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## 5. Profit Loss

cost Price      selling Price

$$80 \quad \begin{array}{c} P \\ \frac{20}{80} = \frac{1}{4} \end{array} \rightarrow 25\% \quad P\% \rightarrow 25\%$$

$$80 \quad \begin{array}{c} -L \\ \frac{20}{80} \times 100 = 25\% \end{array} \quad L\% \rightarrow 25\%$$

$$20\%P = \frac{1}{5} \quad CP \quad SP$$

$$5 \quad +1 \rightarrow 6$$

$$10\%L = \frac{1}{10} \quad CP \quad SP$$

$$10 \quad -1 \rightarrow 9$$

- 1) Alfred buys an old scooter for Rs. 4700 and spends Rs. 800 on its repairs. If he sells the scooter for Rs. 5800, his gain percent is :
- a)  $4\frac{4}{7}\%$    b)  $5\frac{5}{11}\%$    c) 10%   d) 12%

$$\begin{array}{r} 4700 \\ + 800 \\ \hline 5500 \end{array} \quad \begin{array}{c} +P \\ \xrightarrow{\quad} \end{array} \quad 5800$$

$$\begin{array}{r} 300 \\ \swarrow \quad \searrow \\ 5500 \end{array} \quad \begin{array}{c} \times 100 \\ \xrightarrow{\quad} \end{array} \quad \begin{array}{l} 6\% \\ \xrightarrow{\quad} 5\frac{5}{11} \end{array} \quad \begin{array}{l} \text{remainder} \\ \xrightarrow{\quad} \end{array}$$

divide no.

- 2) The cost price of 20 articles is the same as the selling price of  $x$  articles. If the profit is 25%, then the value of  $x$  is:  
 a) 15   b) 16   c) 18   d) 25

$$CP \cdot 20 = SP \cdot x$$

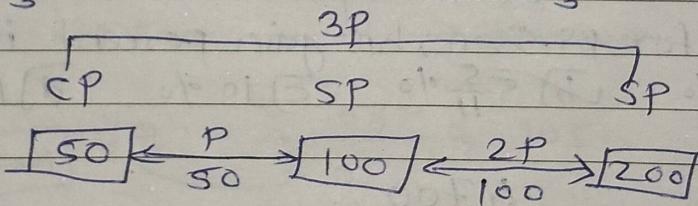
$$\frac{CP}{SP} \Rightarrow \frac{x}{20} = \frac{4}{5}$$

$$25\%P = \frac{1}{4}$$

$$\boxed{\frac{CP}{SP} = \frac{4}{5}}$$

- 3) If selling price is doubled, the profit triples. Find the profit percent.

- a)  $66\frac{2}{3}\%$    b) 100%   c)  $105\frac{1}{3}\%$    d) 120%



$$\frac{50}{50} \times 100 = \underline{\underline{100\%}}$$

- 4) In a certain store, the profit is 320% of the cost. If the cost increases by 25% but the selling price remains constant, approximately what percentage of the selling price is the profit?
- a) 30%   b) 70%   c) 100%   d) 250%

$$\begin{array}{ccc}
 \text{CP} & & \text{SP} \\
 100 & \xrightarrow[\text{P}]{} & 420 \\
 & +320 & \\
 \textcircled{125} \downarrow & +25\% & \\
 125 & \xrightarrow[\text{295}]{} & 420 \\
 \textcircled{70\%} & & \\
 \underline{295} & \times 100 = 70\% & \underline{\underline{\quad}}
 \end{array}$$

- 5) A vendor bought toffees at 6 for a rupee. How many for a rupee must he sell to gain 20%?
- a) 3   b) 4   c) 5   d) 6

(M2)

$$\begin{array}{ccc}
 1\text{₹} & \xrightarrow[\text{CP}]{} & 6\text{₹} \\
 \downarrow 20\% & & \\
 1.2\text{₹} & \xrightarrow[\text{SP}]{} & 6\text{₹}
 \end{array}$$

$$1\text{₹} \xrightarrow[\text{SP}]{} \frac{6}{1.2} = 5\text{₹}$$

(M2)  $\frac{x}{A} \leftarrow$  article

$$\frac{1}{6} \times \frac{6+20}{100} = \frac{1}{5} \xrightarrow[\text{ST}]{} 1\text{₹} \xrightarrow[\text{ST}]{} =$$

