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CLASS: VIII

SUB.: MATHS (NCERT BASED)

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Simple Interest: Simple Interest is a method for calculating the interest earned or paid on a certain balance in a specific period.

$$1. \text{ Simple Interest} = \frac{\text{Principal} \times \text{Rate} \times \text{Time}}{100} = \frac{PRT}{100}$$

$$2. \text{ Principal} = \frac{\text{Simple interest} \times 100}{\text{Rate} \times \text{Time}}$$

$$3. \text{ Time} = \frac{\text{Simple interest} \times 100}{\text{Principal} \times \text{Rate}}$$

$$4. \% \text{ Rate} = \frac{\text{Simple interest} \times 100}{\text{Principal} \times \text{Time}}$$

$$5. \text{ Amount} = \text{Principal} + \text{Simple Interest}$$

Definition Of Compound Interest: . It is the addition of interest to the sum of Amount or Principal Amount i.e. interest on interest.

It is the result of reinvesting interest. So that interest in the next period is then earned on the principal amount and previously accumulated interest.

1. Let Principal = P, Rate = R% per annum, Time = n years.

2. When interest is compounded Annually:

$$\text{Amount} = P \left(1 + \frac{R}{100} \right)^n$$

3. When interest is compounded Half-yearly:

$$\text{Amount} = P \left[1 + \frac{(R/2)}{100} \right]^{2n}$$

4. When interest is compounded Quarterly:

$$\text{Amount} = P \left[1 + \frac{(R/4)}{100} \right]^{4n}$$

5. When interest is compounded Annually but time is in fraction, say $3\frac{2}{5}$ years.

$$\text{Amount} = P \left(1 + \frac{R}{100} \right)^3 \times \left(1 + \frac{\frac{2}{5}R}{100} \right)$$

6. When Rates are different for different years, say $R_1\%$, $R_2\%$, $R_3\%$ for 1st, 2nd and 3rd year respectively.

$$\text{Then, Amount} = P \left(1 + \frac{R_1}{100} \right) \left(1 + \frac{R_2}{100} \right) \left(1 + \frac{R_3}{100} \right).$$

7. Present worth of Rs. x due n years hence is given by:

$$\text{Present Worth} = \frac{x}{\left(1 + \frac{R}{100} \right)^n}.$$