

MOTHERCARE PREPARATORY SCHOOLS
REVISION WORK TERM I - 2020
P.7 MATHEMATICS
Time Allowed: 2 Hours 30 Minutes

A = 40
 B = 60

 T = 100%

INDEX NO:

Random No.	Personal No.

Candidate's Name: GUIDE SET IV

Candidate's Signature: _____ Stream: _____

School Random No: _____

District ID: _____

Read The Following Instructions Carefully.

1. The paper has two sections: A and B.
2. All the working for both sections A and B must be shown in the spaces provided.
3. All working must be done using a blue or black ball – point pen or fountain pen. Diagrams must be drawn in pencil.
4. Un necessary changes of work may lead to loss of marks.
5. Any handwriting that cannot easily be read may lead to loss of marks.
6. Do not fill anything in boxes indicated: "For Examiners' Use only" and those inside the question paper.

FOR EXAMINERS' USE ONLY			
SECTION	EXRS MARKS	T/L MARKS	OFFICE
A			
B			
TOTAL			

SECTION A: 40 MARKS

1. Work out: $621 \div 3$

$$\begin{array}{r} 207 \\ 3 \overline{) 621} \\ \underline{6} \\ 021 \\ \underline{00} \\ 21 \\ \underline{21} \\ 00 \end{array}$$

207

$$3 \overline{) 621} \quad 621 \div 3 = 207$$

$$\begin{array}{r} 207 \\ 2 \times 3 = 6 \\ 02 \\ 0 \times 3 = 0 \\ 21 \\ 7 \times 3 = 21 \\ 00 \end{array}$$

1	3
2	6
3	9
4	12
5	15
6	18
7	21

2. Write "Four hundred nine" in Roman numerals.

$$\begin{array}{r} 400 = CD \\ + 9 = IX \\ \hline 409 = CDIX \end{array}$$

$$409 = CDIX$$

3. Simplify: $3(a-4) - 2(a+5)$

$$\begin{array}{r} 3(a-4) - 2(a+5) \\ 3 \times a - 4 \times 3 - 2 \times a - 2 \times 5 \\ 3a - 12 - 2a - 10 \\ 3a - 2a - 12 - 10 \\ a - 22 \end{array}$$

$$\begin{array}{r} 3(a-4) - 2(a+5) \\ 3a - 3 \times 4 - 2 \times a - 2 \times 5 \\ 3a - 12 - 2a - 10 \\ 3a - 2a - 12 - 10 \\ a - 22 \end{array}$$

4. Twelve litres of milk were given to some children. If each child got $\frac{3}{4}$ of a litre of milk, how many children got the milk?

$$(12 \text{ litres} \div \frac{3}{4} \text{ litres}) \text{ children}$$

$$(\frac{4}{3} \times 12) \text{ children}$$

$$(4 \times 4) \text{ children}$$

$$16 \text{ children}$$

10

5. The LCM of two numbers is 60 and their GCF is 3. If one of the numbers is 15, find the second number.

$$\begin{aligned} \text{Second Number} &= \frac{\text{LCM} \times \text{GCF}}{\text{One number}} \\ &= \frac{60 \times 3}{15} \\ &= 4 \times 3 \\ &= 12 \end{aligned}$$

OR
Let the second number be y

$$\text{LCM} \times \text{GCF} = \text{First number} \times \text{second number}$$

$$60 \times 3 = 15 \times y$$

$$180 = 15y$$

$$\frac{180}{15} = \frac{15y}{15}$$

$$12 = y$$

$$y = 12$$

Method II

6) $x + 90^\circ + 50 = 180^\circ$ (int. \angle sum of a triangle)

$x + 140^\circ = 180^\circ$

$x + 140^\circ - 140^\circ = 180^\circ - 140^\circ$

$x = 40^\circ$

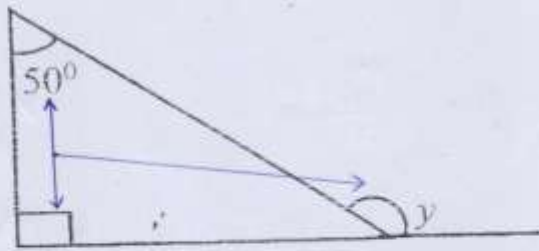
$y + x = 180^\circ$ (supplementary angles)

