

Unit-3

(1) A = 1,20,000/-

B = 1,35,000/-

C = 1,50,000/-

Ratio of Investment A:B:C =

120000 : 135000 : 150000

A:B:C = 8:9:10.

Profit = 56,700.

Total ratio = $\frac{27}{27} \times 2100$

Profit of A = $\frac{8}{27} \times 56,700$.

= ~~16592~~ = 16800/-

$$\begin{array}{r} 1 \\ 27 \\ \times 2 \\ \hline 54 \end{array}$$

2100

$$\begin{array}{r} 27 \\ \overline{)56,700} \\ 54 \\ \hline 27 \end{array}$$

Profit of B = $\frac{9}{27} \times 56,700$

= 18900/-

Profit of C = $\frac{10}{27} \times 56,700$

= $10 \times 2100 = 21,000/-$

(2) A = 45,000 - 12 months.

Peter = 60,000 - 9 months.

Ronald = ~~75,000~~ 90,000 - 3 months.

Profit Ratio = Investment Ratio

A:P:R = $45,000 \times 12 : 60,000 \times 9 : 90,000 \times 3$

= $45 \times 12 : 60 \times 9 : 90 \times 3$

= 2:2:1. Total ratio = 5

$$\text{profit} = 16,500.$$

$$\text{Amit's profit} = \frac{3}{5} \times 16,500$$

$$\begin{array}{r} 3300 \\ \hline 5) 16,500 \\ 15 \\ \hline 15 \end{array}$$

$$= 2 \times 3300 = 6600/-$$

$$\text{Peter's profit} = \frac{2}{5} \times 16,500 = 6600/-.$$

$$\text{Ronald's profit} = \frac{1}{5} \times 16,500 = 3300/-$$

(3) 1 week - 7 days = 105 kgs.

$$7 \text{ days} = 105 \text{ kgs.}$$

$$58 \text{ days} = ? \times \text{kgs}$$

$$? \times 7 = 58 \times 105$$

$$x = \frac{58 \times 105}{7}$$

$$x = 58 \times 15$$

$$x = 870 \text{ kgs.}$$

$$\begin{array}{r} 15 \\ 7) 105 \\ 7 \\ \hline 435 \\ 435 \\ \hline 58 \\ 58 \\ \hline 290 \\ 290 \\ \hline 0 \end{array}$$

(4) Roger - work - 8 days.

$$\text{for 1 day} = \frac{1}{8}$$

- Antony - work - 5 days.

$$\text{Antony - 1 day work} = 1/5.$$

$$\text{Both Antony and Roger} = \frac{1}{8} + \frac{1}{5}$$

$$\begin{aligned} \text{for 1-day.} &= \frac{5+8}{40} \\ &= \frac{13}{40}. \end{aligned}$$

Both of them complete work in $40/13$ days.

(5) A+B - total work = 15 days.

(A+B) 1-day work = $1/15$.

B - total work = 20 days.

B - 1 day work = $1/20$.

$$A + \frac{1}{20} = \frac{1}{15}$$

$$\begin{aligned} A &= \frac{1}{15} - \frac{1}{20} \\ &= \frac{4 - 3}{60} \\ &= \frac{1}{60}. \end{aligned}$$

15, 20

3, 4

A's 1 day work = $1/60$.

A can complete work in 60 days.

(6) A alone complete work = 6 days.

A 1-day work = $1/6$.

~~Assistant~~ (A+B) complete = 4 days.

(A+B) - 1 day = $1/4$.

$$\frac{1}{6} + B = \frac{1}{4}$$

$$B = \frac{1}{4} - \frac{1}{6}$$

$$= \frac{6 - 4}{24}$$

$$= \frac{2}{24}$$

$$= \underline{\underline{12}} = 1/12$$

B - 1 day = $1/12$

B, can complete in 12 days.

$$\text{A's work : B's work} = \frac{1}{6} : \frac{1}{12}$$
$$= 2 : 1$$

total ratio = 3.

