

Profit & Loss

Formula:

Example : Book = Rs.200 -----> Cost Price

Sell Book With 100 Rs Profit = $200+100 = \text{Rs.}300$

Selling Price = Cost Price + Profit Rs

$\% \text{Profit} = \text{Profit in Rs} / \text{Cost Price} \times 100$

$\% \text{Loss} = \text{Loss Rs} / \text{Cost Price} \times 100$

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

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

1. Book CP = Rs. 500

I Want 10% Profit Then

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

$$\text{SP} = (100 + 10)\% \times 500$$

$$\text{SP} = 110\% \text{ of } 500$$

$$\text{SP} = 110/100 \times 500$$

$$\text{SP} = 550$$

$$\text{SP} = \text{Rs.}550$$

I Sold Book At 20% Loss Then

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

$$\text{SP} = (100 - 20)\% \times 500$$

$$\text{SP} = \text{Rs.}400$$

2. Ajay incurred loss of 20% by selling a vase for Rs. 2880. To get a profit of 20% at what price should he sell the vase?

$$\text{SP} = 2880 = (100 - 20)\% \times \text{CP}$$

$$= 80\% \times \text{CP}$$

$$\text{SP} = 80/100 \times \text{CP}$$

$$\text{CP} = 2880 \times 100 / 80$$

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

$$\text{SP} = (100 + 20)\% \times (2880 \times 100 / 80)$$

$$\text{SP} = (120/100) \times (2880 \times 100 / 80)$$

$$\text{SP} = 4320$$

$$SP = Rs.4320$$

3. Rambabu sells paper planes at the rate of 20 planes for Re. 1. If he gets profit of 20%, how many planes did he buy in 1 rupee?

$$SP = Rs.1$$

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

$$1 = (100 + 20)\% \times CP$$

$$1 = 120\% \times CP$$

$$1 = 120/100 \times CP$$

$$CP = 100/120$$

$$20 \text{ ----- } 100/120 \text{ Rs}$$

$$? \text{ ----- } 1 \text{ Rs}$$

Cross Multiply

$$? = 24$$

$$X = 24$$

SHORT CUTS :

1. Profit Percentage Formula

When the profit is given:

$$\text{Profit Percentage} = \frac{\text{Profit}}{\text{Cost Price}} \times 100 \quad \text{Profit Percentage} = \frac{\text{Cost Price} - \text{Profit}}{\text{Cost Price}} \times 100$$

Where:

- Profit = Selling Price (SP) - Cost Price (CP)

2. Loss Percentage Formula

When the loss is given:

$$\text{Loss Percentage} = \frac{\text{Loss}}{\text{Cost Price}} \times 100 \quad \text{Loss Percentage} = \frac{\text{Cost Price} - \text{Loss}}{\text{Cost Price}} \times 100$$

Where:

- Loss = Cost Price (CP) - Selling Price (SP)

3. Selling Price (SP) Based on Profit or Loss

If profit or loss percentage is given:

- Profit:**

$$\text{Selling Price (SP)} = \text{Cost Price (CP)} \times (1 + \text{Profit \%} / 100) \quad \text{Selling Price (SP)} = \text{Cost Price (CP)} \times (1 + 100 \text{ Profit \%} / 100)$$

- Loss:**

$$\text{Selling Price (SP)} = \text{Cost Price (CP)} \times (1 - \text{Loss \%} / 100) \quad \text{Selling Price (SP)} = \text{Cost Price (CP)} \times (1 - 100 \text{ Loss \%} / 100)$$

4. Cost Price (CP) Based on Profit or Loss

If selling price (SP) and profit or loss percentage is given:

- **Profit:**

$\text{Cost Price (CP)} = \frac{\text{Selling Price (SP)}}{1 + \frac{\text{Profit \%}}{100}}$
 $\text{Cost Price (CP)} = \frac{\text{Selling Price (SP)}}{1 + \frac{\text{Profit \%}}{100}}$

- **Loss:**

$\text{Cost Price (CP)} = \frac{\text{Selling Price (SP)}}{1 - \frac{\text{Loss \%}}{100}}$
 $\text{Cost Price (CP)} = \frac{\text{Selling Price (SP)}}{1 - \frac{\text{Loss \%}}{100}}$

5. Successive Profit or Loss

If there are **two successive profits or losses**:

$\text{Overall Profit \%} = \left(\left(1 + \frac{P_1}{100} \right) \times \left(1 + \frac{P_2}{100} \right) - 1 \right) \times 100$
 $\text{Overall Profit \%} = \left(\left(1 + \frac{P_1}{100} \right) \times \left(1 + \frac{P_2}{100} \right) - 1 \right) \times 100$

Where:

- P_1 and P_2 are the two profit percentages.
- Use the formula similarly for successive losses but subtract the loss percentages.

For example: If you first gain 10% profit, then 20% profit, the overall profit will be:

$\text{Overall Profit \%} = \left(\left(1 + \frac{10}{100} \right) \times \left(1 + \frac{20}{100} \right) - 1 \right) \times 100 = 1.1 \times 1.2 - 1 = 0.32 \text{ or } 32\%$
 $\text{Overall Profit \%} = \left(\left(1 + \frac{10}{100} \right) \times \left(1 + \frac{20}{100} \right) - 1 \right) \times 100 = 1.1 \times 1.2 - 1 = 0.32 \text{ or } 32\%$

6. Profit or Loss on Discount

If a discount is given and you want to find the profit or loss:

- **Profit when discount is given:**

$\text{Profit Percentage} = \frac{\text{Discount}}{\text{Cost Price}} \times 100$
 $\text{Profit Percentage} = \frac{\text{Discount}}{\text{Cost Price}} \times 100$

- **Loss when discount is given:**

$\text{Loss Percentage} = \frac{\text{Discount}}{\text{Selling Price}} \times 100$
 $\text{Loss Percentage} = \frac{\text{Discount}}{\text{Selling Price}} \times 100$