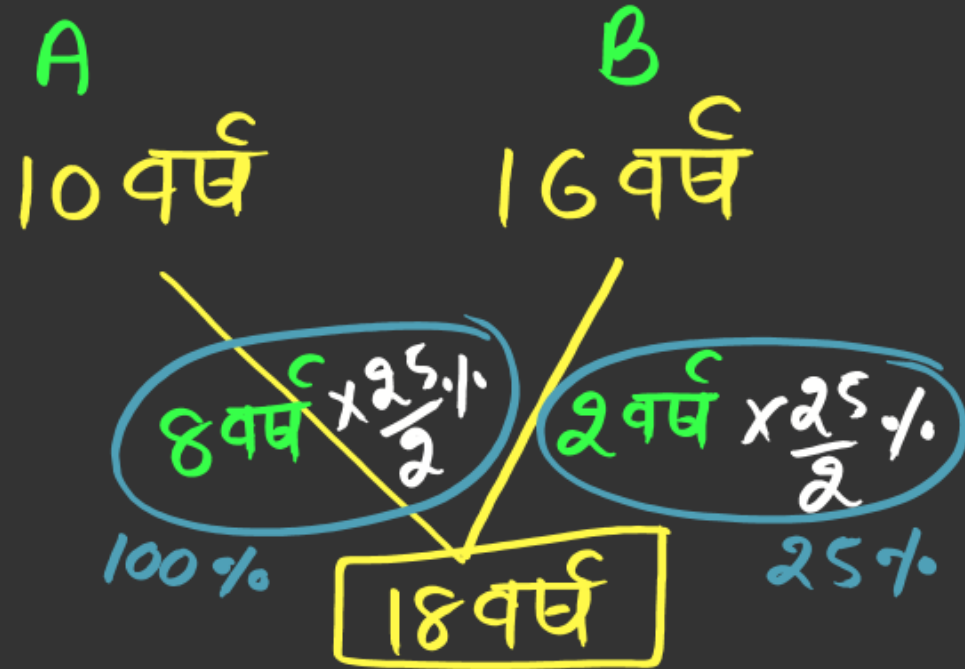


30.



1,30,000 ₹

$\rightarrow 12\frac{1}{2}\%$

$$A \times \frac{8}{200} \% = B \times \frac{5}{125} \%$$

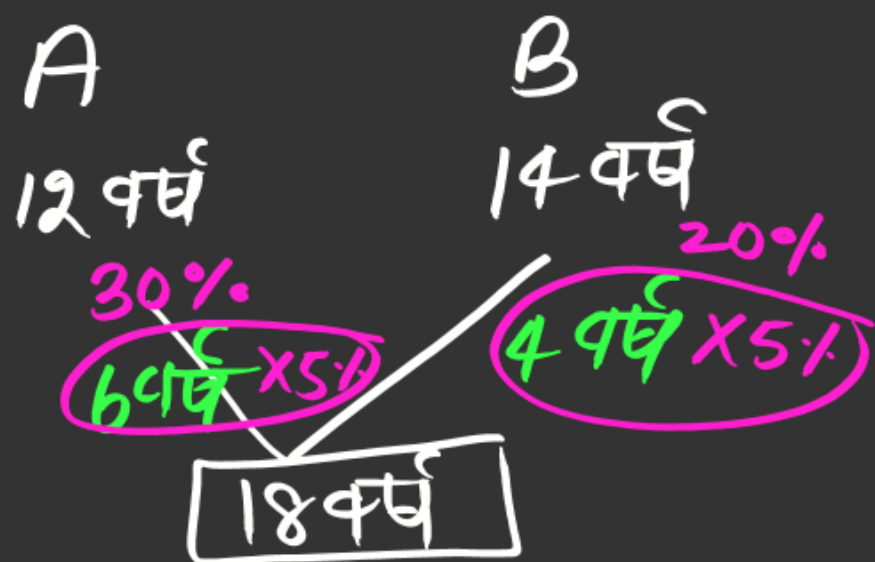
$$\begin{array}{l} A : B \\ 5 : 8 \rightarrow \div 13 = 1,30,000 \\ \downarrow \times 10000 \\ 50,000 \text{ ₹} \end{array} \quad \begin{array}{l} \downarrow \times 10000 \\ 80,000 \text{ ₹} \end{array}$$