$$\text{share of A} = 300 \times \frac{2}{3}$$
$$= 200.$$

$$\text{share of B} = 300 \times \frac{1}{3}$$
$$= 100.$$

$$(7) \quad 1 \text{ hr} = 82.6 \text{ km.}$$
$$15 \text{ min} = x \text{ km.}$$

$$1 \text{ hr} \times x = 82.6 \times 15$$

~~$$1 \times 5 \times x = 82.6 \times 15$$~~

$$x = 82.6 \times 15 \times \frac{1}{18}$$
$$x = 4.4$$

~~$$(8) \quad 1 \text{ hr} = 82.6 \text{ km/hr.}$$~~

$$(7) \quad \text{speed} = 82.6 \text{ km/hr}$$
$$= 82.6 \times \frac{5}{18}$$
$$= 22.95 \text{ m/s.}$$

time = 15 min

$$\text{distance} = (22.95) \times 15$$
$$= 344.25 \text{ m.}$$

$$[1 \text{ km} = 1000 \text{ m}]$$
$$[1 \text{ hr} = 60 \text{ min}]$$

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

$$\underline{(7)} \quad \text{Speed} = 82.6 \text{ km/hr.}$$

$$T = 15 \text{ min}$$

$$\text{distance} = \text{speed} \times \text{time}$$

$$= 82.6 \times \frac{15}{60}$$

$$= 82.6 \times \frac{1}{4}$$

$$= 20.65 \text{ km}$$

$$= 20.65 \times 1000 \text{ m}$$

$$= 20650 \text{ m}$$

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

$$\begin{array}{r} 20.65 \\ \times 8 \\ \hline 20650 \end{array}$$

$$\underline{(8)} \quad \text{Let total journey} = x \text{ km.}$$

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

$$\frac{1}{3} \text{ Journey} = 30 \text{ km/hr.}$$

$$T_1 = \frac{x/3}{30}$$

$$= \frac{x}{60} \text{ hr.}$$

$$\frac{1}{4} \text{ Journey} = 30 \text{ km/hr}$$

$$\frac{1}{3} + \frac{1}{4} + ? = 1$$

$$T_2 = \frac{\frac{x}{4}}{30} = \frac{x}{120} \text{ hr}$$

$$\text{remain journey} \Rightarrow \frac{x}{3} + \frac{x}{4} + (y) = x$$

$$\frac{4x+3x}{12} + y = x$$

$$7x + 12y = 12x$$

$$12y = 12x - 7x$$

$$12y = 5x$$

$$y = \frac{5x}{12}$$

$$t_3 = \frac{\frac{5x}{12}}{50}$$

$$\frac{5x}{12} \times \frac{1}{50} = \frac{x}{120}$$

$$= \frac{5x}{600} \text{ hr} =$$

$$\text{Average speed} = \frac{\text{total distance}}{t_1 + t_2 + t_3}$$

$$= \frac{x}{\frac{x}{120} + \frac{x}{60} + \frac{5x}{600}} = \frac{x}{\frac{120}{120} + \frac{2x}{120} + \frac{5x}{120}}$$

$$= \frac{x}{\frac{x+2x+5x}{120}} =$$

$$\frac{x}{\frac{8x}{120}} =$$

$$\text{Avg. speed} = \frac{x}{\frac{4x}{120}} =$$

$$\frac{120}{4x}$$

$$= \cancel{x} \times \frac{120}{\cancel{4x}}$$

$$= \frac{120}{4}$$

$$= 30 \text{ km/hr.}$$

(9) Speed - downstream = 32 km/hr.

Speed - upstream = 38 km/hr.

$$\begin{aligned}\text{speed of boat in water} &= \frac{ds + us}{2} \\ &= \frac{38 + 32}{2} \\ &= 70/2 = 35 \text{ km/hr.}\end{aligned}$$

$$\text{speed of the stream} = \frac{ds - us}{2}$$

$$= \frac{38 - 32}{2}$$

$$= 4/2 = 2 \text{ km/hr.}$$

(10) Let length of the train = x m.

distance travel = $(x+84)$ m.

$$\text{speed of train} = \frac{\cancel{84}}{21} \left(\frac{x+84}{21} \right) \text{ m/sec.}$$

$$\text{speed of train} = \frac{x}{9} \text{ m/s.}$$

$$\frac{x+84}{2x} = \frac{x}{x}$$

7 3

$$3(x+84) = \cancel{2}x 7x$$

$$84 = 2x$$

$x = 42 \text{ m}$

$$\begin{array}{r} 84 \\ x3 \\ \hline 252 \\ 24 \\ \hline 12 \end{array}$$

$$3x + 252 = 7x$$

$$252 = 4x$$

$$x = 63 \text{ m.}$$

$$\text{Speed of train} = \frac{\lambda}{t} = \frac{63}{9}$$

= 7 m/s.

$$= 7 \times \frac{18}{5} \text{ km/hr}$$

$$= \frac{126}{5} = 25.2 \text{ km/hr}$$