$y + 40^\circ = 180^\circ$

$y + 40^\circ - 40^\circ = 180^\circ - 40^\circ$

$y = 140^\circ$

6. Find the size of angle y in the figure below.



$y = 50^\circ + 90^\circ$ (The sum of two int. \angle s)
 = one ext opp. ext. \angle

$y = 140^\circ$

7. Andrew deposited sh. 600,000 in the bank that offers an interest rate of 3% per year for $1\frac{1}{2}$ years. Find the interest earned by Andrew.

$SI = P \times R \times T$

= sh: 600,000 \times $\frac{3}{100}$ \times $1\frac{1}{2}$

= sh: 6,000 \times 3 \times $\frac{3}{2}$

= sh: 3000 \times 9

= sh: 27,000

sh: 3000
 \times 9
 sh: 27000

8. Change 25 m/s into km/hr.

1000m = 1km

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

3600sec = 1hr
 1sec = $\frac{1}{3600}$ hr

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

$s = \frac{25}{1000} \text{ km} \div \frac{1}{3600} \text{ hr}$

$s = \frac{25}{1000} \text{ km} \times \frac{3600}{1 \text{ hr}}$

$s = (5 \times 18) \text{ km/hr}$

$s = 90 \text{ km/hr}$

9. A mathematics lesson ended at 1:25 pm. If it had lasted for $1\frac{3}{4}$ hours, at what time did the lesson start?

1hr and $\frac{3}{4} \times 60$ minutes

1hr and 45minutes

1:25pm
 + 12:00hrs
 13:25hr

Starting time = Ending time - Duration

12:25hrs
 - 1:45hrs
 11:40hrs

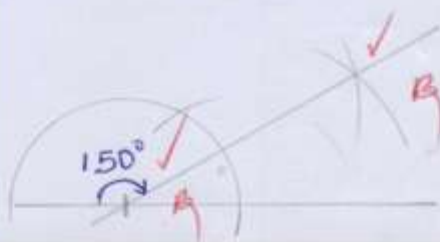
11:40hrs
 00:00hrs

11:40am

The lesson started at 11:40am.

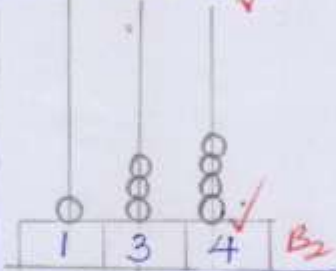
10. In the space below, construct an angle of 150° .

110



11. Show 134_{six} on the abacus.

six sixes sixes ones ✓



OR

1	3	4
6 ²	6 ¹	6 ⁰

$$(1 \times 6^2) + (3 \times 6^1) + (4 \times 6^0)$$

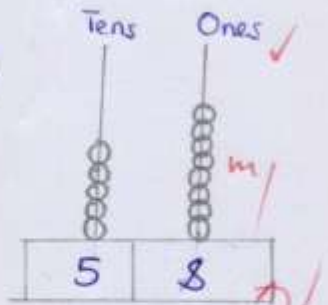
$$(1 \times 6 \times 6) + (3 \times 6) + (4 \times 1)$$

