

* Simple Interest :

• Principal : The money borrowed or lent out for certain period is called the principle or the sum.

• Interest : The extra money paid for using others money is called interest.

• Simple Interest : If the interest on a sum borrowed for certain period is ~~recat~~ reckoned uniformly, then it is called simple interest.

Let, principal = P, Rate = R% per annum (p.a) &
T = Time period (years).

$$1] S.I = \left[\frac{P \times R \times T}{100} \right]$$

$$2] \left[P = \frac{100 \times SI}{R \times T} \right] ; \left[R = \frac{100 \times SI}{P \times T} \right] ; \left[T = \frac{100 \times SI}{P \times R} \right]$$

* Compound Interest :

1] P = principal ; R = Rate ; Time = N yrs.

i] When interest is compounded annually,
Amount = $P \times \left[1 + \frac{R}{100} \right]^n$

ii] When interest is compounded half yearly
Amount = $P \left[1 + \frac{(R/2)}{100} \right]^{2n}$

iii] When interest is compounded quarterly
Amount = $P \left[1 + \frac{(R/4)}{100} \right]^{4n}$

iv] When interest is compounded annually but time is in fraction say $3\frac{2}{5}$ yrs

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

v] When rates are diff. for diff. yrs say $R_1\%$, $R_2\%$ & $R_3\%$ for 1st, 2nd, 3rd yrs resp.

$$\text{Amount} = P \left[1 + \frac{R_1}{100} \right] \left[1 + \frac{R_2}{100} \right] \left[1 + \frac{R_3}{100} \right]$$

vi] Present worth of Rs x due in years hence is given by

$$\text{present worth} = \frac{x}{\left[1 + \frac{R}{100} \right]^n}$$

Q. Find the simple Interest on Rs 68000 at $16\frac{2}{3}\%$ per annum for 9 months

$$S.I. = \frac{P \times R \times T}{100} = \frac{68000 \times \frac{50}{3} \times \frac{3}{4}}{100} = 170 \times 50 = \underline{\underline{8500}}$$

Q. The sum of Rs 12500 amounts to Rs 15500 in 4 yrs at the rate of S.I. What is the rate of Interest?

$$P = 12500$$

$$R = ?$$

$$T = 4 \text{ yrs.}$$

$$SI = 15500 - 12500 = 3000$$

$$R = \frac{SI \times 100}{P \times T}$$

$$= \frac{3000 \times 100}{12500 \times 4} = \underline{\underline{6\%}}$$

Q. A man took a loan from a bank at the rate of 12% per annum. SI after 3 yrs he had to pay Rs 5400 interest only for the period. The amount borrowed by him

$$R = 12\%$$

$$T = 3 \text{ yrs.}$$

$$SI = 5400$$

$$P = ?$$

$$P = \frac{100 \times SI}{R \times T}$$

$$= \frac{100 \times 5400}{12 \times 3} = \underline{\underline{Rs 15000}}$$

Q. The sum of money at simple Interest amount Rs 815 in 3 yrs & to Rs 854 in 4 yrs, the sum is

$$SI \text{ for } 1 \text{ yr} = 854 - 815 = 39$$

$$SI \text{ for } 3 \text{ yr} = 39 \times 3 = 117$$

$$\text{principal} = \frac{100 \times \text{SI}}{R \times T} \quad \sim \cancel{100 \times}$$

$$\text{sum} = 815 - 117 = \underline{\underline{698.}}$$

Q. The sum fetched a total simple interest of Rs 4016.25 at the rate of 9% p.a. in 5 yrs. what is the sum.

$$P = \frac{100 \times \text{SI}}{R \times T} = \frac{100 \times 4016.25}{9 \times 5} = \underline{\underline{8925.}}$$

Q. How much time will it take for an amount of Rs 450 to yield Rs 81 as a interest. ~~4%~~ 4.5% p.a.

$$T = \frac{100 \times \text{SI}}{P \times R} = \frac{100 \times 81}{450 \times 4.5} = 4$$

Q. Find the S.I on Rs 3000 at 6 1/4 pa forom the period of 4th Feb 2009 to 18th April 2009.

$$\text{SI} = \frac{P \times R \times T}{100} = \frac{3000 \times \overset{7.5}{\cancel{25}} \times 1}{100 \times \cancel{4} \times 8} = \underline{\underline{37.50}}$$

Q. The simple Interest accureate at an amount of Rs 2500 at the end of 6 yrs is 1875. What would be SI accureate on ament of Rs 6875 at the same rate of for the same period.

$$R = \frac{100 \times \text{SI}}{P \times T} = \frac{100 \times 1875}{2500 \times 6} = 12.5.$$

$$\text{SI} = \frac{P \times R \times T}{100} = \frac{\overset{6875}{\cancel{2500}} \times 12.5 \times 6}{100} = \underline{\underline{1875.}}$$

$$= \underline{\underline{5156.25.}}$$

Q. A sum of Rs 800 amounts to Rs 920 in 3 yrs at SI. If the interest rate is increased by 3% it would be amount to how much.

Q. After 3 yrs, how much compound interest will be obtain on Rs 7800 at the interest rate of 5% pa.

$$\text{Amount} = P \times \left[1 + \frac{R}{100}\right]^n$$

$$= 7800 \times \left[1 + \frac{5}{100}\right]^3 = 7800 \times \left[\frac{21}{20}\right]^3$$

$$= 7800 \times \left[\frac{21}{20}\right]^3 = 7800 \times \frac{21}{20} \times \frac{21}{20} \times \frac{21}{20}$$

$$= \frac{7800 \times 21 \times 21 \times 21}{20 \times 20 \times 20} = \frac{722358}{8}$$

$$= 9029.47$$

$$\therefore 9029.47 - 7800$$

$$= 1229.47$$

Q. Find the compound interest on Rs 10,000 int 2 years at 4% pa, the interest will compounded half yearly.

Q. Find the compound Interest on Rs 16000 at 20% p.a for 9 months compounded quarterly.

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

$$= 16000 \left[1 + \frac{5}{100} \right]^{3 \times \frac{3}{4}} = 16000 \left[\frac{105}{100} \right]^3$$

$$= \cancel{16000} \times \frac{105}{100} \times \frac{105}{100} \times \frac{105}{100}$$

$$= \overset{842}{\cancel{16000}} \times \frac{21}{20} \times \frac{21}{20} \times \frac{21}{20}$$

$$= \underline{\underline{18522}}$$

$$\therefore 18522 - 16000 = \underline{\underline{2522}}$$

Q.