

Exercises – 11 A

Q. 1

Answer :

(i) CP = Rs. 950

Gain = 6%

$$\begin{aligned} SP &= \left\{ \frac{(100 + \text{Gain \%})}{100} \times CP \right\} \\ &= \left\{ \frac{(100 + 6)}{100} \times 950 \right\} \\ &= \frac{106}{100} \times 950 \\ &= \frac{100700}{100} \\ &= \text{Rs. } 1007 \end{aligned}$$

(ii) CP = Rs. 9600

Gain = $16\frac{2}{3}\%$ = $\frac{50}{3}\%$

$$\begin{aligned} SP &= \left\{ \frac{(100 + \text{Gain \%})}{100} \times CP \right\} \\ &= \left\{ \frac{(100 + \frac{50}{3})}{100} \times 9600 \right\} \\ &= \frac{350}{300} \times 9600 \\ &= \frac{3360}{3} \\ &= \text{Rs. } 11200 \end{aligned}$$

(iii) CP = Rs. 1540

Loss = 4%

$$\begin{aligned} SP &= \left\{ \frac{(100 - \text{Loss \%})}{100} \times CP \right\} \\ &= \left\{ \frac{(100 - 4)}{100} \times 1540 \right\} \\ &= \frac{96}{100} \times 1540 \\ &= \frac{147840}{100} \\ &= \text{Rs. } 1478.40 \end{aligned}$$

(iv) CP = Rs. 8640

Loss = $12\frac{1}{2}\%$ = $\frac{25}{2}\%$

$$\begin{aligned} SP &= \left\{ \frac{(100 - \text{Loss \%})}{100} \times CP \right\} \\ &= \left\{ \frac{(100 - \frac{25}{2})}{100} \times 8640 \right\} \\ &= \frac{175}{200} \times 8640 \\ &= \frac{1512000}{200} \\ &= \text{Rs. } 7560 \end{aligned}$$

Q. 2

Answer :

(i) CP = Rs. 2400

SP = Rs. 2592

Gain = SP - CP = Rs. (2592 - 2400) = Rs. 192

$$\text{Gain\%} = \left(\frac{\text{Gain}}{\text{CP}} \times 100 \right) = \left(\frac{192}{2400} \times 100 \right) = 8$$

(ii) CP = Rs. 1650

SP = Rs. 1452

Loss = CP - SP = (1650 - 1452) = Rs. 198

$$\text{Loss\%} = \left(\frac{\text{Loss}}{\text{CP}} \times 100 \right) = \left(\frac{198}{1650} \times 100 \right) = 12$$

(iii) CP = Rs. 12000 and SP = Rs. 12800

Gain = SP - CP = (12800 - 12000) = Rs. 800

$$\text{Gain\%} = \left(\frac{\text{Gain}}{\text{CP}} \times 100 \right) = \left(\frac{800}{12000} \times 100 \right) = 6.66$$

(iv) CP = Rs. 1800

SP = Rs. 1611

Loss = CP - SP = (1800 - 1611) = Rs. 189

$$\text{Loss\%} = \left(\frac{\text{Loss}}{\text{CP}} \times 100 \right) = \left(\frac{189}{1800} \times 100 \right) = 10.5$$

Q. 3

Answer :

(i) SP = Rs. 924

Gain = 10%

$$\text{CP} = \left\{ \frac{100}{(100 + \text{Gain \%})} \times \text{SP} \right\}$$

$$= \left\{ \frac{100}{(100 + 10)} \times 924 \right\}$$

$$= \frac{92400}{110}$$

$$= \text{Rs. 840}$$

(ii) SP = Rs. 1755

Gain = $12\frac{1}{2}\%$ = $\frac{25}{2}\%$

$$\text{CP} = \left\{ \frac{100}{(100 + \text{Gain \%})} \times \text{SP} \right\}$$

$$= \left\{ \frac{100}{\left(100 + \frac{25}{2}\right)} \times 1755 \right\}$$

$$= \left\{ \frac{200}{225} \times 1755 \right\}$$

$$= \frac{351000}{225}$$

$$= \text{Rs. 1560}$$

(iii) SP = Rs. 8510

Loss = 8%

$$\begin{aligned} \text{CP} &= \left\{ \frac{100}{(100 - \text{Loss \%})} \times \text{SP} \right\} \\ &= \left\{ \frac{100}{(100 - 8)} \times 8510 \right\} \\ &= \frac{851000}{92} \\ &= \text{Rs. 9250} \end{aligned}$$

