Class – 5

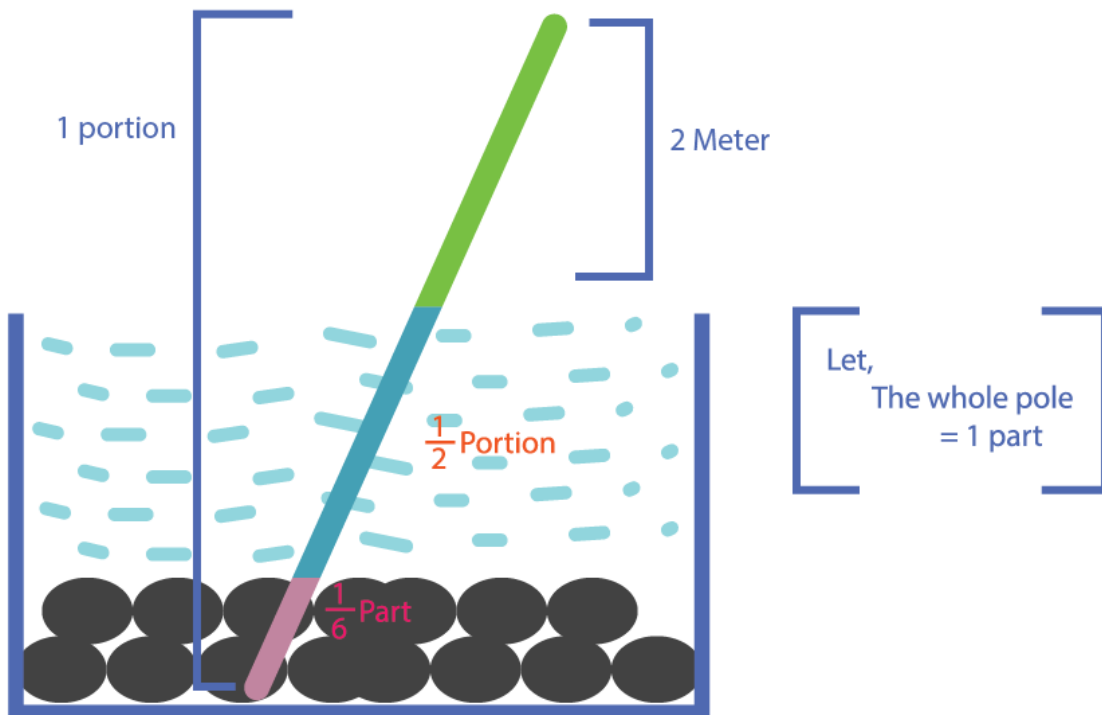# Subject – Mathematics

Chapter – 6

Fraction

Part – 3

Word Problem:

1) $\frac{1}{6}$ *portion of a pole is in the mud,* $\frac{1}{2}$ *portion is in the water and the remaining portion is above water. The length of the portion above water is 2m. What is the length of the pole in water?*

Solution:

Given,

A pole is in mud = $\frac{1}{6}$ Portion

A pole is in water = $\frac{1}{2}$ Portion

∴ A pole total is in mud and water = $\left(\frac{1}{6} + \frac{1}{2}\right)$ Portion

$$= \frac{(1 \times 1) + (1 \times 3)}{6} \text{ Portion}$$

$$= \frac{1+3}{6} \text{ Portion}$$

$$= \frac{4}{6} \text{ Portion}$$

$$= \frac{2}{3} \text{ Portion}$$

Let, the whole pole = 1 portion

∴ A pole is above water = $(1 - \frac{2}{3})$ portion

$$= \frac{1-2}{3} portion = \frac{1}{3} \text{ portion}$$

According to the question,

$\frac{1}{3}$ portion = 2 m

1 portion = $(2 \div \frac{1}{3})$ m

$$= (2 \times 3) \text{ m}$$

$$= 6 \text{ m}$$

The total length of the pole = 6 m

The length of the pole is in water = $\left(\frac{1}{2} of 6\right)$ m = 3 m

Ans: 3 m

2) In a hostel every day $2\frac{1}{7}$ quintal of rice is needed. In that hostel how many quintals of rice is needed in one week?

