

Chapter 12 Profit and Loss

Question: 1

Given the following values, find the unknown values:

- (i) C.P. = Rs 1200, S.P. = Rs 1350 Profit/Loss , ?
- (ii) C.P. = Rs 980, S.P. = Rs 940 Profit/Loss = ?
- (iii) C.P. = Rs 720, S.P. ?, Profit = Rs 55.50
- (iv) C.P. ? S.P. = Rs 1254, Loss = Rs 32

Solution:

(i) CP = Rs. 1200, SP = Rs. 1350

CP < SP. So, profit.

Profit = Rs. (1350 – 1200) = Rs. 150

(ii) CP = Rs. 980, SP = Rs. 940

CP > SP. So, loss.

Loss = Rs. (980 – 940) = Rs. 40

(iii) CP = Rs. 720, SP = ?, profit = Rs. 55.50

Profit = SP – CP

Rs. 55.50 = SP – Rs. 720

SP = Rs. (55.50 + 720) = Rs. 775.50

(iv) CP = ?, SP = Rs. 1254, loss = Rs. 32

Loss = CP – SP

Rs. 32 = CP – Rs. 1254

CP = Rs. (1254 + 32) = Rs. 1286

Question: 2

Fill in the blanks in each of the following:

- (i) C.P. = Rs 1265, S.P. = Rs 1253, Loss = Rs _____
- (ii) C.P. = Rs _____, S.P. = Rs 450, Profit = Rs 150
- (iii) C.P. = Rs 3355, S.P. = Rs 7355, profit/loss = Rs _____
- (iv) C.P. = Rs _____, S.P. = Rs 2390, Loss = Rs 5.50

Solution:

(i) CP = Rs. 1265, SP = Rs. 1253

Loss = CP – SP = Rs. (1265 – 1253) = Rs. 12

(ii) CP = 7, SP = Rs. 450, profit = Rs. 150

Profit = SP – CP

Rs. 150 = Rs. 450 – CP = CP = Rs. (450 – 150) = Rs. 300

(iii) CP = Rs. 3355, SP = Rs. 7355,

Here SP > CP, so profit.

Profit = SP – CP Profit = Rs. (7355 – 3355) = Rs. 4000

(iv) CP = 7, SP = Rs. 2390, loss = Rs. 5.50

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

$$\text{Rs. } 5.50 = \text{CP} - \text{Rs. } 2390 \quad \text{CP} = \text{Rs. } (5.50 + 2390) = \text{Rs. } 2395.50$$

Question: 3

Calculate the profit or loss and profit or loss per cent in each of the following cases:

(i) C.P. = Rs 4560, S.P. = Rs 5000

(ii) C.P. = Rs 2600, S.P. = Rs 2470

(iii) C.P. = Rs 332, S.P. = Rs 350

(iv) C.P. = Rs 1500, S.P. = Rs 1500

Solution:

(i) CP = Rs. 4560, SP = Rs. 5000

Here, SP > CP. So, profit.

$$\text{Profit} = \text{SP} - \text{CP} = \text{Rs. } (5000 - 4560) = \text{Rs. } 440$$

$$\text{Profit \%} = \left\{ \frac{\text{Profit}}{\text{CP}} \times 100 \right\} \% = \left\{ \frac{440}{4560} \times 100 \right\} \% = \{0.0965 \times 100\} \% = 9.65\%$$

(ii) CP = Rs. 2600, SP = Rs. 2470.

Here, CP > SP. So, loss.

$$\text{Loss} = \text{CP} - \text{SP} = \text{Rs. } (2600 - 2470) = \text{Rs. } 130 \quad \text{Profit\%} = \left\{ \frac{\text{Profit}}{\text{CP}} \times 100 \right\} \% = \left\{ \frac{130}{2600} \times 100 \right\} \%$$

$$= \{0.05 \times 100\} \% = 5\%$$

(iii) CP = Rs. 332, SP = Rs. 350.

Here, SP > CP. So, profit.

$$\text{Profit} = \text{SP} - \text{CP} = \text{Rs. } (350 - 332) = \text{Rs. } 18 \quad \text{Profit\%} = \left\{ \frac{\text{Profit}}{\text{CP}} \times 100 \right\} \% = \left\{ \frac{18}{332} \times 100 \right\} \%$$

$$= \{0.054 \times 100\} \% = 5.4\%$$

(iv) CP = Rs. 1500, SP = Rs. 1500

$$\text{SP} = \text{CP}$$

So, neither profit nor loss.

