Percentage and its Application

Percentage means per hundred or for every hundred

$x\% = \frac{x}{100}$ Ex $25\% = \frac{25}{100} = \frac{1}{4}$

Chart

Problem on percentage

Ex. In 800 student 25% are girls, find the number of boys.

Sol. Boys percentage
= (100-25)%
= 75%
No. of boys = 75 of total student
$= \frac{75}{100} \times 800 = 600$

Ex. Ram salary is decreased by 20% and then increased by 20% find % change in his salary.

Sol. Let has salary is Rs. 100
His salary after 20% decrease
= 100 - 20% of 100
= 100 - 20 = 80
Now when his salary increased by 20% it become
= 80 + 20% of 80
= 80 +16 = 96
So Ram income is decreased by
(100 - 96) = 4%

Profit & Loss

Profit = SP - CP

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

Loss = CP - SP

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

Profit & Loss are Calculated on CP.

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

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

Ex. A man sold an article at Rs.450 and having a loss of 10% in order to gain 20% at what price should be sold.

Sol. Initially SP = 450
loss = 10%

$SP = \left(\frac{100 - \text{loss}\%}{100}\right) CP$

$450 = \left(\frac{100 - 10}{100}\right) CP$

$CP = \frac{450 \times 100}{90} = 500$

Now CP = 500
gain = 20%

So the New $SP = \left(\frac{100 + \text{gain}\%}{100}\right) CP$

$= \left(\frac{100 + 20}{100}\right) 500$

= Rs. 600

% Increase and Decrease

$\%\ \text{Increase} = \frac{\text{increase}}{\text{original value}} \times 100$

$\%\ \text{Decrease} = \frac{\text{decrease}}{\text{original value}} \times 100$

Value added Tax

Tax is always calculated on the price at which article is sold.

$\text{SP With tax} = \left(\frac{100 + \text{tax}\%}{100}\right) SP$

Q. The cost of article in shop is Rs. 60 The sales tax was 5% find bill amount

Sol. SP = 60 , tax% = 5

$\text{SP With tax} = \left(\frac{100 + 5}{100}\right) \times 60 = 63$

Discount

Discount = MP - SP

$\text{Discount} = \frac{MP - SP}{MP} \times 100$

Discount always given on MP

$SP = \frac{100 - \text{Discount}\%}{100} \times MP$

Ex. An article marks Rs 600 and a discount of 20% is given find selling price of it.

Sol. MP = 600
Discount % = 20

$SP = \left(\frac{100 - \text{discount}\%}{100}\right) MP$

$= \left(\frac{100 - 20}{100}\right) \times 600 = \text{Rs. } 480$