



Profit and loss - Quant Study Notes for Competitive Exams

Hi guys, Profit and Loss is the most interesting and very important topic of the Quant section. This is a very wide topic of the quant section in which you will learn some real-life solutions to problems and it will increase your aptitude dramatically. So let's start.

To understand the concept of profit and loss, we again have to understand the concept of 'Percentage increase and decrease' but now in a slightly different way. Now, there is a most important concept, to understand profit and loss, called PERCENTAGE INCREASE or DECREASE.

PERCENTAGE INCREASE or DECREASE in a quantity is the ratio, expressed in percentage, of the actual INCREASE or DECREASE in the quantity to the original amount of the quantity. i.e. $\text{PERCENTAGE INCREASE} = (\text{Actual increase} / \text{Original quantity}) \times 100$ $\text{PERCENTAGE DECREASE} = (\text{Actual decrease} / \text{Original quantity}) \times 100$

E.g. If the consumption of rice by a family is increased from 60 kg/month to 75 kg/month, then the percentage increase in rice consumption is calculated as follows: Sol: Actual increase = $75 - 60 = 15$ kg/month \Rightarrow Percentage increase = $(\text{actual increase} / \text{quantity at the beginning}) \times 100 = 15/60 \times 100 = 25\%$ So, let's start by taking a simple example and try to understand what profit/loss in a trade is.

E.g. A man buys an article for Rs.300 and sells it for Rs.900. Find profit/loss. Sol: We saw he buys at Rs.300 and sells that article at Rs.900. So, he got additional, $\Rightarrow 900 - 300 = 600$ that is the extra money he got this is called profit for him.

Let's take another scenario of loss;

E.g. Aman buys an article at Rs 900. and sells it for Rs 300. Find profit/loss. Sol: He buys at 900 rs. and sells at Rs 300. So, he loses $900 - 300 = \text{Rs } 600$.

Whenever a purchased article is sold, then either profit is earned or loss is incurred. Let's learn some terminologies;

Selling Price (SP): The price at which article is sold.

Cost Price (CP): The price at which article is manufactured or purchased.

Profit (SP - CP): When an article is sold at a price more than its cost price, then profit is earned.

Loss (CP - SP): When an article is sold at a price less than its cost price, then the loss is incurred.

Profit and loss

In day-to-day life we don't talk about absolute loss/gain we talk about profit/loss in percentage terms, eg. 15% off, 20% sale.

$$\text{Profit/Loss (\%)} = [(\text{Selling price} - \text{Cost price}) \times 100] / \text{Cost price} = [(SP - CP) \times 100] / CP$$

In formula if



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- Selling price - Cost price > 0 , then there is profit
- Selling price - Cost price < 0 , then there is loss

TIP- Profit and loss are always calculated on cost price unless otherwise stated in the question.

E.g. A person buys a toy for 50 and sells it for 75. What will be his gain percent? Sol: So according to our question, Selling Price = 75 and Cost Price = 50 Selling Price - Cost Price = $75 - 50 = 25 > 0$ So, there would be profit, Profit (%) = $(75 - 50) / 50 \times 100$ Profit (%) = $25 / 50 \times 100 = 1/2 \times 100 = 50\%$ (Ans.) So, he would get 50% profit.

E.g. Find the SP, when CP is 80 rs. and the gain is 20%. Sol: He gains 20 % for selling at 'x' rs. and buying it for 80 rs. Sol: So, Gain (%) = $(SP - CP) / CP \times 100$ $\Rightarrow 20 = (x - 80) / 80 \times 100$ $\Rightarrow (20 \times 80) / 100 = x - 80$ $\Rightarrow 16 = x - 80$ $\Rightarrow x = Rs 96$ (Ans.)

Rearranging above formula we would get

- $SP = [(100 + \text{gain}\%) / 100] \times CP$
- $SP = [(100 - \text{Loss}\%) / 100] \times CP$
- $CP = [100 / (100 + \text{gain}\%)] \times SP$
- $CP = [100 / (100 - \text{Loss}\%)] \times SP$

We don't have to remember these formulas; they are just derived from the main formula.

E.g. Find the SP, when CP is 80 rs. and the gain is 20%. Sol: We know the direct formula for SP when there is gain $\Rightarrow SP = ((100 + \text{Gain}\%) / 100) \times CP \Rightarrow SP = ((100 + 20) / 100) \times 80 = 1.2 \times 80 = Rs 96$

E.g. The M.R.P of a 1 kg salt packet is Rs 33 which is fixed so that the shopkeeper gets 50% profit. The shopkeeper sells it for Rs 27.5 but removes 250 g from each packet. What is the effective profit (%) he makes? Sol: Cost price = $M.R.P \times 100 / (100 + \text{Profit}\%) \Rightarrow 33 \times 100 / (100 + 50) = Rs 22$ But he sells only 750g instead of 1 kg Cost price of 750 g = $0.75 \times 22 = Rs 16.5$ Selling price of 750g = 27.5 Profit = $(S.P. - C.P.) / (C.P.) \times 100 \Rightarrow (27.5 - 16.5) / 16.5 \times 100 = 66.66\%$ (Ans.)

Concepts of profit and loss will be used in other topics as well. Hope you understood the concept of profit and loss through this blog. So practice hard and stay connected with us.