$$(36 + 18) + 4$$

$$54 + 4$$

$$58_{\text{ten}}$$

ON THE ABACUS



12. Increase sh. 4000 by 12½%.

Change to fraction

$$\frac{25}{2}\%$$

$$\frac{25}{2} \div \frac{100}{1}$$

$$\frac{25}{2} \times \frac{1}{100}$$

$$\frac{1 \times 1}{2 \times 4}$$

$$\frac{1}{8}$$

Increase

$$\frac{8+1}{8} = \frac{9}{8}$$

$$\frac{9}{8} \times \text{sh. } 4000$$

$$\frac{9}{8} \times \text{sh. } 500$$

$$\text{sh. } 4500$$

OR

$$(100\% + 12\frac{1}{2}\%) \times \text{sh. } 4000$$

$$112\frac{1}{2}\% \times \text{sh. } 4000$$

$$\frac{225}{2}\% \times \text{sh. } 4000$$

$$\left(\frac{225}{2} \div \frac{100}{1}\right) \times \text{sh. } 4000$$

$$\frac{225}{2} \times \frac{1}{100} \times \text{sh. } 4000$$

$$\text{sh. } 225 \times 20$$

$$\text{sh. } 2250$$

$$\text{sh. } 4500$$

13. If today is Thursday. What day of the week was it 33 days ago?

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

$$\text{Thursday} - 33 = \text{--- (finite 6)}$$

$$\frac{33}{7} = 4 \text{ r } 5$$

$$4 - 5 = \text{--- (finite 6)}$$

$$(4+7) - 5 = \text{--- (finite 6)}$$

$$11 - 5 = 6 \text{ (finite 7)}$$

$$6 \text{ (finite 7)}$$

Saturday

OR

S	M	T	W	T	F	S
4	3	2	1	0		
11	10	9	8	7	6	5
18	17	16	15	14	13	12
25	24	23	22	21	20	19
32	31	30	29	28	27	26
						33

The day was Saturday.

14. Find the sum of the next two numbers in the sequence below;

$$1, 2, 5, 10, 17, 26, 37$$

Addition of odd numbers.

$$26$$

$$+ 37$$

$$63$$

15. Find the range of -9 and -5.

$$\text{Range} = H - L$$

$$-5 - (-9)$$

$$-5 + 9$$

$$+4$$



110

16. Solve: $5 - 3x = 17$

$$5 - 3x = 17$$

$$5 - 5 - 3x = 17 - 5 \quad | \checkmark$$

$$-3x = 12$$

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

$$x = -4 \quad | \checkmark$$

17. Work out: $5\frac{3}{4} \div 2\frac{1}{4}$

$$5\frac{3}{4} \div 2\frac{1}{4}$$

$$\frac{23}{4} \div \frac{9}{4}$$

$$\frac{23}{4} \times \frac{4}{9} \quad | \checkmark$$

$$\frac{23}{4} \times \frac{4}{9}$$

$$\frac{23}{9}$$

$$2\frac{5}{9} \quad | \checkmark$$

oooooooooo

$$\frac{(5 \times 4) + 3}{4}$$

$$\frac{20 + 3}{4}$$

$$\frac{23}{4}$$

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

$$\frac{8 + 1}{4}$$

$$\frac{9}{4}$$

18. Calculate the radius of the circle whose circumference is 88 m.

(Take π as $\frac{22}{7}$).