Solution:

We know,

1 week = 7 days

In 1 day rice is needed $2\frac{1}{7}$ quintal

$\therefore$ In 7 day rice is needed $\left(2\frac{1}{7} \times 7\right)$ quintal

$$= \left(\frac{15}{7} \times 7\right) \text{ quintal}$$

$$= 15 \text{ quintals}$$

Ans: 15 quintals

3) *1 m of metal pipe weighs $3\frac{1}{4}$ kg. How many kg does $\frac{3}{5}$ m of the pipe weigh?*

Solution:

1 m of metal pipe weighs $3\frac{1}{4} kg$

$\therefore \frac{3}{5}$ m of metal pipe weighs $\left(3\frac{1}{4} \times \frac{3}{5}\right) kg$

$$= \left(\frac{13}{4} \times \frac{3}{5}\right) kg$$

$$= \frac{39}{20} kg$$

$$= 1\frac{19}{20} kg$$

Ans: $1\frac{19}{20} kg$

4) *1 dL of paint covers $\frac{8}{9}$ m^2. How many m^2 can you paint with $\frac{5}{3}$ dL?*

Solution:

1 dL of paint covers $\frac{8}{9} m^2$

$\therefore \frac{5}{8}$ dL of paint covers $\left(\frac{8}{9} \times \frac{5}{8}\right) m^2$

$$= \frac{5}{9} m^2$$

Ans: $\frac{5}{9} m^2$

5) *If you cut $6\frac{2}{5}$ m of string into $\frac{4}{5}$ m sections, how many pieces it will be?*

Solution:

Here, total length of string $= 6\frac{2}{5} m = \frac{32}{5} m$

Length of each piece $= \frac{4}{5} m$

Number of pieces can be cut from $\frac{32}{5}m$

$$= \left(\frac{32}{5} \div \frac{4}{5}\right)$$

$$= \left(\frac{32}{5} \times \frac{8}{4}\right)$$

$$= 8 \text{ pieces}$$

Ans: 8 pieces

6) A wall of $\frac{9}{7}m^2$ can be covered by $\frac{3}{4}dL$ of paint. How many m^2 can you paint with 1 dL?

Solution:

$$\frac{3}{4} \text{ dL can cover } \frac{9}{7}m^2$$

$$\therefore 1 \text{ dL can cover } \left(\frac{9}{7} \div \frac{3}{4}\right)m^2$$

$$= \left(\frac{9}{7} \times \frac{7}{3}\right)m^2$$

$$= \frac{12}{7}m^2$$

$$= 1\frac{5}{7}m^2$$

Ans: $1\frac{5}{7}m^2$

7) A metal pipe of 5 m weights $2\frac{6}{7}kg$. How long do you cut off if you need 1 kg of pipe?

Solution:

$$5 \text{ metre weights} = 2\frac{6}{7}kg$$

$$\therefore 1 \text{ metre weights} = \left(2\frac{6}{7} \div 5\right)kg$$

$$= \left(\frac{20}{7} \times \frac{1}{5}\right)kg$$

$$= \frac{4}{7}kg$$

Ans: $\frac{4}{7}kg$

8) *Flowers are planted in $\frac{5}{6}$ of a flower bed that has an area of 20 m². What is the area of planted flowers in m²?*

Solution:

Total area of garden $20m^2$

Cultivated flower in $\frac{5}{6}$ part of the garden

Cultivate area of flower garden $= \left(\frac{5}{6} of\ 20\right) m^2$

$$= \frac{50}{3}\ m^2$$

$$= 16\frac{2}{3}\ m^2$$

9) *Ahmed has 4 kg of oil. 1L of the oil weighs $\frac{6}{7}$ kg. How many 2 oil he has?*