Question: 4

Find the gain or loss per cent, when:

(i) C.P. = Rs 4000 and gain = Rs 40.

(ii) S.P. = Rs 1272 and loss = Rs 328

(iii) S.P. = Rs 1820 and gain = Rs 420.

Solution:

(i) CP = Rs. 4000, gain = Rs. 40

$$\text{Gain \%} = \left\{ \frac{\text{Gain}}{\text{CP}} \times 100 \right\} \% = \left\{ \frac{40}{4000} \times 100 \right\} \% = (0.01 \times 100) \% = 1\%$$

(ii) SP = Rs. 1272, loss = Rs. 328

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

$$\text{Hence, CP} = \text{Loss} + \text{SP} = \text{Rs. } 328 + \text{Rs. } 1272 = \text{Rs. } 1600$$

$$\text{Loss \%} = \left\{ \frac{\text{Loss}}{\text{CP}} \times 100 \right\} \% = \left\{ \frac{328}{1600} \times 100 \right\} \% = 20.5\%$$

(iii) SP = Rs. 1820, gain = Rs. 420

$$\text{Gain} = \text{SP} - \text{CP} \quad \text{CP} = 1820 - 420 = \text{Rs. } 1400$$

$$\text{Gain \%} = \left\{ \frac{\text{Gain}}{\text{CP}} \times 100 \right\} \% = \left\{ \frac{420}{1400} \times 100 \right\} \% = 30\%$$

Question: 5

Find the gain or loss per cent, when:

(i) C.P. = Rs 2300, Overhead expenses = Rs 300 and gain = Rs 260.

(ii) C.P. = Rs 3500, Overhead expenses = Rs 150 and loss = Rs 146

Solution:

(i) CP = Rs. 2300, overhead expenses = Rs. 300, gain = Rs. 260

$$\text{Gain \%} = \left\{ \frac{\text{Gain}}{\text{CP} + \text{overhead expenses}} \right\} \times 100 = \left\{ \frac{260}{2300 + 300} \right\} \times 100$$
$$= \left\{ \frac{260}{2600} \right\} \times 100 = 10\%$$

(ii) CP = Rs. 3500, overhead expenses = Rs. 150, loss = Rs. 146

$$\text{Loss \%} = \left\{ \frac{\text{Loss}}{\text{CP} + \text{overhead expenses}} \right\} \times 100 = \left\{ \frac{146}{3500 + 150} \right\} \times 100$$
$$= \left\{ \frac{146}{3650} \right\} \times 100 = \frac{14600}{3650} = 4\%$$

Question: 6

A grain merchant sold 600 quintals of rice at a profit of 7%. If a quintal of rice cost him Rs 250 and his total overhead charges for transportation, etc. were Rs 1000 find his total profit and the selling price of 600 quintals of rice.

Solution:

Cost of 1 quintal of rice = Rs. 250

Cost of 600 quintals of rice = $600 \times 250 = \text{Rs. } 150000$

Overhead expenses = Rs. 1000

Total CP = Rs. $(150000 + 1000) = \text{Rs. } 151000$

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

$$7 = \left(\frac{P}{151000} \right) \times 100$$

$$P = 1510 \times 7 = \text{Rs. } 10570$$

Profit = Rs. 10570

SP = CP + profit = Rs. $(151000 + 10570) = \text{Rs. } 161570$

Question: 7

Naresh bought 4 dozen pencils at Rs 10.80 a dozen and sold them for 80 paise each. Find his gain or loss percent.

Solution:

Cost of 1 dozen pencils = Rs. 10.80

Cost of 4 dozen pencils = $4 \times 10.80 = \text{Rs. } 43.2$

Selling price of each pencil = 80 paise

Total number of pencils = $12 \times 4 = 48$

SP of 48 pencils = $48 \times 80 \text{ paise} = 3840 \text{ paise} = \text{Rs. } 38.40$

Here, $SP < CP$.

$$\text{Loss} = CP - SP = \text{Rs. } (43.2 - 38.4) = \text{Rs. } 4.8$$

$$\text{Loss \%} = \left(\frac{\text{Loss}}{\text{CP}} \right) \times 100 = \left(\frac{4.8}{43.2} \right) \times 100 = \frac{480}{43.2} = 11.11\%$$

Question: 8

A vendor buys oranges at Rs 26 per dozen and sells them at 5 for Rs 13. Find his gain percent.