(iv) SP = Rs. 5600

Loss = $6\frac{2}{3}\%$ = $\frac{20}{3}\%$

$$\begin{aligned} \text{CP} &= \left\{ \frac{100}{(100 - \text{Loss \%})} \times \text{SP} \right\} \\ &= \left\{ \frac{100}{\left(100 - \frac{20}{3}\right)} \times 5600 \right\} \\ &= \left\{ \frac{300}{280} \times 5600 \right\} \\ &= \frac{168000}{28} \\ &= \text{Rs. 6000} \end{aligned}$$

Q. 4

Answer :

Cost price of an almirah = Rs. 13600

Transportation cost = Rs. 400

Total cost price = Rs. (13600 + 400) = Rs. 14000

Selling price = Rs. 16800

Now, SP > CP

Gain = SP - CP = (16800 - 14000) = Rs. 2800

$$\text{Gain \%} = \left(\frac{\text{Gain}}{\text{CP}} \times 100 \right) \%$$

$$= \left(\frac{2800}{14000} \times 100 \right) \%$$

$$= \frac{2800}{140} \%$$

$$= 20\%$$

Q. 5

Answer :

Cost price of the house = Rs. 765000

Cost of repairing the house = Rs. 115000

Total Cost price = (765000 + 115000) = Rs. 880000

Ravi sold it at a gain of 5%.

$$\begin{aligned} \text{SP} &= \left\{ \frac{(100 + \text{gain \%})}{100} \times \text{CP} \right\} \\ &= \left\{ \frac{(100 + 5)}{100} \times 880000 \right\} \\ &= \frac{105}{100} \times 880000 \\ &= \text{Rs. 924000} \end{aligned}$$

He gets Rs. 924000.

Q. 6

Answer :

CP of 12 lemons (dozen) = Rs. 25

CP of one lemon = Rs. $\frac{25}{12}$

CP of five lemons = $5 \times \frac{25}{12} = \frac{125}{12} = \text{Rs. } 10.42$

SP of five lemons = Rs. 12 (given)

Gain = SP - CP = (12 - 10.42) = Rs 1.58

Gain % = $\left(\frac{\text{Gain}}{\text{CP}} \times 100 \right) \%$

= $\left(\frac{1.58}{10.42} \times 100 \right) \%$

= 15.2%

Q. 7

Answer :

Let the cost price of the pen be Re 1.

Cost price of 12 pens = Rs 12

SP of 12 pens = CP of 15 pens = Rs 15

Gain = SP - CP = Rs (15 - 12) = Rs 3

Gain % = $\left(\frac{\text{Gain}}{\text{CP}} \times 100 \right) \%$

= $\left(\frac{3}{12} \times 100 \right) \%$

= 25%

Gain% = 25%

Q. 8

Answer :

Let the cost price of one spoon be Re 1.

CP of 16 spoons = Rs 16

SP of 16 spoons = CP of 15 spoons = Rs 15

Loss = CP - SP = (16 - 15) = Re 1

Loss % = $\left(\frac{\text{Loss}}{\text{CP}} \times 100 \right) \%$

= $\left(\frac{1}{16} \times 100 \right) \%$

= 6.25%

Loss% = 6.25%

Q. 9

Answer :

Cost price of a video = Rs. 12000

SP of a video at a gain of 10% = $\left\{ \frac{(100 + \text{Gain \%})}{100} \times \text{CP} \right\}$

= $\left\{ \frac{(100 + 10)}{100} \times 12000 \right\}$

= $\left\{ \frac{110}{100} \times 12000 \right\}$

= **Rs. 13200**

So, Rahul purchased at a cost price of Rs. 13200.

Rahul sells it at a loss of 5%.

SP of a video at loss of 5% = $\left\{ \frac{(100 - \text{Loss \%})}{100} \times \text{CP} \right\}$

= $\left\{ \frac{(100 - 5)}{100} \times 13200 \right\}$

= $\frac{95}{100} \times 13200$

= **Rs. 12540**

∴ Rakesh pays = Rs. 12540

Q. 10

Answer :

SP of the sofa set = Rs. 21600

Gain% = 8

$$\begin{aligned}\text{CP of the sofa set} &= \left\{ \frac{100}{(100 + \text{Gain}\%)} \times \text{SP} \right\} \\ &= \left\{ \frac{100}{(100 + 8)} \times 21600 \right\} \\ &= \frac{2160000}{108} \\ &= \text{Rs. 20000}\end{aligned}$$

He purchased it at the cost of Rs. 20000.

