

# Profit and Loss

## Ex 10B

### IMPORTANT FACTS

#### Cost Price:

The price, at which an article is purchased, is called its **cost price**, abbreviated as **C.P.**

#### Selling Price:

The price, at which an article is sold, is called its **selling price**, abbreviated as **S.P.**

#### Profit or Gain:

If S.P. is greater than C.P., the seller is said to have a **profit** or **gain**.

#### Loss:

If S.P. is less than C.P., the seller is said to have incurred a **loss**.

### IMPORTANT FORMULAE

$$1. \text{ Gain} = (\text{S.P.}) - (\text{C.P.})$$

$$2. \text{ Loss} = (\text{C.P.}) - (\text{S.P.})$$

$$3. \text{ Loss or gain is always reckoned on C.P.}$$

$$4. \text{ Gain Percentage: (Gain \%)}$$

$$\text{Gain \%} = \left( \frac{\text{Gain} \times 100}{\text{C.P.}} \right)$$

$$5. \text{ Loss Percentage: (Loss \%)}$$

$$\text{Loss \%} = \left( \frac{\text{Loss} \times 100}{\text{C.P.}} \right)$$

$$6. \text{ Selling Price: (S.P.)}$$

$$\text{SP} = \left[ \frac{(100 + \text{Gain \%})}{100} \times \text{C.P.} \right]$$

$$7. \text{ Selling Price: (S.P.)}$$

$$\text{SP} = \left[ \frac{(100 - \text{Loss \%})}{100} \times \text{C.P.} \right]$$

$$8. \text{ Cost Price: (C.P.)}$$

$$\text{C.P.} = \left[ \frac{100}{(100 + \text{Gain \%})} \times \text{S.P.} \right]$$

$$9. \text{ Cost Price: (C.P.)}$$

$$\text{C.P.} = \left[ \frac{100}{(100 - \text{Loss \%})} \times \text{S.P.} \right]$$

10. If an article is sold at a gain of say 35%, then S.P. = 135% of C.P.

11. If an article is sold at a loss of say, 35% then S.P. = 65% of C.P.

12. When a person sells two similar items, one at a gain of say  $x\%$ , and the other at a loss of  $x\%$ , then the seller always incurs a loss given by:

$$\text{Loss \%} = \left( \frac{\text{Common Loss and Gain \%}}{10} \right)^2 = \left( \frac{x}{10} \right)^2$$

13. If a trader professes to sell his goods at cost price, but uses false weights, then

$$\text{Gain \%} = \left[ \frac{\text{Error}}{(\text{True Value}) - (\text{Error})} \times 100 \right] \%$$

Q1.

#### Answer :

Marked price = Rs 4650 and discount = 18%

Discount = 18% of marked price

$$= 18\% \text{ of Rs } 4650$$

$$= \text{Rs } \left( 4650 \times \frac{18}{100} \right) = \text{Rs } 837$$

Selling price = marked price – discount

$$= \text{Rs } (4650 - 837) = \text{Rs } 3813$$

Therefore, the selling price of the cooler is Rs 3813.

Q2.

**Answer :**

Marked Price = Rs 960

Selling Price = Rs 816

Discount = MP – SP

$$= \text{Rs } (960 - 816)$$

$$= \text{Rs } 144$$

$$\text{Rate of discount} = 144 \times \frac{100}{960} = 15\%$$

Therefore, the discount on the sweater is 15%.

Q3.

**Answer :**

Selling price = **Rs 546**

Discount = **Rs 104**

Marked Price = ?

Marked Price = selling price + discount

$$= \text{Rs } (546 + 104)$$

$$= \text{Rs } 650$$

$$\begin{aligned}\text{Rate of discount} &= 104 \times \frac{100}{650} \\ &= 16\%\end{aligned}$$

Therefore, the rate of discount given on the shirt is 16%.

Q4.

**Answer :**

Selling Price = Rs 216.20

Rate of discount = 8%

Marked Price = ?

SP = MP – discount

Let the MP be Rs **x**.

$$\text{Now, } x - \frac{8}{100} \times x = 216.20$$

$$\Rightarrow \frac{92x}{100} = 216.20$$

$$\Rightarrow 92x = 21620$$

$$\Rightarrow x = \frac{21620}{92}$$

$$\Rightarrow x = 235$$

$\therefore$  Marked price = **Rs 235**

Q5.

**Answer :**

Cost price = Rs 528

Rate of discount = 12%

Marked price = ?

SP = MP – discount

Let the MP be Rs **x**.

$$\text{Now, } \frac{x - 12}{100 \times x} = 528$$

$$\Rightarrow \frac{88x}{100} = 528$$

$$\Rightarrow 88x = 52800$$

$$\Rightarrow x = \frac{52800}{88}$$

$$\Rightarrow x = \text{Rs } 600$$

Therefore, the marked price of tea set is Rs 600.

Q6.

**Answer :**

Let Rs 100 be the CP.

Then, marked price = **Rs 135**

Discount = 20% of MP

$$= \frac{20}{100} \times 135$$
$$= 27$$

Selling price = marked price – discount

$$= 135 - 27$$

$$= \text{Rs } 108$$

Now, gain = SP – CP

$$= 108 - 100$$

$$= \text{Rs } 8$$

$$\therefore \text{Gain percentage} = \frac{\text{gain}}{\text{CP}} \times 100$$

$$= \frac{8}{100} \times 100$$
$$= 8\%$$

Q7.

**Answer :**

Let Rs 100 be the CP.