Solution:

CP of 1 dozen oranges = Rs. 26

CP of 1 orange = $\frac{26}{12} = \text{Rs. } 2.16$

CP of 5 oranges = $2.16 \times 5 = \text{Rs. } 10.8$

Now, SP of 5 oranges = Rs. 13

$$\text{Gain} = \text{SP} - \text{CP} = \text{Rs. } (13 - 10.8) = \text{Rs. } 2.2$$

$$\text{Gain \%} = (\text{Gain}/\text{CP}) \times 100 = (2.2/10.8) \times 100 = 20.3\%$$

Question: 9

Mr Virmani purchased a house for Rs 365000 and spent Rs 135000 on its repairs. If he sold it for Rs 550000, find his gain percent.

Solution:

Amount Mr. Virmani paid to purchase the house = Rs. 365000

Amount he spent on repair = Rs. 135000

Total amount he spent on the house (CP) = Rs. (365000 + 135000) = Rs. 500000

SP of the house = Rs. 550000

Gain = SP – CP = Rs. (550000 – 500000) = Rs. 50000

Gain % = (Gain/CP) x 100 = (50000/500000) x 100

$$= 5000000/500000 = 10\%$$

Question: 10

Shikha purchased a wrist watch for Rs 840 and sold it to her friend Vidhi for Rs 910. Find her gain percent.

Solution:

The cost price of the wristwatch that Shikha purchased, CP = Rs. 840

The price at which she sold it, SP = Rs. 910

Gain = SP – CP = (910 – 840) = Rs. 70

Gain % = (Gain/CP) x 100 = (70/840) x 100 = 7000/840 = 8.3%

Question: 11

A business man makes a 10% profit by selling a toy costing him Rs 120. What is the selling price?

Solution:

CP = Rs. 120

Profit % = 10

We now that

$\text{SP} = \{(100 + \text{profit \%})/100\} \times \text{CP} = \{(100 + 10)/100\} \times 120$

$= \{(110/100)\} \times 120 = 1.1 \times 120$

= Rs. 132

Question: 12

Harish purchased 50 dozen bananas for Rs 135. Five dozen bananas could not be sold because they were rotten. At what price per dozen should Harish sell the remaining bananas so that he makes a profit of 20%?

Solution:

Cost price of 50 dozens bananas that Harish purchased, CP = Rs. 135

Bananas left after removing 5 dozen rotten bananas = 45 dozens

Effective CP of one dozen bananas = Rs. 135/45 = Rs. 3

Calculating the price at which Harish should sell each dozen bananas to make a profit of 20% (or 1/5), we get

Profit % = (Gain/CP) x 100

To get a gain of 20% we give profit % = 20 and substitute

$$20 = (\text{gain}/135) \times 100$$

$$\text{Gain} = 270/10 = 27$$

We know ; $\text{SP} = \text{CP} + \text{Gain}$

$$\text{SP} = 27 + 135$$

$$\text{SP} = 162$$

Now that SP is for 45 Dozens of bananas

Calculating for one dozen

$$\rightarrow 162/45$$

$$= \text{Rs. } 3.6$$

Harish should sell the bananas at Rs. 3.60 a dozen in order to make a profit of 20%.

Question: 13

A woman bought 50 dozen eggs at Rs 6.40 a dozen. Out of these 20 eggs were found to be broken. She sold the remaining eggs at 55 paise per egg. Find her gain or loss percent.

Solution:

Cost of one dozen eggs = Rs. 6.40

Cost of 50 dozen eggs = $50 \times 6.40 = \text{Rs. } 320$

Total number of eggs = $50 \times 12 = 600$

Number of eggs left after removing the broken ones = $600 - 20 = 580$

SP of 1 egg = 55 paise

So, SP of 580 eggs = $580 \times 55 = 31900$ paise = $\text{Rs. } 31900/100 = \text{Rs. } 319$

Loss = $\text{CP} - \text{SP} = \text{Rs. } (320 - 319) = \text{Re. } 1$

Loss % = $(\text{Loss}/\text{CP}) \times 100 = (1/320) \times 100 = 0.31\%$

Question: 14

Jyotsana bought 400 eggs at Rs 8.40 a dozen. At what price per hundred must she sell them so as to earn a profit of 15%?