$$2\pi r = C$$

$$2 \times \frac{22}{7} r = 88 \text{ m} \quad | \checkmark$$

$$\frac{44r}{7} = 88 \text{ m}$$

$$7 \times \frac{44r}{7} = 88 \text{ m} \times 7$$

$$44r = 88 \text{ m} \times 7$$

$$\frac{44r}{44} = \frac{88 \text{ m} \times 7}{44}$$

$$r = (2 \times 7) \text{ m}$$

$$r = 14 \text{ m} \quad | \checkmark$$

19. If 5 men take 4 days to paint the house, how many more days will 2 men take to paint the same house?

Men : Days

5 men = 4 days

1 man = (5×4) days
20 days

2 men = $(\frac{20}{2})$ days
= 10 days $| \checkmark$

More days

$(10 - 4)$ days

6 more days $| \checkmark$

10

20. If R has 63 proper subsets, find $n(R)$.

Number of proper subsets = $(2^n) - 1$

$$(2^n) - 1 = 63 \quad | \checkmark$$

$$(2^n) - 1 + 1 = 63 + 1$$

$$2^n = 64$$

$$2^n = 2^6$$

$n = 6$ elements

$$n(R) = 6 \quad | \checkmark$$

2	64
2	32
2	16
2	8
2	4
2	2
	1

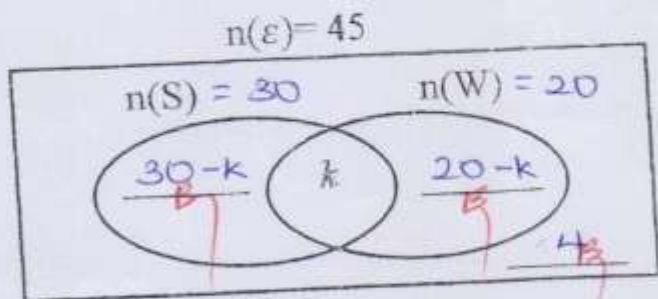
$$64 = 2^6$$

SECTION B: (60 MARKS)

21. In a party of 45 guests, 30 drink soda (S), 20 guests drink water (W) —only, k drink both soda and water while 4 guests do not drink any of the two drinks.

a) Complete the Venn diagram below.

(3marks)



- b) Find the value of k .

(2marks)

$$\begin{aligned}
 30 + 20 - k + 4 &= 45 \\
 (30 + 4) - k &= 45 \\
 34 - k &= 45 \\
 34 - 34 - k &= 45 - 34 \\
 -k &= -9 \\
 \frac{-k}{-1} &= \frac{-9}{-1} \\
 k &= 9
 \end{aligned}$$

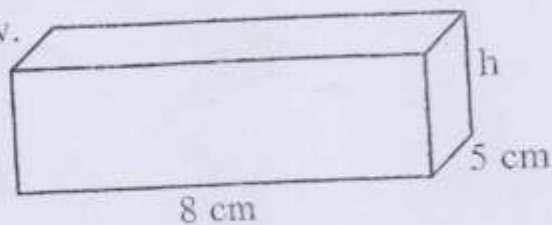
- c) How many guests drink only one drink?

(1mark)

$$\begin{aligned}
 &n(S) \text{ only} + n(W) \text{ only} \\
 &(30 - k + 20 - k) \text{ guests} \\
 &(30 - 9 + 20 - 9) \text{ guests} \\
 &(21 + 11) \text{ guests} \\
 &32 \text{ guests}
 \end{aligned}$$

6

22. The volume of the figure below is 240 cm^3 . Use it to answer the questions that follow.



- a) Find the value of h .

$$L \times W \times H = V$$

$$8 \text{ cm} \times 5 \text{ cm} \times H = 240 \text{ cm}^3$$

$$40 \text{ cm}^2 \times H = 240 \text{ cm}^3$$

$$\frac{40 \text{ cm}^2 \times \text{cm} \times H}{40 \text{ cm}^2 \times \text{cm}} = \frac{240 \text{ cm}^3 \times \text{cm}}{40 \text{ cm}^2 \times \text{cm}}$$

$$h = 6 \text{ cm}$$

- b) Work out the total surface area of the figure above.

$$T.S.A = 2(L \times W) + 2(L \times H) + 2(W \times H)$$

$$= 2(8 \text{ cm} \times 5 \text{ cm}) + 2(8 \text{ cm} \times 6 \text{ cm}) + 2(5 \text{ cm} \times 6 \text{ cm})$$

$$2 \times 40 \text{ cm}^2 + 2 \times 48 \text{ cm}^2 + 2 \times 30 \text{ cm}^2$$

$$80 \text{ cm}^2 + 96 \text{ cm}^2 + 60 \text{ cm}^2$$

$$\begin{array}{r} 80 \text{ cm}^2 \\ 96 \text{ cm}^2 \\ + 60 \text{ cm}^2 \\ \hline 236 \text{ cm}^2 \end{array}$$

23. The sum of the values in the table are the same vertically, horizontally and diagonally. Fill in the missing values to complete the table.