6) \* The percentage profit earned by selling an article for Rs. 1920 is equal to the percentage loss incurred by selling the same article for Rs. 1280. At what price should the article be sold to make 25% profit?

a) Rs. 2000

b) Rs. 2200

c) Rs. 2400

d) Data inadequate

$$\begin{array}{ccccccc}
 & & & \text{DIFF} = 640 & & & \\
 & 1280 & L & CP & P & 1920 & \\
 \uparrow & & \uparrow & : & & & \downarrow \\
 320 & & 1 & & 1 & & 320 \\
 \frac{640}{2} = 320 & & & & & & \\
 CP = 1280 + 320 = \underline{\underline{1600}} & & & & & & \\
 \begin{array}{c} 316 \\ \times 50 \\ \hline 1580 \end{array} & \boxed{1600} & \xrightarrow[400]{+25\%} & \boxed{2000} & & &
 \end{array}$$

7) A shopkeeper expects a gain of 22.5% on his cost price. If in a week his sale was of Rs. 392, what was his profit?

a) Rs. 18.20     b) Rs. 70     c) Rs. 72     d) Rs. 88.25

$$22.5\% P = \frac{22.5}{100} \Rightarrow \frac{225}{1000} = \frac{9}{40}$$

$$\begin{array}{ccccc}
 CP & \xrightarrow{+9} & SP & & \frac{8}{48} = 8 \\
 \frac{40}{40} & & \frac{49}{49} & & \\
 & \swarrow & \downarrow & \downarrow & \leftarrow \\
 g \times 8 & & 392 & 8 & \frac{392}{48} = 8 \\
 & & \underline{\underline{72}} & & 
 \end{array}$$

8) A man buys a cycle for RS. 1400 and sells it at a loss of 15%. What is the selling price of the cycle?

- a) RS. 1090    b) RS. 1160    c) RS. 1190    d) RS. 1202

$$\begin{array}{rcl}
 1400 & \xrightarrow{\text{10\%} - 140} & \\
 & \xrightarrow{\text{5\%} \rightarrow 14 \times 5 = 70} & \\
 \textcircled{-210} \downarrow & \text{-15\% L} & \\
 \textcircled{1190} \xrightarrow{\text{cross}} & \text{selling price} &
 \end{array}$$

9) Sam purchased 20 dozens of toys at the rate of RS. 375 per dozen. He sold each one of them at the rate of RS. 33. what was his percentage profit?

- a) 3.5    b) 4.5    c) 5.6    d) 6.5

$$\begin{array}{ccc}
 \text{CP} & & \text{SP} \\
 2 \text{DZ} & & (1 \text{DZ}) \\
 375 & & \\
 & \xrightarrow{\text{each one}} & \\
 & \xrightarrow{\text{in dozen } 12 \text{ items}} & \\
 & \xrightarrow{\text{P}} & \\
 & \xrightarrow{\frac{396 - 375}{375} \times 100} & \\
 & = \underline{\underline{5.6}} & \\
 & & 
 \end{array}$$

$$\begin{aligned}
 \text{Profit Percentage} &= \frac{7.21}{375} \times 100 \\
 &= \frac{5.6}{5} \\
 &= \underline{\underline{5.6\%}}
 \end{aligned}$$

- 10) Some articles were bought at 6 articles for Rs. 5 and sold at 5 articles for 6. Gain percent is:  
 a) 30% b)  $33\frac{1}{3}\%$  c) 35% d) 44%

$$6A \xrightarrow{CP} 5E$$

$$5A \xrightarrow{SP} 6E$$

make articles same

$$30 = 5 \times 6A \xrightarrow{CP} 5E \times 5 \Rightarrow 25$$

$$36 = 6 \times 5A \xrightarrow{SP} 6E \times 6 \Rightarrow 36$$

$$\left( \frac{11}{25} \times 100 \right) = 44\%$$

- ii) On selling 17 balls at Rs. 720, there is a loss equal to the cost price of 5 balls. The cost price of a ball is:

$$\Rightarrow SP \Rightarrow 720$$

(m1)

$$\text{Loss} \Rightarrow CP - SP$$

$$CP5 \Rightarrow CP17 - SP17$$

$$12CP = SP17$$

$$\frac{CP}{SP} = \frac{17}{12} \xrightarrow{G=60} 960$$

$$60 \xrightarrow{720}$$

(m2)

$$\frac{CP}{SP} \rightarrow 17$$

12

60

720

$$17 \times 60 = 960$$

Total  
Balls

Cost  
price

and  
5 ball  
loss

Selling  
balls  
after  
loss

12) When a plot is sold for Rs. 18,700, the owner loses 15%. At what price must that plot be sold in order to gain 15%?

- $\Rightarrow$  a) Rs. 21,000      b) Rs. 22,500  
 ✓ c) Rs. 25,300      d) Rs. 25,800

$$\text{SP} = 18,700 \quad \text{Loss} - 15\%$$

$$85\% \longrightarrow 18700$$

$$5\% \longrightarrow 1100$$

$$15\% \text{ profit} \quad 115\% \longrightarrow 25,300$$

$$\begin{array}{r} 115 \\ \times 100 \\ \hline 1100 \\ 220 \\ \hline 2200 \\ 2200 \\ \hline 25,300 \end{array}$$

13) 100 oranges are bought at the rate of Rs. 350 and sold at the rate of Rs. 48 per dozen. The percentage of profit or loss is:

- ✓ a)  $14\frac{2}{7}\%$  gain      b) 15% gain  
 c)  $14\frac{2}{7}\%$  loss      d) 15% loss

$$100 \text{ orange} \longrightarrow \text{Rs. } 350$$

$$1 \text{ orange} \xrightarrow{\text{CP}} 3.5 \text{ Rs}$$

dozen sold

$$\frac{48}{12} = 4 \text{ Rs}$$

$$1 \text{ orange} \xrightarrow{\text{SP}} 42$$

$$\frac{0.5}{3.5} = \frac{1}{7}$$

$$14\frac{2}{7}\% \text{ gain}$$

- 14) A shopkeeper sells one transistor for Rs. 840 at a gain of 20% and another for Rs. 960 at a loss of 4%. His total gain or loss percent is:
- a)  $5\frac{15}{17}\%$  loss      b)  $5\frac{15}{17}\%$  gain  
 c)  $6\frac{2}{3}\%$  gain      d) None of these

$$SP = \text{Rs. } 840 \rightarrow 20\% \text{ profit}$$

$$SP = \text{Rs. } 960 \rightarrow \text{loss } 4\%$$

one transistor :-

$$120\% \xrightarrow{\text{SP}} 840$$

$$100\% \xrightarrow[\text{CP}]{7} \underline{700}$$

another transistor :- ~~100~~ 40% Loss

$$96\% \xrightarrow{10} 960$$

$$100\% \xrightarrow[\text{CP}]{100 \times 10} \underline{1000}$$

$$TCP = 1000 + 700 = 1700$$

$$TSP = 960 + 840 = 1800$$

$$\frac{100}{1700} \times 100 = 5\frac{15}{17}\% \text{ profit}$$

gain

- 15) A trader mixes 26 kg of rice at Rs. 20 per kg with 30 kg of rice other variety at Rs. 36 per kg and sells the mixture at Rs. 30 per kg. His profit percent is:

- a) No Profit, no loss      b) ~~10~~ 5%  
 c) 8%      d) 10%      e) None of these

$$\begin{array}{ccc} 26 \text{ kg} & + & 30 \text{ kg} \Rightarrow 56 \text{ kg} \\ \downarrow 20 \text{ ₹ per kg} & & \downarrow 36 \text{ ₹ per kg} \\ 520 \text{ ₹} & & 1080 \text{ ₹} \Rightarrow 1600 \text{ ₹} \end{array}$$

~~CP / SP~~  ~~$\times 30$~~   
~~P~~ → ~~86 ₹~~

5% Profit