{2000} \times \frac{3}{\cancel{2}_{1}}$
Sh. 6,000

18. $\frac{1}{2}\pi r^2$
$\frac{1}{\cancel{2}_{1}} \times \frac{\cancel{22}^{11}}{\cancel{7}_{1}} \times \cancel{7}^{1} \times 7$
11×7
77

19. πr^2 = Base area

$\frac{22}{7} \times r^2 = 61600 cm^2$

$\frac{22}{7} \times r^2 \times 7 = 61600 cm^2 \times 7$

$\frac{22}{22} r^2 = \frac{61600 cm^2 \times 7}{22}$ (2800, 5600)

$r^2 = 2800 cm^2 \times 7$

$r^2 = 4 \times 700 cm^2 \times 7$

$r^2 = 400 cm^2 \times 7 \times 7$

$\sqrt{r^2} = \sqrt{(20 \times 20)} \times \sqrt{(7 \times 7)} cm^2$

$\sqrt[2]{r^2} = \sqrt[2]{20^2} \times \sqrt[2]{7^2} \times \sqrt[2]{cm^2}$

$r = 20 \times 7$ cm

$r = 140$ cm

20. Number of small sacks

(50×100) g

250 g

5

2×100

200 small sacks.

Selling price for the sack of sugar

Sh. 1200×200

Sh. 120000

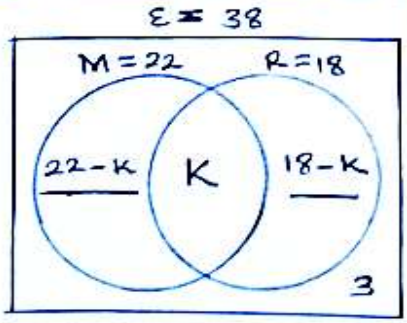
$\times$ 2

Sh. 240,000

SECTION B

21. a)

$\varepsilon = 38$



(b) Value of K

$22 - K + K + 18 - K + 3 = 38$

$22 + 18 + 3 - K = 38$

$43 - K = 38$

$43 - 43 - K = 38 - 43$

$\frac{-K}{-1} = \frac{-5}{-1}$

$K = 5$

(c) Only one type of food.

$22 - K + 18 - K$

$22 - 5 + 18 - 5$

$17 + 13$

30 pupils

22. a)

1 1 1

1 1 0 1 two

+ 1 1 1 two

1 0 1 0 0 two

(b) 43_{five}

$(4 \times 5^1) + (3 \times 5^0)$

$4 \times 5 + 3 \times 1$

$20 + 3$

23_{ten}

Base	No	Rem
2	23	
2	11	1
2	5	1
2	2	1
	1	0

$\therefore 43_{five} = 10111_{two}$

23 a)

Maize flour

Sh. 2500

$\times$ 3

Sh. 7,500

Sugar	Milk
Sh. 4800	
$\times$ 2	
Sh. 9,600	Sh. 3,000

Total Expenditure

Sh. 7,500

Sh. 9,600

+ Sh. 3,000

Sh. 20,100

(b) Balance.

Sh. 30,000

− Sh. 20 100

Sh. 9,900

24 a)

(i) Value of y

$y \times 2 \times 3 = 18$

$y \times \frac{6}{6} = \frac{18}{6}$

$y = 3$

(ii) Value of W

$W = 2 \times 3 \times 5$

$W = 6 \times 5$

$W = 30$

(b) LCM

$30 \times y$

30×3

90

25. a)

Marks	50	80	70	90
No of pupils	4	2	3	1

(b) Mean mark

$\frac{\text{Sum of all data}}{\text{No of pupils}}$

$\frac{(50 \times 4) + (80 \times 2) + (70 \times 3) + 90}{10}$

$20\phi + 16\phi + 21\phi + 9\phi$

10ϕ

$20 + 16 + 21 + 9$

66

26. Fraction for girls

a) $\frac{5}{5} - \frac{2}{5} = \frac{5-2}{5}$

$\frac{3}{5}$

Number of girls

$\frac{3}{5} \times 35^{7}$

3×7

21 girls

b)

Boys	More girls
$\frac{2}{5} \times 35$	21
14	-14
	7

27 a) Simple interest

$P \times R \times T$

$Sh.100,000 \times (7\frac{1}{2} \div 100) \times 4$

$Sh.100,000 \times (\frac{15}{2} \times \frac{1}{100}) \times 4^{2}$

$Sh.1000 \times 30$

Sh. 30,000

b) Amount

P + S.I

Sh. 100,000

+Sh. 30,000

Sh. 130,000

28. Length of the rectangular shape

$\frac{316}{100} \times 100cm + 42cm + 42cm$

$316cm + 84cm$

316cm

+84cm

400 cm

Width = $2 \times 100cm$

= 200 cm

Area of the rectangle

L x W

400cm x 200cm

80,000 cm^2

Area of all quadrants

$\frac{1}{4} \pi r^2 \times 4$

$\frac{22}{7} \times 4^{6cm} \times 42cm$

$22 \times 252 cm^2$

252

x 22

0504

5040

5,544 cm^2

Area of the dining table.