Q. 11

Answer :

SP of the watch = Rs 11400

Loss% = 5

$$\begin{aligned}\text{CP} &= \left\{ \frac{100}{(100 - \text{Loss}\%)} \times \text{SP} \right\} \\ &= \left\{ \frac{100}{(100 - 5)} \times 11400 \right\} \\ &= \frac{11400}{95} \\ &= \text{Rs. 12000}\end{aligned}$$

He purchased it at the cost of Rs. 12000.

Q. 12

Answer :

SP of the calculator = Rs. 1325

Gain % = 6

$$\begin{aligned}\text{CP of the calculator} &= \left\{ \frac{100}{(100 + \text{Gain}\%)} \times \text{SP} \right\} \\ &= \left\{ \frac{100}{(100 + 6)} \times 1325 \right\} \\ &= \frac{132500}{106} \\ &= \text{Rs. 1250}\end{aligned}$$

$$\begin{aligned}\text{SP of the calculator} &= \left\{ \frac{(100 + \text{Gain}\%)}{100} \times \text{CP} \right\} \\ &= \left\{ \frac{(100 + 12)}{100} \times 1250 \right\} \\ &= \frac{140000}{100} \\ &= \text{Rs. 1400}\end{aligned}$$

Q. 13

Answer :

SP of a computer = Rs. 24480

Loss% = 4

$$\begin{aligned}\text{CP of the computer} &= \left\{ \frac{100}{(100 - \text{Loss}\%)} \times \text{SP} \right\} \\ &= \left\{ \frac{100}{(100 - 4)} \times 24480 \right\} \\ &= \frac{2448000}{96} \\ &= \text{Rs. 25500}\end{aligned}$$

In order to gain 4%:

$$\begin{aligned}\text{SP of the computer} &= \left\{ \frac{(100 + \text{Gain}\%)}{100} \times \text{CP} \right\} \\ &= \left\{ \frac{(100 + 4)}{100} \times 25500 \right\} \\ &= \left\{ \frac{104}{100} \times 25500 \right\} \\ &= \frac{2652000}{100} \\ &= \text{Rs. 26520}\end{aligned}$$

Q. 14

Answer :

Let the CP of the tricycle be Rs. x

$$\begin{aligned}\text{SP at 15\% gain} &= \left\{ \frac{(100 + \text{Gain \%})}{100} \times \text{CP} \right\} \\ &= \left\{ \frac{(100 + 15)}{100} \times x \right\} \\ &= \frac{115}{100} x\end{aligned}$$

$$= \text{Rs. } \frac{23}{20} x$$

$$\text{SP at 20\% gain} = x \times \frac{120}{100} = \text{Rs. } \frac{6}{5} x$$

$$\frac{6}{5} x - \frac{23}{20} x = 108$$

$$\Rightarrow \frac{24x - 23x}{20} = 108$$

$$\Rightarrow \frac{x}{20} = 108$$

$$\Rightarrow x = 2160$$

Hence, the cost price of the tricycle is Rs. 2160

Q. 15

Answer :

Let CP of a television be Rs x .

$$\text{SP at 8\% loss} = \frac{(100 - 8)}{100} \times x = \text{Rs. } \frac{92}{100} x$$

$$\text{SP at 6\% gain} = \left(\frac{100 + 6}{100} \right) \times x = \text{Rs. } \frac{106}{100} x$$

$$\frac{106}{100} x - \frac{92}{100} x = 3360$$

$$\Rightarrow \frac{14}{100} x = 3360$$

$$\Rightarrow x = \frac{336000}{14} = 24000$$

$\therefore$ CP = Rs. 24000

Sandeep bought it at the cost of Rs. 24000.

Q. 16

Answer :

SP of each cycle = Rs. 2376

He gains 10% in one cycle.

$$\text{CP} = \left\{ \frac{100}{(100 + \text{Gain \%})} \times \text{SP} \right\}$$

$$= \left\{ \frac{100}{(100 + 10)} \times 2376 \right\}$$

$$= \frac{100}{110} \times 2376$$

$$= \text{Rs. 2160}$$

He loses 10% in the second cycle.

$$\text{CP} = \frac{100}{(100 - \text{Loss \%})} \times \text{SP}$$

$$= \frac{100}{(100 - 10)} \times 2376$$

$$= \frac{100}{90} \times 2376$$

$$= \frac{23760}{9}$$

$$= \text{Rs. 2640}$$

$$\begin{aligned}\text{Total CP} &= \text{Rs. } (2160 + 2640) = \text{Rs. } 4800 \\ \text{Total SP} &= \text{Rs. } (2376 + 2376) = \text{Rs. } 4752 \\ \text{Loss} &= \text{CP} - \text{SP} = \text{Rs. } (4800 - 4752) = \text{Rs. } 48 \\ \text{Loss \%} &= \left(\frac{\text{Loss}}{\text{CP}} \times 100 \right) \% \\ &= \left(\frac{48}{4800} \times 100 \right) \% \\ &= 1\%\end{aligned}$$