Solution:

$$\frac{6}{7}\ kg\ of\ oil = 1\ L$$

$$\therefore 1\ kg\ of\ oil\ = \left(1 \div \frac{6}{7}\right) L$$

$$= \left(1 \times \frac{7}{6}\right) L$$

$$= \frac{7}{6} L$$

$$4\ kg\ of\ oil = \left(\frac{7}{6} \times 4\right) L$$

$$= \frac{14}{3}\ L$$

Ans: $4\frac{2}{3} L$

10) *Mr. Sajjad had 24000 Taka. He donated $\frac{5}{12}$ portion of his money to an orphanage, $\frac{3}{8}$ portion to an educational institution. What amount of money was he left with?*

Solution:

$$Mr.\ Sajjad's\ total\ donation\ = \left(\frac{5}{12} + \frac{3}{8}\right) portion$$

$$= \frac{(5\times2)+(3\times3)}{24}\ portion$$

$$= \frac{10+9}{24}\ portion$$

$$= \frac{19}{24}\ portion$$

Let, The total money = 1 portion

$$\therefore \text{Remaining portion} = \left(1 - \frac{19}{24}\right)$$

$$= \frac{24-19}{24}$$

$$= \frac{5}{24}$$

An amount left with Mr. Ahmed $= \left(\frac{5}{24} \text{ of } 24000\right) = 5000tk$

Ans: 5000 tk

Creative Question

1.Mr. Habib kept $\frac{1}{4}$ portion of his property for himself and divided the rest of the property equally between his two children.

    a) **What portion was the rest of the property after Mr. Habib kept his property for himself?**
    b) **What portion of the property did each child get?**
    c) **If Mr. Habib has property of Taka 200000.How much will each child get?**

Solution:

a) Let, the whole property = 1 part

The rest of the property = $(1 - \frac{1}{4})$ part

$$= \frac{4-1}{4} \text{ part}$$

$$= \frac{3}{4} \text{ part}$$

Ans: $\frac{3}{4}$ part.

b) From "a" we get,

$$2 \text{ children get } \frac{3}{4} \text{ part}$$

$$1 \text{ children get } (\frac{3}{4} \div 2) \text{ part}$$

$$= (\frac{3}{4} \times \frac{1}{2}) \text{ part}$$

$$= \frac{3}{8} \text{ part}$$

Ans: $\frac{3}{8}$ part.

c) Mr. Habib has property of Taka 200000

Each child get= ($\frac{3}{8}$ of 200000) tk

= 75000 tk

Ans: 75000 tk.

2.A metal pipe of 4m weights $1\frac{3}{5}$ Kg.

        a) How many Kg does 1m of the pipe weights?
        b) How long do you cut off if you need 1Kg of the pipe?
        c) A metal pipe of $\frac{5}{2}$ m weighs 1Kg.How many Kg is the weight of 4m pipe?

Solution:

a) 4m weights $1\frac{3}{5}$ Kg

1m weights $(1\frac{3}{5} \div 4)$ Kg

$$= (\frac{8}{5} \div 4) \text{ Kg}$$

$$= (\frac{8}{5} \times \frac{1}{4}) \text{ Kg}$$

$$= \frac{2}{5} \text{ Kg}$$

Ans: $\frac{2}{5}$ Kg.

b) $1\frac{3}{5}$ Kg of pipe = 4 m

1 Kg of pipe $= (4 \div 1\frac{3}{5})$ m

$$= (4 \div \frac{8}{5}) \text{ m}$$

$$= (4 \times \frac{5}{8}) \text{ m}$$

$$= \frac{5}{2} \text{ m}$$

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

Ans: $2\frac{1}{2}$ m.

c) $\frac{5}{2}$ m weighs = 1 Kg

1 m weighs = $(1 \div \frac{5}{2})$ Kg

$$= \frac{2}{5}\ Kg$$

4 m weighs = $(\frac{2}{5} \times 4)$ Kg

$$= \frac{8}{5}\ Kg\ = 1\frac{3}{5}\ Kg$$

Ans: $1\frac{3}{5}$ Kg.