Magic sum

$$(1+15+14+4)$$

$$16+18$$

$$\underline{34}$$

1	15	14	4
12	6	7	9
8	10	11	5
13	3	2	16

110

$$34 - (12+8)$$

$$34 - 21$$

$$13$$

$$34 - (12+7+9) + \frac{12}{28}$$

$$34 - 28$$

$$6$$

$$34 - (4+9+5) + \frac{13}{18}$$

$$34 - 18$$

$$16$$

$$34 - (10+8+5) + \frac{18}{23}$$

$$34 - 23$$

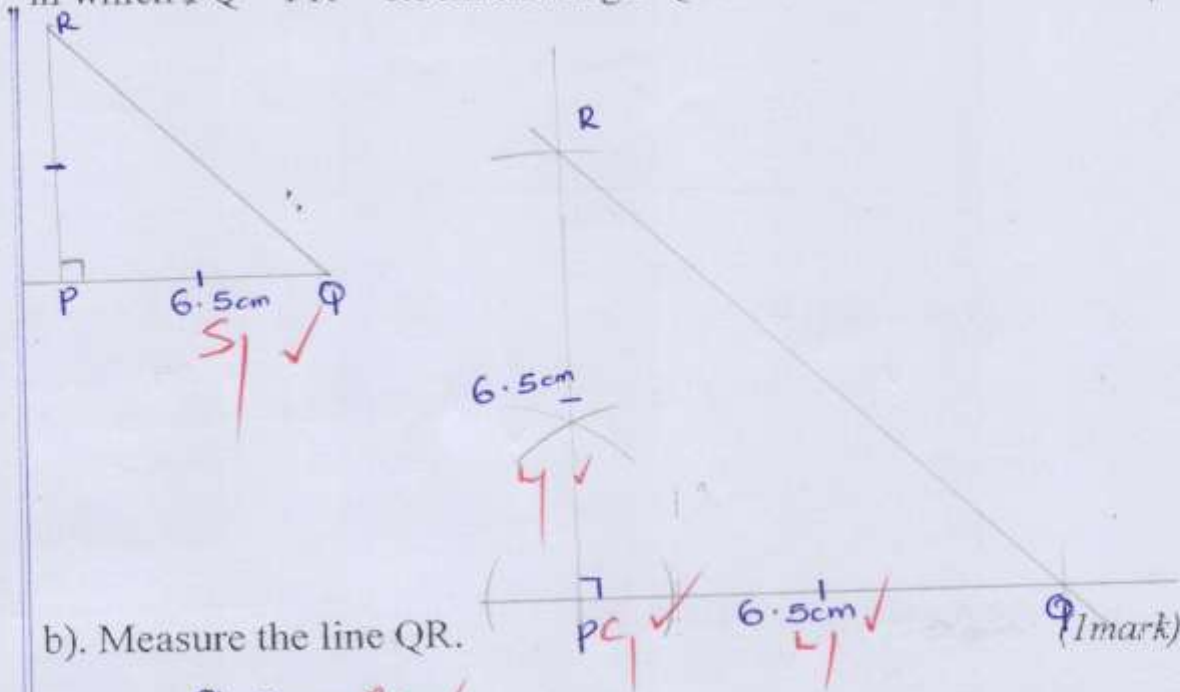
$$11$$

$$34 - (13+16+2) + \frac{29}{31}$$

$$34 - 31$$

$$3$$

24. a) Using a ruler and a pair of compasses only, construct a triangle in which $PQ = PR = 6.5\text{cm}$ and angle $QPR = 90^\circ$. (4 marks)



b). Measure the line QR.

9.2cm B ✓

Accept 9.1- and 9.3cm

25. The table below shows the marks scored by pupils in a mathematics test.

Marks scored	80	70	90	60
Number of pupils	2	3	1	4

- a) How many pupils sat for the test? (2 marks)

(2+3+1+4) pupils ✓
 (5+5) pupils ✓
10 pupils ✓

- b) Find the mode. (1 mark)

60 marks B ✓

Marks	Tallies
90	
80	
70	
60	← mode.

OS

(1 mark)

c) How many pupils scored above the mean mark?

