

Percentage

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→ percentage is a fraction whose denominator is always 100. & percentage represented by $x\%$.

⇒ Express $\frac{x}{y}$ as a percentage.

$$x\% = \frac{x}{100} \quad \frac{2}{5} = 20\% = \frac{20}{100} = \frac{1}{5} \text{ R.V.}$$

⇒ Express $\frac{x}{y}$ as a percentage.

$$\frac{x}{y} = \left(\frac{x}{y} \times 100 \right) \% \Rightarrow \frac{1}{4} = \left(\frac{1}{4} \times 100 \right) \% = 25\%$$

$$\text{and } 0.8 = 80\%$$

⇒ Remember

$$\frac{1}{1} = 100\%$$

$$\frac{1}{4} = 25\%$$

$$\frac{1}{2} = 50\%$$

$$\frac{1}{5} = 20\%$$

$$\frac{1}{3} = 33.\overline{33}\% \quad \left[33\frac{1}{3}\% \right]$$

$$\frac{1}{6} = 16\frac{2}{3}\%$$

⇒ Comparison bet'n two values x and y.

i) If x is compare to y then we assume always y is equal to 100%.

ii) When any question ask y is a what percent of x then x is always write in the denominator.

Σ If x is 80% of y . What percent of x is y ?

$$y = \frac{100 \times 100}{80} \text{ of } x \\ = 125\% \text{ of } x.$$

II. Method.

Let y is 100 then $x = 80$

$$\text{Required \%} = \frac{100}{80} \times 100 = 125\%$$

$$\boxed{\frac{y}{x} \times 100}$$

Σ K is what $\% \text{ of } N$?

$$\frac{K}{N} \times 100 = \frac{K}{N} \%$$

\Rightarrow If A is $R\%$ more than B , then B is less than A by,

$$\left[\frac{R}{(100+R)} \times 100 \right] \%$$

$$\boxed{\frac{B \times R}{100} + B = A}$$

\Rightarrow If A is $R\%$ less than B , then B is greater than A by,

$$\left[\frac{R}{(100-R)} \times 100 \right] \%$$

$$B - \frac{B \times R}{100} = A.$$

Ex if the income of Ram is 10% more than Shyam's income. How much percent Shyam's income less than Ram's?

$$\frac{R}{100+R} \times 100 = \frac{10}{110} \times 100 = \frac{100}{11} = 9\frac{1}{11}\%$$

Q. Memo

since 10% more  Two fold

$$\frac{10 \times 100}{110} = 9\frac{1}{11}\%$$

Ex If the income of A is 10% less than B

S2 If the income of A is 40% less than B

How much percent B's income is more than
A's ?

Ans. 66.66 %.

\Rightarrow If a price of a commodity increases by R%,
then % reduction in the consumption as not to
increase the expenditure is -

$$\left[\frac{R}{(100+R)} \times 100 \right] \%$$

\Rightarrow If the price of commodity decreased by R%,
then % increase in consumption as not to
decrease the expenditure is -

$$\left[\frac{R}{(100-R)} \times 100 \right] \%$$

S2 If the price of Petrol be raised by 20%,
then the % by which car owners must reduce
their consumption is -

from the \rightarrow . by which car owner must reduce his consumption so not increases his expenditure.

$$\frac{R}{100+R} \times 100 \Rightarrow \frac{20}{120} \times 100 \Rightarrow 16\frac{2}{3}\%$$

⇒ Result of Population

a) Let the population of a town be P now and suppose increased at the rate of $R\%$ per annum then \downarrow decrease

1. Population after n years = $P \left(1 + \frac{R}{100}\right)^n$

2. Population n years ago = $\frac{P}{\left(1 + \frac{R}{100}\right)^n}$

Ex: present population of a town 1.21 crore & it is increase 10%. Per annum. Then find out population after two years and before two years.

After two years = $P \left(1 + \frac{R}{100}\right)^n$

$$= 1.21 \left(1 + \frac{10}{100}\right)^2$$

$$= 1.21 \left(\frac{110}{100}\right)^2$$

$$= 1.21 (1.1)^2$$

$$= 1.21 \times 1.21 = 1.4641 \text{ crore}$$

Before two years = $\frac{P}{\left(1 + \frac{R}{100}\right)^n}$

$$= \frac{1.21}{1.21} = 1 \text{ crore}$$

S If the present population of a town is 72600 and it is increased by 10%.

What will be the population after two years.