7999

80,10010 cm^2

$-5544 cm^2$

74,456 cm^2

29) Let the cost of a fountain pen be y

fountain pen	book
y	3y
	Sh. 4500

$3y = Sh.4500$

$\frac{3y}{3} = \frac{Sh.4500}{3}$

$y = Sh.1500$

b) Sh. 4,500

+Sh 1,500

Sh. 6,000

30) 1 litre = $1000 cm^3$

$(\frac{4312}{100} \times 1000) cm^3$

$4312 cm^3$

Radius of the tank

$\pi r^2 h$ = Volume

$\frac{22}{7} \times r^2 \times 10cm = 43120 cm^3$

$\frac{22}{22} \times r^2 \times 10cm = \frac{43120}{22} cm^3$

$\frac{22}{22} \times 10cm = \frac{4312}{22} cm^2$

$r^2 = 196 cm^2$

$r^2 = 14cm \times 14cm$

$\sqrt{r^2} = \sqrt{14^2} cm^2$

$r = 14cm$

Area of the cover

πr^2

$\frac{22}{7} \times 7^{1}\!4cm \times 14cm$

$44cm \times 14cm$

44

x 14

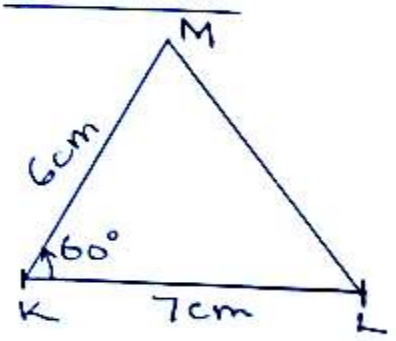
176

+44

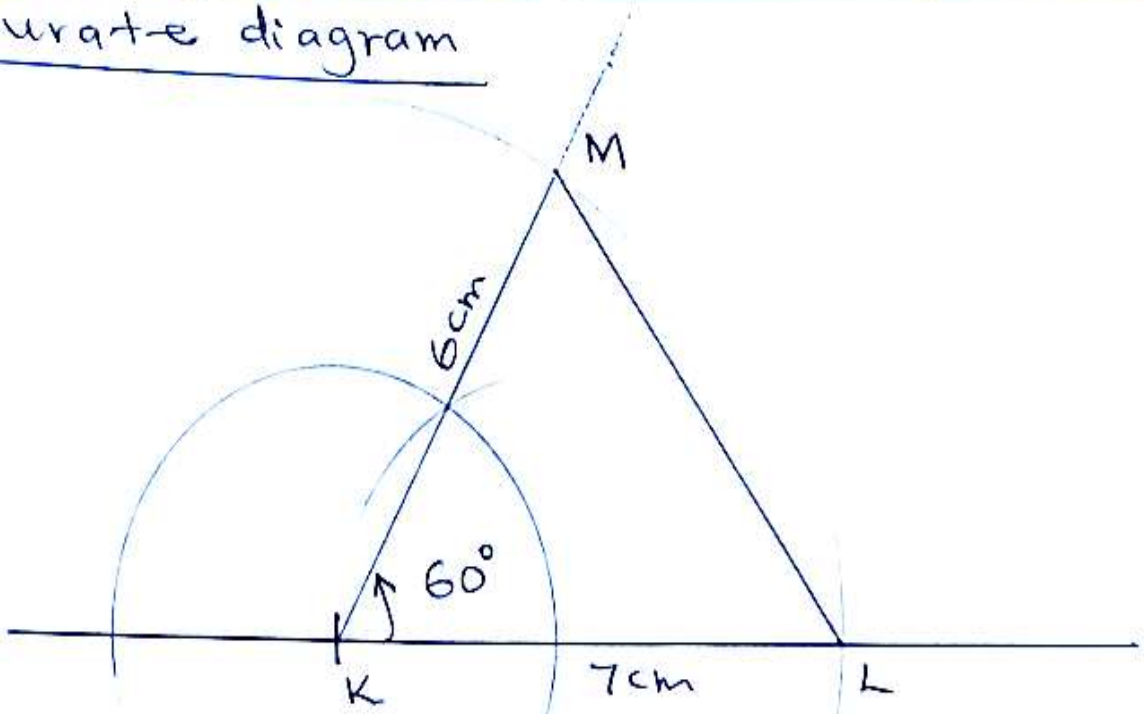
616 cm^2

31 a)

Sketch



Accurate diagram



(b) ML = 6.5cm

32 a) At 11:30 a.m

b) For 30 minutes

c) Average speed

$\frac{\text{Total distance}}{\text{Total time}}$

$180\text{km} \div 4\frac{1}{2}\text{hrs}$

$180\text{km} \div \frac{9}{2}\text{hrs}$

$\overset{20}{\cancel{180}}\text{km} \times \frac{2}{\cancel{9}\text{hrs}_{1}}$

$20\text{km} \times \frac{2}{1\text{hr}}$

$40\frac{\text{km}}{\text{hr}}$.