BALABHADRA SKILL DEVELOPMENT ACADEMY
MATHS FORMULA - 9
ARITHMETIC

SIMPLE INTEREST

Sl	Situation	Formula
01	Simple Interest (P- Principle, t- time, r- rate of interest)	$SI=\frac{\text{Principle}\times\text{Time}\times\text{Rate}}{100} = \frac{prt}{100}$
02	Amount	$A = P\left(1+\frac{rt}{100}\right) = P\left(\frac{100+rt}{100}\right)$
03	Principal	$P=\frac{100\times A}{100+rt}$
04	Simple Interest	$SI=\frac{Art}{100+rt}$
05	If rate of interest becomes r_2 % from r_1 % and Rs. x more are earned in t yr, then principal	$\frac{x\times 100}{(r_2-r_1)\times t}$
06	The time taken by an amount to become n times of itself at r% rate of simple interest is	$\frac{(n-1)\times 100}{r}$
07	An amount will be n times of itself in t yr. The rate of interest is	$\left[\frac{(n-1)\times 100}{t}\right]\%$
08	If an amount becomes n_1 times of itself in t_1 yr at same rate of simple interest, then the time taken by the amount to become n_2 times of itself at the same rate of interest	$t_2 = \frac{(n_2-1)t_1}{(n_1-1)}$ yr
09	If an amount becomes n_1 times of itself in a time at r_1 % rate of simple interest, then in the same time period, the rate of interest to make the sum n_2 times of itself is	$r_2 = \frac{(n_2-1)\times r_1}{(n_1-1)}$

10	If the difference of interests on P obtained from two sources in time t yr be x, then the difference in the rates of interest will be	$\frac{x \times 100}{P \times t}$
11	If a sum is divided in two parts such that the simple interest on first part in t_1 yr at r_1 % rate of interest is equal to the simple interest on second part in t_2 yr at r_2 % rate of interest; the ratio of two parts	$\frac{1}{r_1 t_1} : \frac{1}{r_2 t_2}$
12	The annual payment that will discharge a debt of A due in t yr the rate of interest r% per annum is	$\left[\frac{100A}{100t + \frac{rt(t-1)}{2}}\right]$
13	If a certain sum of money amounts to x in t_1 yr and to y in t_2 yr, then (i) Principal (ii) Rate	(i) $\frac{xt_2 - yt_1}{t_2 - t_1}$ (ii) $\frac{(y-x)\times 100}{xt_2 - yt_1}$
14	Out of a certain sum P, 1/a part is invested at R_1%, 1/b part at R_2% and the remainder (1-1/a-1/b), say 1/c part at R_3%. If the annual income from all these investments is Rs. A, then the original sum is given by	$P = \left(\frac{A \times 100}{\frac{R_1}{a} + \frac{R_2}{b} + \frac{R_3}{c}}\right)$

Note. To calculate interest, the day on which amount is deposited is not considered. But the day on which amount is withdrawn is considered.