Then, marked price = **Rs 140**

Discount = 30% of MP

$$= \frac{30}{100} \times 140$$
$$= 42$$

Selling Price = marked price – discount

$$= 140 - 42$$

$$= \text{Rs } 98$$

Now, loss = CP – SP

$$= 100 - 98$$

$$= \text{Rs } 2$$

$$\therefore \text{Loss percentage} = \frac{\text{Loss} \times 100}{\text{CP}}$$

$$= \frac{2 \times 100}{100}$$
$$= 2\%$$

Therefore, the shopkeeper had a loss of 2%.

Q8.

**Answer :**

Cost price of the fan = **Rs 1080**

Gain percentage = 25%

$$\therefore \text{Selling price} = \left\{ \frac{(100 + \text{gain \%})}{100} \times \text{CP} \right\}$$

$$= \left\{ \frac{100 + 25}{100} \times 1080 \right\}$$

$$= \frac{125}{100} \times 1080$$

$$= \text{Rs } 1350$$

Let the marked price be Rs **x**.

Discount = 25% of **Rs x**

$$= \frac{25x}{100}$$

SP = MP – discount

$$\Rightarrow 1350 = x - \frac{25x}{100}$$

$$\Rightarrow 1350 = \frac{100x - 25x}{100}$$

$$\Rightarrow 135000 = 75x \Rightarrow x = \frac{13500}{75} \Rightarrow x = 1800$$

Therefore, the marked price of the fan is **Rs 1800**.

Q9.

**Answer :**

Cost price of the refrigerator = **Rs 11515**

Gain percentage = 20%.

$$\begin{aligned}\therefore \text{Selling price} &= \left\{ \frac{(100 + \text{gain \%})}{100} \times C.P \right\} \\ &= \left\{ \frac{100+20}{100} \times 11515 \right\} \\ &= \frac{120}{100} \times 11515 \\ &= \text{Rs } 13818\end{aligned}$$

Let the marked price be Rs  $x$ .

Discount = 16% of **Rs  $x$**

$$= \frac{16x}{100}$$

S.P = MP - Discount

$$\Rightarrow 13818 = x - \frac{16x}{100}$$

$$\Rightarrow 13818 = \frac{100x - 16x}{100}$$

$$\Rightarrow 1381800 = 84x \Rightarrow x = \frac{1381800}{84} \Rightarrow x = 16450$$

Therefore, the marked price of the refrigerator is **Rs 16450**.

Q10.

**Answer :**

The cost price of the ring is **Rs 1190**.

Gain percentage = 20%.

$$\begin{aligned}\therefore \text{Selling price} &= \left\{ \frac{(100 + \text{gain \%})}{100} \times C.P \right\} \\ &= \left\{ \frac{100+20}{100} \times 1190 \right\} \\ &= \frac{120}{100} \times 1190 \\ &= \text{Rs } 1428\end{aligned}$$

Let the marked price be  $x$ .

Discount = 16% of **Rs  $x$**

$$= \frac{16x}{100}$$

SP = MP - Discount

$$\Rightarrow 1428 = x - \frac{16x}{100}$$

$$\Rightarrow 1428 = \frac{100x - 16x}{100}$$

$$\Rightarrow 142800 = 84x$$

$$\Rightarrow \frac{142800}{84} = x$$

$$\Rightarrow x = 1700$$

Therefore, the marked price of the ring is **Rs 1700**.

Q11.

**Answer :**

Let **Rs 100** be the cost price.

Gain required = 17%

$\therefore$  Selling price = **Rs 117**

Let the marked price be **Rs  $x$** .

Then, discount = 10% of  $x$

$$= \frac{10}{100} \times x$$

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

Selling Price = MP - discount

$$\Rightarrow 117 = x - \frac{x}{10}$$

$$\Rightarrow 117 = \frac{9x}{10}$$

$$\Rightarrow 9x = 1170$$

$$\Rightarrow x = \frac{1170}{9}$$

$$\Rightarrow x = 130$$

$\therefore$  Marked price = **Rs 130**

Hence, the marked price is 30% above the cost price.

Q12.

**Answer :**

Let **Rs 100** be the cost price.

Gain required = 8%

Therefore, the selling price is **Rs 108**.

Let **Rs x** be the marked price.

Then, discount = 10% of x

$$\begin{aligned} &= \frac{10}{100} \times x \\ &= \frac{x}{10} \end{aligned}$$

Selling Price = MP – discount

$$\Rightarrow 117 = x - \frac{x}{10}$$

$$\Rightarrow 117 = \frac{9x}{10}$$

$$\Rightarrow 9x = 1080$$

$$\Rightarrow x = \frac{1080}{9}$$

$$\Rightarrow x = 120$$

$\therefore$  Marked price = **Rs 120**

Hence, the marked price is 20% above the cost price.

Q13.

**Answer :**

Marked price of the TV = Rs 18500

First discount = 20%

**Now, 20% of 18500**

$$= \frac{20}{100} \times 18500$$

$$= \text{Rs } 3700$$

Price after the first discount = Rs (18500 – 3700) = Rs 14800

Second discount = 5% of 14800

$$\begin{aligned} &= \frac{5}{100} \times 14800 \\ &= 740 \end{aligned}$$

Price after the second discount = (14800 – 740)

= Rs 14060

The TV is available for **Rs 14060**.

Q14.

**Answer :**

Let the marked price of the article be Rs 100.

First discount = 20%

Price after the first discount = (100 – 20) = Rs 80

Second discount = 5% of 80

$$\begin{aligned} &= \frac{5}{100} \times 80 \\ &= \text{Rs } 4 \end{aligned}$$

Price after the second discount = (80 – 4) = Rs 76

Net selling price = Rs 76

$\therefore$  Single discount equivalent to the given successive discounts = (100 – 76)% = 24%