PERCENTAGES

Concept:

By a certain percent, we mean that many hundredths.

Thus, x percent means x hundredths, written as x%.

To express x% as a fraction: We have, $x\% = \frac{x}{100}$.

Thus, $20\% = \frac{20}{100} = \frac{1}{5}$.

To express $\frac{a}{b}$ as a percent: We have, $\frac{a}{b} = \left(\frac{a}{b} \times 100\right)\%$.

Thus, $\frac{1}{4} = \left(\frac{1}{4} \times 100\right)\% = 25\%$.

1.If A is R% more than B, then B is less than A by R / (100+R) * 100
2.If A is R% less than B, then B is more than A by R / (100-R) * 100
3.If the price of a commodity increases by R%, then reduction in consumption, not to increase the expenditure is : R/(100+R)*100
4.If the price of a commodity decreases by R%, then the increase in consumption, not to decrease the expenditure is : R/(100-R)*100

Results on Population:

Let the population of a town be P now and suppose it increases at the rate of R% per annum, then:

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

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

3. If a number is increased by x % and thereafter reduced by x %, then the number will be reduced by

(x^2)/100 percent.

4.If a number is reduced by *x* % and thereafter increased by *x* % then the number will be reduced by $\left(\frac{x^2}{100}\right)$ *percent.*

5.If in a examination, in which the minimum pass percentage is *x* %, a candidate secures *y* marks and fails by *z* marks, then the total number of marks in this examination will be $\frac{100\times(y+z)}{x}$

6.If in an examination *x* % and *y* % candidates respectively fail in two different subjects while z% candidates fail in both the subjects, then the percentage of candidates who pass in both the subjects will be $\left[100-(x+y-z)\right]\%$

TIPS:

1) If an object's price is increased or decreased by x% and the other factor is decreased by y% then the net effect is given by: Net Effect = [x + y +xy / 100]%

2) If the net effect is nil, i.e. there is no loss or no gain, then the above formula becomes: y = 100x / 100 + x

3) If the price of an article is successively increased by x%, y% and z% then single equivalent increase in the price will be [x + y + z + {xy + yz + zx} / (100) + xyz / (100)^2]%

4) If after spending p1% first, then p2% from the remaining and so on, B is the balance amount, then the total (original) amount is given by:Total amount = B * 100 * 100... / (100 - p1) (100 - p2)...Population formula:1) If the population increases by x% during the first year, by y% during the second year, by z% during the third year, the population after three years will be:

P(1 + x / 100) (1 + y / 100) (1 + z / 100)