$\div 1 = 10000 \text{ ₹}$

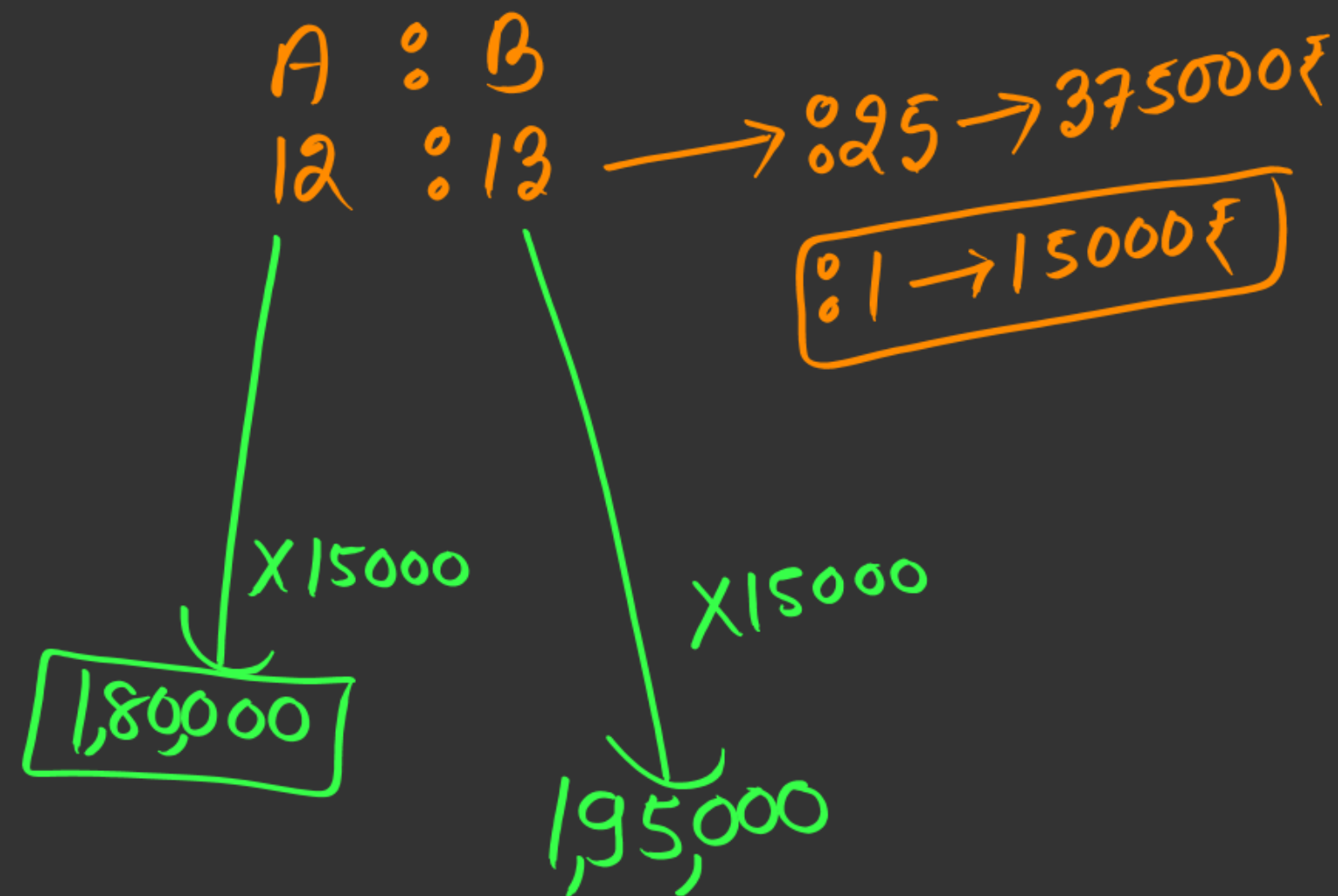
31.

$P \rightarrow 375000 \text{ ₹}$

$r \rightarrow 5\%$



$$A \times 130\% = B \times 120\%$$



# Compound Interest

C.I  $\rightarrow$  અકૃતદિ ઇયાજ

$C.I \rightarrow$  compound Interest (चक्रवृद्धि व्याज)

$p \rightarrow$  principal (मूलधन)

$r \rightarrow$  rate (दर)

$t \rightarrow$  time (समय)

$A \rightarrow$  Amount (मिश्रधन)

$$A = p + C.I$$

$$C.I = A - p$$

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

$$C.I = A - P$$

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

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

वार्षिक

8%

समय

t

द्विमासी  $\rightarrow \frac{8}{2}\%$

2t

चारमासी  $\rightarrow \frac{8}{3}\%$

3t

तीन्मासी  $\rightarrow \frac{8}{4}\%$

4t

## 2 वर्ष का C.I

$r\%$      $r\%$

$$C.I \rightarrow r + r + \frac{r \times r}{100}$$

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

$$\begin{array}{l} r \rightarrow 12\% \\ t \rightarrow 2 \text{ वर्ष} \end{array} \left. \vphantom{\begin{array}{l} r \rightarrow 12\% \\ t \rightarrow 2 \text{ वर्ष} \end{array}} \right\} \begin{array}{l} C.I = 24 \\ 1.44 \\ \hline 25.44\% \end{array}$$

