

compound Interest

दर r t
बार $\rightarrow \frac{r}{2}$ $2t$
बार $\rightarrow \frac{r}{3}$ $3t$
बार $\rightarrow \frac{r}{4}$ $4t$

$$1^{\text{st}} \text{ year की C.I.} = 1^{\text{st}} \text{ year की S.I.}$$

$$1^{\text{st}} \text{ year की C.I.} - 1^{\text{st}} \text{ year की S.I.} = 0$$

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

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

$$C.I. = P \left[\left(1 + \frac{r}{100} \right)^n - 1 \right]$$

2 वर्ष का

$$C.I \rightarrow \left(2x + \frac{x^2}{100}\right)\%$$

$$\begin{array}{l} x \rightarrow 23\% \\ t \rightarrow 2 \text{ वर्ष} \end{array} \left. \vphantom{\begin{array}{l} x \rightarrow 23\% \\ t \rightarrow 2 \text{ वर्ष} \end{array}} \right\} C.I = 46 \\ \underline{5.29} \\ 51.29\%$$

$$\begin{array}{l} x \rightarrow 25\% \\ t \rightarrow 2 \text{ वर्ष} \end{array} \left. \vphantom{\begin{array}{l} x \rightarrow 25\% \\ t \rightarrow 2 \text{ वर्ष} \end{array}} \right\} C.I = 50 \\ \underline{6.25} \\ 56.25\%$$

$$\begin{array}{l} \text{1st} \\ x \rightarrow 4\% \end{array} \quad \begin{array}{l} \text{2nd} \\ 5\% \end{array}$$
$$t \rightarrow 2 \text{ वर्ष}$$
$$C.I \rightarrow A + B + \frac{A \times B}{100} \rightarrow \frac{20}{100}$$
$$4 + 5 + \frac{4 \times 5}{100}$$
$$9.20\%$$

$$\gamma \rightarrow 3\%, 4\%$$

$$t \rightarrow 29\%$$

$$C.I \rightarrow 7.12\%$$

$$t \rightarrow 29\%$$

$$\gamma \rightarrow 12\%, 9\%$$

$$C.I \rightarrow \begin{array}{r} 21 \\ 1.08 \\ \hline 22.08\% \end{array}$$

$$t \rightarrow 29\%$$

$$\gamma \rightarrow 8\%, 9\%$$

$$C.I \rightarrow 17.72\%$$

$$29\%$$

$$\gamma \rightarrow 9\%, 11\%$$

$$C.I \rightarrow 20.99\%$$

$$\approx 21\%$$

$$\# 29\%$$

$$\gamma \rightarrow 11\%, 15\%$$

$$C.I \rightarrow \begin{array}{r} 26 \\ 1.65 \\ \hline 27.65\% \end{array}$$

$$P \rightarrow 700 \text{ ₹}$$

$$r \rightarrow \textcircled{2\%}, 3\%$$

$$t \rightarrow 2 \text{ वर्ष}$$

$$C.I =$$

II-method

$$r \rightarrow 2\%, 3\%$$

$$t \rightarrow 2 \text{ वर्ष}$$

$$C.I \rightarrow 5.06\%$$

$$\frac{700 \times 5.06}{100} = 35.42$$

I-method

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

$$A = 700 \times \frac{102}{100} \times \frac{103}{100} = \frac{714 \times 103}{100} = \frac{73542}{100} = 735.42$$

$$C.I \rightarrow A - P$$

$$C.I = 735.42 - 700$$

$$C.I = 35.42 \text{ ₹}$$

$$714 \times 103 = 714 \times (100 + 3)$$

$$\begin{array}{r} 71400 \\ 2142 \\ \hline 73542 \end{array}$$

$$2 + 3 + \frac{2 \times 3}{100}$$

$$5 + \frac{6}{100} = 5.06\%$$

$$\begin{array}{l} 100 : 102 \\ 100 : 103 \end{array}$$

$$\# P \rightarrow 800 \text{ ₹}$$

$$r \rightarrow 4\%, 6\%$$

$$t \rightarrow 2 \text{ वर्ष}$$

$$C.I = 10.24\%$$

$$\frac{800 \times 10.24}{100} = 81.92$$

$$\# t \rightarrow 2 \text{ वर्ष}$$

$$P \rightarrow 900 \text{ ₹}$$

$$r \rightarrow 7\%, 6\%$$

$$C.I \rightarrow 13.42\%$$

$$A =$$

$$C.I \rightarrow \frac{900 \times 13.42}{100} = 120.78$$

$$120.78$$

$$A = P + C.I$$

$$A = 900 + 120.78$$

$$1020.78$$

Golden rule

(i) 2 वर्ष का

$$C.I \rightarrow 2 : 1$$

(ii) 3 वर्ष का

$$C.I \rightarrow 3 : 3 : 1$$

(iii) 4 वर्ष का

$$C.I \rightarrow 4 : 6 : 4 : 1$$

$$r \rightarrow 4\%$$

$$t \rightarrow 2 \text{ yrs}$$

$$P \rightarrow 400 \text{ ₹}$$

$$C.I \rightarrow$$

I-method

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

$$\boxed{C.I = A - P}$$

III - method

$$\begin{array}{rcl}
 C.I \rightarrow & 2 & : 1 \\
 & \times & \times \\
 & 16 & 0.64 \\
 \hline
 & 32 + 0.64 & \\
 & 32.64 &
 \end{array}$$