Q. 17

Answer :

Let the CP of the exhaust fan be Rs. x .

$$\text{Gain} = \text{Rs. } \frac{x}{6}$$

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

$$\text{SP} = \text{Rs. } 7350$$

$$\therefore x + \frac{x}{6} = 7350$$

$$\Rightarrow \frac{7}{6}x = 7350$$

$$\Rightarrow x = \frac{7350 \times 6}{7} = \frac{44100}{7} = 6300$$

$$\text{CP of the fan} = \text{Rs. } 6300$$

Q. 18

Answer :

Mohit sold a watch to Karim at Rs. x .

Mohit sold it at a gain of 10%.

SP of the watch = 110% of x

$$= \left(x + \frac{110}{100} \right) = \text{Rs. } \frac{11}{10}x$$

Karim sold it to Rahim at a gain of 4%.

$$\text{SP of the watch} = 104\% \text{ of } \frac{11}{10}x = \left(\frac{104}{100} \times \frac{11}{10}x \right) = \text{Rs. } \left(\frac{26}{25} \times \frac{11}{10}x \right)$$

But, Rahim pays Rs. 14300.

$$\therefore \frac{26}{25} \times \frac{11}{10}x = 14300$$

$$\Rightarrow x = \frac{14300 \times 25 \times 10}{26 \times 11} = \frac{3575000}{286} = 12500$$

Mohit purchased it at Rs. 25000.

Q. 19

Answer :

Let the production cost of a washing machine be Rs. x .

Profit of the manufacturer = 10%

SP of the manufacturer = 110% of x

$$= \left(x + \frac{110}{100} \right) = \frac{110}{100}x = \text{Rs. } \frac{11}{10}x$$

Profit of the wholesale dealer = 15%

SP of the wholesale dealer = 115% of Rs. $\frac{11}{10}x$

$$= \text{Rs. } \left(\frac{11}{10}x \times \frac{115}{100} \right) = \text{Rs. } \left(\frac{11}{10}x \times \frac{23}{20} \right)$$

Profit of the retailer = 25%

$$\text{SP of the retailer} = 125\% \text{ of Rs. } \left(\frac{11}{10}x \times \frac{23}{20} \right)$$

$$= \text{Rs. } \left(\frac{11}{10}x \times \frac{23}{20} \times \frac{125}{100} \right) = \text{Rs. } \left(\frac{11}{10}x \times \frac{23}{20} \times \frac{5}{4} \right)$$

Given:

Retail price = Rs. 37950

$$\therefore \left(\frac{11}{10}x \times \frac{23}{20} \times \frac{5}{4} \right) = 37950$$

$$\Rightarrow x = \frac{37950 \times 10 \times 20 \times 4}{11 \times 23 \times 5}$$

$$\Rightarrow x = \frac{30360000}{1265} = 24000$$

$\therefore$ Production cost of a washing machine = Rs. 24000

Q. 20

Answer :

Mr. Mehta purchased a video at the cost of Rs. 20000.

Mr. Mehta purchased a television at the cost of Rs. 30000.

Total cost = Rs. (20000 + 30000) = Rs. 50000

He lost 5% on the video.

$$\begin{aligned} SP &= \frac{(100 - \text{Loss \%})}{100} \times CP \\ &= \frac{100 - 5}{100} \times 20000 \\ &= \frac{95}{100} \times 20000 \\ &= \text{Rs. } 19000 \end{aligned}$$

He gained 8% on the television.

$$\begin{aligned} SP &= \frac{(100 + \text{Gain \%})}{100} \times CP \\ &= \frac{100 + 8}{100} \times 30000 \\ &= \frac{108}{100} \times 30000 \\ &= \text{Rs. } 32400 \end{aligned}$$

$$\text{Total SP} = \text{Rs. } (19000 + 32400) = \text{Rs. } 51400$$

$$\text{Total CP} = \text{Rs. } 50000$$

$$\text{Total Gain} = \text{SP} - \text{CP} = \text{Rs. } (51400 - 50000) = \text{Rs. } 1400$$

$$\begin{aligned} \text{Gain \%} &= \left(\frac{\text{Gain}}{\text{CP}} \times 100 \right) \% \\ &= \left(\frac{1400}{50000} \times 100 \right) \% \\ &= 2.8\% \end{aligned}$$