(2marks)

$$\text{Mean} = \frac{\text{Sum of items}}{\text{Number of items}}$$

$$= \frac{(80 \times 2) + (90 \times 1) + (70 \times 3) + (60 \times 4)}{10}$$

$$= \frac{(160 + 90) + (210 + 240)}{10}$$

$$= \frac{250 + 450}{10}$$

$$= \frac{700}{10}$$

$$= 70 \text{ marks}$$

The mean mark is 70 marks

26. Mutoni went to the market and bought the items as shown on the table below.

Item	Quantity	Unit price	Total cost
Sugar	2 kg	Sh. 3,500 per kg	Sh. 7,000
Meat	3 kg	Sh. 8,000 per kg	Sh. 24,000
Milk	2½ litres	Sh. 1,200 each litre	Sh. 3,000
Bread	4 loaves	Sh. 2,000 @ loaf	Sh. 8,000
Total expenditure			Sh. 42,000

a) Complete the table above.

Sugar

$$\begin{array}{r} \text{sh: } 3500 \\ \times \quad 2 \\ \hline \text{sh: } 7,000 \end{array}$$

Meat

$$\begin{array}{r} (\text{sh: } 24000) \text{ kg} \\ (\text{sh: } 8000) \\ \hline 3 \text{ kg} \end{array}$$

Milk

$$\begin{array}{r} 2\frac{1}{2} \times \text{sh: } 1200 \\ \quad \quad \quad 600 \\ \frac{5}{2} \times \text{sh: } 1200 \\ \quad \quad \quad 600 \\ \hline \text{sh: } 3000 \end{array}$$

Bread

$$\begin{array}{r} \text{sh: } 2000 \\ \text{sh: } 8000 \\ \hline 4 \\ \hline \text{sh: } 2,000 \end{array}$$

Total expenditure (5 marks)

$$\begin{array}{r} \text{sh: } 24000 \\ \text{sh: } 8000 \\ \text{sh: } 7000 \\ + \text{sh: } 3000 \\ \hline \text{sh: } 42,000 \end{array}$$

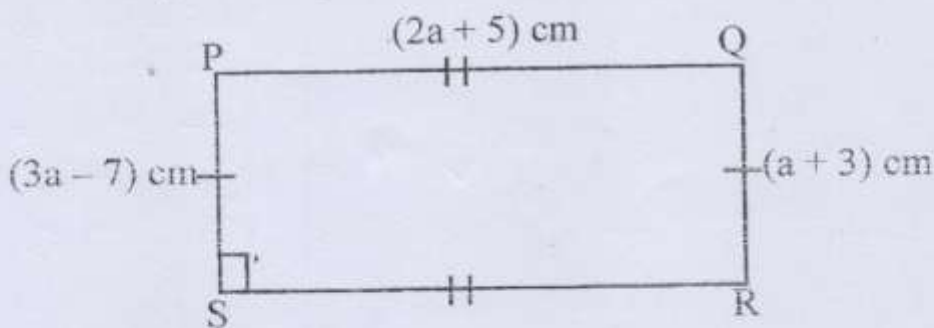
a) If she went with sh. 50,000, find her change.

(1 mark)

$$\begin{array}{r} \text{sh: } 50000 \\ + \text{sh: } 42000 \\ \hline \text{sh: } 8,000 \end{array}$$

08

27. Study the diagram below and use it to answer the questions that follow.



a) Find the value of a.

width = width

$$(3a - 7) \frac{\text{cm}}{\text{cm}} = (a + 3) \frac{\text{cm}}{\text{cm}}$$

$$3a - 7 = a + 3$$

$$3a - 7 + 7 = a + 3 + 7$$

$$3a = a + 10$$

$$3a - a = a - a + 10$$

$$2a = 10$$

$$\frac{2a}{2} = \frac{10}{2}$$

$$a = 5$$

b) Work out the area of the figure above.