II-method

$$\left. \begin{array}{l} r \rightarrow 4\% \\ t \rightarrow 2 \text{ yrs} \end{array} \right\} C.I \rightarrow 8.16\%$$

$$C.I \rightarrow \frac{400 \times 8.16}{100} = 32.64 \text{ ₹}$$

$$\frac{400 \times 4}{100} = 16$$

$$\frac{16 \times 4}{100} = 0.64$$

$$\gamma \rightarrow 4\%$$

$$t \rightarrow 2 \text{ वर्ष}$$

$$P \rightarrow 400 \text{ ₹}$$

$$\frac{400 \times 4}{100} = 16$$

$$\frac{16 \times 4}{100} = 0.64$$

$$C.I \rightarrow 2 : 1$$

$$\frac{16^x \quad 0.64^x}{}$$

$$32 + 0.64 = 32.64$$

$$\gamma \rightarrow 5\%$$

$$P \rightarrow 700$$

$$t \rightarrow 2 \text{ वर्ष}$$

$$C.I \rightarrow 10.25\%$$

$$\frac{700 \times 5}{100} = 35$$

$$\frac{35 \times 5}{100} = 1.75$$

$$C.I \rightarrow 2 : 1$$

$$\frac{35^x \quad 1.75^x}{}$$

$$70 + 1.75 = 71.75$$

$$r \rightarrow 6\%$$

$$t \rightarrow 2 \text{ वर्ष}$$

$$P \rightarrow 600 \text{ ₹}$$

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

$$II \rightarrow C.I = 12.36\%$$

$$III \rightarrow \text{golden rule}$$

$$\frac{600 \times 6}{100} = 36$$

$$\frac{36 \times 6}{100} = 2.16$$

$$C.I \rightarrow 2 : 1$$

$$\begin{array}{r} \times \quad \times \\ 36 \quad 2.16 \end{array}$$

$$\hline 72 + 2.16 = 74.16$$

① 2 वर्ष का

$$C.I - S.I = \frac{PR^2}{100^2}$$

(ii) 3 वर्ष का

$$C.I - S.I = \frac{PR^2(300+R)}{100^3}$$

II-method

$$C.I \rightarrow 8.16\%$$

$$S.I \rightarrow 8\%$$

$$\frac{0.16\%}{8\%} = \frac{48}{P}$$

$$100\% = \frac{48 \times 100 \times 100}{P}$$

$$P = 30,000 \text{ ₹}$$

$$C.I - S.I \rightarrow 48 \text{ ₹}$$

$$r \rightarrow 4\%$$

$$t \rightarrow 2 \text{ वर्ष}$$

$$P = ?$$

$$C.I - S.I = \frac{PR^2}{100^2}$$

$$\frac{3}{48} = \frac{P \times 16}{100 \times 100}$$

$$P = 30,000 \text{ ₹}$$

1. What will be the compound interest on ₹ 30,000 for 2 years at the rate of 5% per annum ?

₹ 30,000 पर 5% की दर से 2 वर्ष का चक्रवृद्धि ब्याज क्या होगी?

(A) ₹ 3000 (B) ₹ 3075 (C) ₹ 3500 (D) ₹ 3200

10.25%

$$\frac{30000 \times 10.25}{100} = 3075$$

2 : 1

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

2. What will be the compound interest on a sum of ₹

15000 for $2\frac{1}{2}$ years at the rate of 10% per annum?

₹ 15000 की राशि पर $2\frac{1}{2}$ वर्षों में 10% की दर से चक्रवृद्धि ब्याज कितनी होगी?

(A) ₹ 4000

~~(B) ₹ 4057.50~~

(C) ₹ 4200.50

(D) ₹ 4500

$$\begin{aligned}
 & \left[\begin{array}{l} r \rightarrow 10\% \\ t \rightarrow 2 \text{ वर्ष} \end{array} \right] \text{C.I.} = 21\% \quad \left| \quad \left[\begin{array}{l} r \rightarrow 10\% \\ t \rightarrow 3 \text{ वर्ष} \end{array} \right] \text{C.I.} = 33\% \quad \left| \quad \left[\begin{array}{l} r \rightarrow 10\% \\ t \rightarrow 4 \text{ वर्ष} \end{array} \right] \text{C.I.} = 46.41\% \right. \\
 & A = 15000 \times \frac{110}{100} \times \frac{110}{100} \times \frac{105}{100} \quad \text{P.P.}
 \end{aligned}$$

$$21 + 5 + \frac{21 \times 5}{100}$$

$$\frac{15000 \times 277.05}{100 \times 100} = \frac{4057.5}{10}$$

$$4057.5$$

$$t \rightarrow 2\frac{1}{2} \text{ वर्ष} \rightarrow 2 \text{ वर्ष} + \frac{1}{2} \text{ वर्ष}$$

$$(21\%) \quad 5\%$$

$$\text{C.I.} \rightarrow 26 \frac{105}{27.05\%}$$

3. What sum will become ₹ 1352 in two years at 8% compound interest annually?

4% वार्षिक चक्रवृद्धि ब्याज की दर पर कौन-सी धनराशि 2 वर्षों में ₹ 1352 हो जाएगी?

(A) ₹ 1220

(B) ₹ 1200

(C) ₹ 1250

(D) ₹ 1260

C.I → 8.16% ✓

A → P + C.I
100% + 8.16%

108.16%

$$108.16\% = 1352$$

$$100\% = \frac{1352}{108.16} \times 100 \times 100$$

25 50

82

1250

3. What sum will become ₹ 1352 in two years at 8% compound interest annually?

4% वार्षिक चक्रवृद्धि ब्याज की दर पर कौन-सी धनराशि 2 वर्षों में ₹ 1352 हो जाएगी?

(A) ₹ 1220

(B) ₹ 1200

(C) ₹ 1250

(D) ₹ 1260

$$\frac{11}{25} = \frac{26}{25}$$

$$P : A$$

$$1 \text{ वर्ष} \rightarrow 25 : 26$$

$$2 \text{ वर्ष} \rightarrow 625 : 676$$

$\times 2$

$\times 2$

1352