Solution:

Cost of eggs per dozen = Rs. 8.40

Cost of 1 egg = $8.40/12 = \text{Rs. } 0.7$

Cost of 400 eggs = $400 \times 0.7 = \text{Rs. } 280$

Calculating the price at which Jyotsana should sell the eggs to earn a profit of 15%,

we get 15% of $280 + 280$

$$= \{(15/100) \times 280\} + 280 = \{4200/100\} + 280 = 42 + 280 = \text{Rs. } 322$$

So, Jyotsana must sell the 400 eggs for Rs. 322 in order to earn a profit of 15%. Therefore, the SP per one hundred eggs = $\text{Rs. } 322/4 = \text{Rs. } 80.50$.

Question: 15

A shopkeeper makes a profit of 15% by selling a book for Rs 230. What is the C.P. and the actual profit ?

Solution:

Given that the SP of a book = Rs. 230

Profit % = 15

Since

$$\text{CP} = (\text{SP} \times 100) / (100 + \text{profit \%})$$

$$\text{CP} = (230 \times 100) / (100 + 15)$$

$$CP = 23000 + 115 = \text{Rs. } 200$$

$$\text{Also, Profit} = SP - CP = \text{Rs. } (230 - 200) = \text{Rs. } 30$$

$$\text{Actual profit} = \text{Rs. } 30$$

Question: 16

A bookseller sells all his books at a profit of 10%. If he buys a book from the distributor at Rs 200, how much does he sell it for ?

Solution:

Given

$$\text{Profit \%} = 10\% \quad CP = \text{Rs. } 200$$

Since

$$SP = \left\{ \frac{100 + \text{profit \%}}{100} \right\} \times CP = \left\{ \frac{100 + 10}{100} \right\} \times 200$$

$$= \left\{ \frac{110}{100} \right\} \times 200 = \text{Rs. } 220$$

The bookseller sells the book for Rs. 220.

Question: 17

A floweriest buys 100 dozen roses at Rs 2 a dozen. By the time the flowers are delivered, 20 dozen roses are mutilated and are thrown away. At what price should he sell the rest if he needs to make a 20% profit on his purchase ?

Solution:

$$\text{Cost of 1 dozen roses} = \text{Rs. } 2$$

$$\text{Number of roses bought by the florist} = 100 \text{ dozens}$$

$$\text{Thus, cost price of 100 dozen roses} = 2 \times 100 = \text{Rs. } 200$$

$$\text{Roses left after discarding the mutilated ones} = 80 \text{ dozens}$$

Calculating the price at which the florist should sell the 80 dozen roses in order to make a profit of 20%, we have

$$\text{Profit \%} = \frac{(SP - CP)}{CP} \times 100 = \frac{(SP - 200)}{200} \times 100$$

$$40 = SP - 200$$

$$SP = \text{Rs. } 240$$

Therefore, the SP of the roses should be $\text{Rs. } 240/80 = \text{Rs. } 3$ per dozen.

Question: 18

By selling an article for Rs 240, a man makes a profit of 20%. What is his C.P. ? What would his profit percent be if he sold the article for Rs 275 ?

Solution:

$$\text{Let } CP = \text{Rs. } x \quad SP = \text{Rs. } 240$$

$$\text{Let profit be Rs. } P.$$

$$\text{Now, profit \%} = 20\%$$

$$\text{Since Profit \%} = \frac{\text{Profit}}{CP} \times 100$$

$$\rightarrow 20 = \frac{P}{x} \times 100$$

$$\rightarrow P = \frac{20x}{100} = \frac{x}{5}$$

$$\text{Profit} = SP - CP = 240 - x$$

$$\rightarrow P = 240 - x$$

$$\rightarrow \frac{x}{5} = 240 - x$$

$$\rightarrow 240 = x + \frac{x}{5}$$

$$\rightarrow 240 = 6 \times \frac{x}{5}$$

$$\rightarrow x = \frac{1200}{6}$$

→ 200

So, CP = Rs. 200

New SP = Rs. 275 and CP = Rs. 200

Profit % = $\{(SP - CP)/CP\} \times 100$

→ $\{(275 - 200)/200\} \times 100 = (75/200) \times 100$

= 7500/200

= 37.5%