Length	Width
$(2a + 5) \text{ cm}$	$(a + 3) \text{ cm}$
$(2 \times 5 + 5) \text{ cm}$	$(5 + 3) \text{ cm}$
$(10 + 5) \text{ cm}$	8 cm
15 cm	

$$\text{Area} = L \times W$$

$$A = 15 \text{ cm} \times 8 \text{ cm}$$

$$A = 120 \text{ cm}^2$$

$$\begin{array}{r} 15 \\ \times 8 \\ \hline 120 \end{array}$$

c) Calculate the total distance round the figure above.

$$P = 2(L + W)$$

$$P = 2(15 \text{ cm} + 8 \text{ cm})$$

$$P = 2 \times 23 \text{ cm}$$

$$P = 46 \text{ cm}$$

08

28. a) Work out: $\frac{0.24 \times 1.5}{0.8 \times 0.5}$

(3 marks)

$$\left(\frac{24}{100} \times \frac{15}{10}\right) \div \left(\frac{8}{10} \times \frac{5}{10}\right)$$

$$\frac{3}{10} \times \frac{3}{10} \times \frac{10}{8} \times \frac{10}{5}$$

$$\frac{3 \times 3 \times 1 \times 1}{10 \times 1 \times 1 \times 1}$$

$$\frac{9}{10}$$

90

9

10

0.9

b). Simplify: $\frac{2}{3} \times \frac{3}{4} \div \frac{5}{6}$

(2 marks)

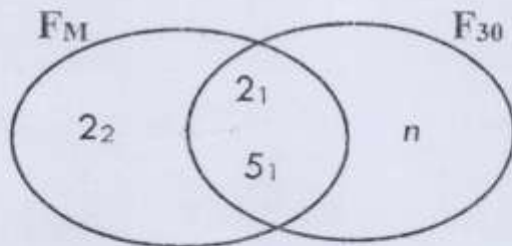
$$\frac{2}{3} \times \left(\frac{3}{4} \div \frac{5}{6} \right)$$

$$\frac{2}{3} \times \frac{3}{4} \times \frac{6}{5}$$

$$\frac{1 \times 1 \times 3}{1 \times 1 \times 5}$$

$$\frac{3}{5}$$

29. The Venn diagram below represents the prime factors of two numbers. Use it to answer the questions that follow.



- a) Find the value of n .

(2 marks)

$$F_{30} = \{2_1, 5_1, n\} \quad n = 3$$

$$30 = 2 \times 5 \times n$$

$$30 = 10n$$

$$\frac{30}{10} = \frac{10n}{10}$$

$$3 = n$$

- b) Calculate the value of M .

(2 marks)

$$F_M = \{2_2, 2_1, 5_1\}$$

$$M = 2 \times (2 \times 5)$$

$$M = 2 \times 10$$

$$M = 20$$

- c) Work out the GCF of M and 30 .

(1 mark)
(1 mark)

$$\text{GCF} = \{2, 5\}$$

$$= 2 \times 5$$

$$= 10$$

07

30. a) Solve: $\frac{2}{3}y + 4 = 10$

$$\frac{2}{3}y + 4 = 10$$

$$\frac{2}{3}y + 4 - 4 = 10 - 4$$

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

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

$$2y = 18$$

$$\frac{2}{2}y = \frac{18}{2}$$

$$y = 9$$

$$\frac{2}{3} \times \frac{2y}{2} + 4 \times 3 = 10 \times 3$$

(2 marks)

$$2y + 12 = 30$$

$$2y + 12 - 12 = 30 - 12$$

$$2y = 18$$

$$\frac{2y}{2} = \frac{18}{2}$$

$$y = 9$$

b) Olupot is 5 years older than his brother Jamwa. If their total age is 35 years, how old is Jamwa? (2 marks)

Let Jamwa's age be k .

Olupot	Jamwa	Total
$k+5$	k	35

$$(k+5) + k = 35$$

$$k+k+5 = 35$$

$$2k+5 = 35$$

$$2k+5-5 = 35-5$$

$$2k = 30$$

$$\frac{2k}{2} = \frac{30}{2}$$

$$k = 15 \text{ years}$$

Jamwa is 15 years old.

