

## STD - 8

### Assignment - 9

#### Compound Interest

1. Find the amount and the compound interest on ₹ 5000 for 2 years at 12% per annum compounded annually.

**Solution:**

$$A = P \left( 1 + \frac{r}{100} \right)^n$$

$P = ₹ 5000$  , rate = 12% per annum , time = 2 years.

$$\begin{aligned} A &= 5000 \left( 1 + \frac{12}{100} \right)^2 \\ &= \overset{1}{\cancel{5000}} \times \overset{56}{\cancel{\frac{112}{100}}} \times \overset{112}{\cancel{\frac{112}{100}}} \\ &= 56 \times 112 \end{aligned}$$

$$A = 56 \times 112 = ₹ 6272$$

$$C.I. = A - P$$

$$C.I. = ₹ 6272 - ₹ 5000 = ₹ 1272$$

∴ **Ans:** C.I. = ₹ 1272, Amount = ₹ 6272.

2. Find the sum that Amount to ₹ 3528 after 2 years at the rate of 5% per annum compound interest.

**Solution:**

Amount = ₹ 3528 , time = 2 years, rate = 5% per annum.

$$3528 = P \left( 1 + \frac{5}{100} \right)^2$$

$$3528 = P \left( \frac{\overset{21}{\cancel{105}}}{\underset{20}{\cancel{100}}} \right) \left( \frac{\overset{21}{\cancel{105}}}{\underset{20}{\cancel{100}}} \right)$$

$$3528 = P \times \frac{21}{20} \times \frac{21}{20}$$

$$\frac{\overset{8}{\cancel{3528}} \times \cancel{20} \times \cancel{20}}{\cancel{21} \times \cancel{21}} = P$$

$$P = 8 \times 20 \times 20$$

$$P = 8 \times 400 = 3200$$

∴ Principal = ₹ 3200

3. At what rate percent per annum will ₹ 800 amount to ₹ 882 in 2 years, when compounded annually?

**Solution:**

$$P = ₹ 800, \quad A = ₹ 882, \quad \text{time} = 2 \text{ years, rate} = ?$$

$$882 = 800 \left( 1 + \frac{r}{100} \right)^2$$

$$\frac{\cancel{882}}{\cancel{800}} = \left( 1 + \frac{r}{100} \right)^2$$

441

$$\left( \frac{21}{20} \right)^2 = \left( 1 + \frac{r}{100} \right)^2$$

$$\left( \frac{21}{20} \right) = \left( 1 + \frac{r}{100} \right)$$

$$\frac{21}{20} - \frac{1}{1} = \frac{r}{100}$$

$$\frac{r}{100} = \frac{21 - 20}{20} = \frac{1}{20}$$

$$r = \frac{100}{20} = 5\%$$

∴ Interest  $r = 5\%$

4. In what time will ₹ 6250 amount to ₹ 7840 at 12%. Per annum compounded annually?

**Solution:**

$$A = ₹ 7840, \quad P = ₹ 6250, \quad \text{rate} = 12\%,$$

Per annum C. I. time=?

$$7840 = 6250 \left( 1 + \frac{12}{100} \right)^t$$

$$\frac{784 \cancel{0}}{625 \cancel{0}} = \left( \frac{112}{100} \right)^n \Rightarrow \left( \frac{56}{50} \right)^n \Rightarrow \left( \frac{28}{25} \right)^n$$

$$\left( \frac{28}{25} \right)^2 = \left( \frac{28}{25} \right)^n$$

$$\therefore n = 2$$

$$\therefore \text{time} = 2 \text{ years.}$$