Exercise - 18 (R.C. Nag, Arithmetic)

Dear Students, in the previous study material I made one mistake in the solution of question no. - 4 of this exercise. Hence, today I am starting with the solution of this sum.

4. Let the man had Rs. $x$ at the begining.

$\therefore$ He donated 10% of Rs. $x$ = $\frac{10}{100}$ of Rs. $x$

= Rs. $\frac{x}{10}$

After making donation he had Rs. $(x - \frac{x}{10})$

= Rs. $\frac{9x}{10}$

According to the question, he spent

$46\frac{2}{3}\%$ of Rs. $\frac{9x}{10}$ = $\frac{\frac{140}{3}}{100}$ of Rs. $\frac{9x}{10}$

= $\frac{\overset{7}{\cancel{140}}}{\underset{50}{\cancel{300}}} \times \frac{\overset{3}{\cancel{9}}x}{\cancel{10}}$ = Rs. $\frac{21x}{50}$

$\therefore$ At last he had Rs. $\left(\frac{9x}{10} - \frac{21x}{50}\right)$ = Rs. $\frac{45x - 21x}{50}$

= Rs. $\frac{\overset{12}{\cancel{24}}x}{\underset{25}{\cancel{50}}}$ = Rs. $\frac{12x}{25}$

$\therefore$ Rs. $\frac{12x}{25}$ = Rs. 72 $\therefore x$ = Rs. $\frac{\overset{6}{\cancel{72}} \times 25}{\cancel{12}}$

= Rs. 150.

$\therefore$ He had Rs. 150 in the begining.

6. The proportion of gold and silver in the crown is 2:1.

∴ Out of 3 part gold is 2 part.

" " 1 " " " " $\frac{2}{3}$ "

" " 100 " " " " $\frac{2}{3} \times 100$ " $= \frac{200}{3}$ part

∴ The percentage of gold $= 66\frac{2}{3}$ part

in the crown is $66\frac{2}{3}$ %.

8. Let the number of boys in the school be x.

According to the question,

Number of Hindu students $= \frac{70}{100}$ of $x = \frac{7x}{10}$,

and the number of Mahamedan $= \frac{\cancel{40}^{4}}{\cancel{100}_{5}}$ of $\left(x - \frac{7x}{10}\right) = \frac{2}{5}$ of $\frac{3x}{\cancel{10}_{5}} = \frac{6x}{25}$

$\therefore \frac{7x}{10} - \frac{6x}{25} = 322$

or $\frac{35x - 12x}{50} = 322$

or $23x = 322 \times 50$

or $x = \frac{\cancel{322}^{14} \times 50}{\cancel{23}} = 700$

∴ The number of boys in the school is 700.

9. Let the price of cloth at the begining was Rs. $x$.

∴ The present price of cloth =

$$\text{Rs.}\left(x + 65\%\text{ of } x\right)$$

$$= \text{Rs.}\left(x + \frac{65}{100}\text{ of } x\right)$$

$$= \text{Rs.}\left(x + \frac{13x}{20}\right) = \text{Rs.}\frac{33x}{20}.$$

∴ If the present price be Rs. $\frac{33x}{20}$, the previous price was Rs. $x$.

If the present price be Rs. 1, the previous price was Rs. $\left(x \times \frac{20}{33x}\right)$

$$= \text{Rs.}\frac{20}{33}$$

If the present price be Rs. 100, the previous was Rs. $\frac{20}{33} \times 100 = \text{Rs.}\frac{2000}{33} = \text{Rs.}\,60\frac{20}{33}$

∴ The household has to reduce $\left(100 - 60\frac{20}{33}\right)\%$ or $39\frac{13}{33}\%$ of his consumption so as not to increase his expenditure.

11. The amount of capital in the second year will be Rs. (4000 + 10% of 4000)

$= \text{Rs.}\left(4000 + \frac{1}{10} \text{ of } 4000\right) = \text{Rs. } 4400$

The amount of capital in the third year will be Rs. (4400 + 10% of 4400)

$= \text{Rs.}\left(4400 + \frac{1}{10} \text{ of } 4400\right) = \text{Rs. } 4840$

∴ The capital in the third year will be Rs. 4840.

13. Let his salary in the initial year was Rs. x.

∴ In the second year his salary was

$\text{Rs.}\left(x + 20\% \text{ of } x\right) = \text{Rs.}\left(x + \frac{20}{100} \text{ of } x\right)$

$= \text{Rs.}\left(x + \frac{x}{5}\right) = \text{Rs. } \frac{6x}{5}$

In the third year his salary will be

$\text{Rs.}\left(\frac{6x}{5} + 20\% \text{ of } \frac{6x}{5}\right) = \text{Rs.}\left(\frac{6x}{5} + \frac{1}{5} \text{ of } \frac{6x}{5}\right)$

$= \text{Rs.}\left(\frac{6x}{5} + \frac{6x}{25}\right) = \text{Rs. } \frac{30x + 6x}{25} = \text{Rs. } \frac{36x}{25}$

Similarly, in the fourth year his salary will be $\text{Rs.}\left(\frac{36x}{25} + \frac{1}{5} \text{ of } \frac{36x}{25}\right)$

$= \text{Rs. } \frac{180x + 36x}{125} = \frac{216x}{125}$

According to the question,

$$\frac{216x}{125} = 13824$$

$$\therefore x = \frac{13824 \times 125}{216} = 8000$$

∴ His initial salary was Rs. 8000.

15. Let the previous price of salt was Rs. $x$/kg.

∴ Present price of salt = Rs. $\left(x - 12\frac{1}{2}\% \text{ of } x\right)$

$$= \text{Rs.}\left(x - \frac{\frac{25}{2}}{100} \text{ of } x\right) = \text{Rs.}\left(x - \frac{25}{200} \text{ of } x\right)$$

$$= \text{Rs.}\left(x - \frac{x}{8}\right) = \text{Rs.}\frac{7x}{8}$$

According to the question

$$\frac{224}{\frac{7x}{8}} - \frac{224}{x} = 2$$

or $$\frac{224 \times 8}{7x} - \frac{224}{x} = 2$$

or $$\frac{224 \times 8 - 224 \times 7}{7x} = 2 \quad \text{or } 14x = 224(8-7)$$

or $14x = 224$

$\therefore x = \frac{224}{14} = 16$

∴ Previously the price of salt was Rs. 16/kg.