31. John, Fatima and Daniel shared a certain amount of money in the ratio of 2:4:3 respectively. If Daniel got sh. 150,000; (4 marks)

a) How much money did they share altogether? (3 marks)

Let the money shared be y

$$\frac{2+4+3}{6+3} = \frac{9}{9}$$

Daniel

$$\frac{3}{9} = \frac{3}{9}$$

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

$$\frac{1}{3} \text{ of } y = \text{sh: } 150,000$$

$$\frac{1}{3} \times y = \text{sh: } 150,000$$

$$\frac{y}{3} \times 3 = \text{sh: } 150,000 \times 3$$

$$y = \text{sh: } 150,000 \times 3$$

$$\underline{\underline{\text{sh: } 450,000}}$$

$$\frac{2+4+3}{6+3} = \frac{9}{9}$$

$$\frac{3}{9} \times 150,000 = 50,000$$

1 part = sh: 150,000

3 parts = sh: 150,000

3 parts = sh: 150,000

$$\underline{\underline{\text{sh: } 450,000}}$$

They shared sh: 450,000

b) How much more money did Fatuma get than John? (1 mark)

More in ratio

Fatuma - John

$$4 - 2 = 2$$

$$2$$

$$50,000$$

$$\frac{2}{2} \times \text{sh: } 50,000$$

$$\text{sh: } 50,000$$

$$\times 2$$

$$\underline{\underline{\text{sh: } 100,000}}$$

OR

Fatuma

$$50,000$$

$$\frac{4}{2} \times \text{sh: } 50,000$$

$$\times 2$$

$$\text{sh: } 50,000 \times 4$$

$$\underline{\underline{\text{sh: } 200,000}}$$

John

$$50,000$$

$$\frac{2}{2} \times \text{sh: } 50,000$$

$$\times 2$$

$$\text{sh: } 50,000 \times 2$$

$$\underline{\underline{\text{sh: } 100,000}}$$

More money

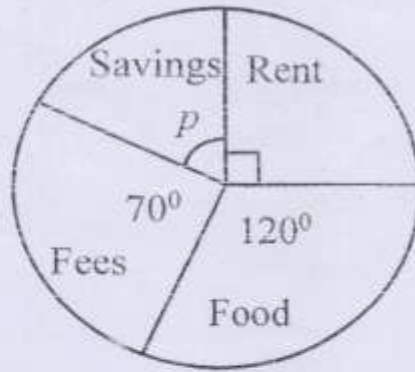
$$-\text{sh: } 200,000$$

$$+\text{sh: } 100,000$$

$$\underline{\underline{\text{sh: } 100,000 \text{ more}}}$$

CS

32. The pie-chart below shows Muzorewa's monthly expenditure. Use it to answer the questions that follow.



- a) Find the value of p in degrees.

(2 marks)

$$\begin{aligned}
 p + (90^\circ + 70^\circ + 120^\circ) &= 360^\circ \\
 p + 280^\circ &= 360^\circ \\
 p + 280^\circ - 280^\circ &= 360^\circ - 280^\circ \\
 \underline{p} &= \underline{80^\circ}
 \end{aligned}$$

- b) If he spends sh. 180,000 on rent, find his monthly income.

(3 marks)

$$\frac{\text{Rent}}{\frac{90^\circ}{360^\circ}} = \frac{1}{4}$$

Let the total

Let r be his monthly income

$$\frac{1}{4} \text{ of } r = \text{sh. } 180,000$$

$$\frac{1}{4} \times r = \text{sh. } 180,000$$

$$\frac{r}{4} \times 4 = \text{sh. } 180,000 \times 4$$

$$\begin{aligned}
 r &= \text{sh. } 180,000 \times 4 \\
 &= \text{sh. } 720,000
 \end{aligned}$$

His salary is sh. 720,000

$$\begin{aligned}
 \frac{0.25}{\frac{90^\circ}{360^\circ}} \\
 \frac{1}{4}
 \end{aligned}$$

$$\begin{aligned}
 1 \text{ part} &= \text{sh. } 180,000 \\
 4 \text{ parts} &= \text{sh. } 180,000 \times 4 \\
 &= \text{sh. } 720,000
 \end{aligned}$$

His salary is sh. 720,000

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