$$\begin{array}{l} r \rightarrow 4\% \\ t \rightarrow 2 \text{ वर्ष} \end{array} \left. \vphantom{\begin{array}{l} r \rightarrow 4\% \\ t \rightarrow 2 \text{ वर्ष} \end{array}} \right\} \begin{array}{l} C.I = 4 + 4 + \frac{4 \times 4}{100} \end{array}$$

$$C.I = 8 + \frac{16}{100}$$

$$C.I = 8.16\%$$

$$\# \textcircled{I} \begin{array}{l} r \rightarrow 4\% \\ t \rightarrow 2 \text{ वर्ष} \end{array} \left. \vphantom{\begin{array}{l} r \rightarrow 4\% \\ t \rightarrow 2 \text{ वर्ष} \end{array}} \right\} C.I = 8.16\%$$

$$\textcircled{IV} \begin{array}{l} r \rightarrow 8\% \\ t \rightarrow 2 \text{ वर्ष} \end{array} \left. \vphantom{\begin{array}{l} r \rightarrow 8\% \\ t \rightarrow 2 \text{ वर्ष} \end{array}} \right\} C.I \rightarrow 16.64\%$$

$$\textcircled{II} \begin{array}{l} r \rightarrow 5\% \\ t \rightarrow 2 \text{ वर्ष} \end{array} \left. \vphantom{\begin{array}{l} r \rightarrow 5\% \\ t \rightarrow 2 \text{ वर्ष} \end{array}} \right\} C.I = 10.25\%$$

$$\textcircled{V} \begin{array}{l} r \rightarrow 10\% \\ t \rightarrow 2 \text{ वर्ष} \end{array} \left. \vphantom{\begin{array}{l} r \rightarrow 10\% \\ t \rightarrow 2 \text{ वर्ष} \end{array}} \right\} C.I \rightarrow 20.100$$

$$\textcircled{III} \begin{array}{l} r \rightarrow 6\% \\ t \rightarrow 2 \text{ वर्ष} \end{array} \left. \vphantom{\begin{array}{l} r \rightarrow 6\% \\ t \rightarrow 2 \text{ वर्ष} \end{array}} \right\} C.I = 12.36\%$$

$$\hline 21\%$$

$$\begin{array}{l} \gamma \rightarrow 17\% \\ t \rightarrow 2 \text{ वर्ष} \end{array} \left] \begin{array}{l} C.I = 34 \\ 2.89 \\ \hline 36.89\% \end{array} \right.$$

$$\# \begin{array}{l} \gamma \rightarrow 3\% \\ t \rightarrow 2 \text{ वर्ष} \end{array} \left] C.I = 6.09\% \right.$$

$$\begin{array}{l} \gamma \rightarrow 2\% \\ t \rightarrow 2 \text{ वर्ष} \end{array} \left] C.I = 4.04\% \right.$$

$$\# \begin{array}{l} 2 \text{ वर्ष} \\ C.I - S.I = \frac{PR^2}{100^2} \end{array}$$

$$\# \begin{array}{l} 3 \text{ वर्ष} \\ C.I - S.I = \frac{PR^2(300+R)}{100^3} \end{array}$$

$$\begin{array}{l} \gamma \rightarrow 20\% \\ t \rightarrow 2 \text{ वर्ष} \end{array} \left] \begin{array}{l} C.I = 40 \\ 4.00 \\ \hline 44\% \end{array} \right.$$

$$\begin{array}{l} \gamma \rightarrow 18\% \\ t \rightarrow 2 \text{ वर्ष} \end{array} \left] \begin{array}{l} C.I = 36 \\ 3.24 \\ \hline 39.24\% \end{array} \right.$$

$$P \rightarrow 500 \text{ ₹}$$

$$r \rightarrow 3\%$$

$$t \rightarrow 2 \text{ वर्ष}$$

$$C.I =$$

I-method

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

$$A = 500 \left(1 + \frac{3}{100}\right)^2$$

$$A = 500 \times \left(\frac{103}{100}\right)^2$$

$$A = 500 \times \frac{103 \times 103}{100 \times 100}$$

$$A = \frac{5 \times 10609}{100} = \frac{53045}{100} = 530.45 \text{ ₹}$$

$$\begin{aligned} C.I &= 530.45 - 500 \\ &= 30.45 \text{ ₹} \end{aligned}$$

II-method (Ratio method)

$$P : A$$

$$1 \text{ वर्ष} \rightarrow 100 : 103$$

$$2 \text{ वर्ष} \rightarrow 100^2 : 103^2$$

$$10000 : 10609$$

$$C.I \rightarrow 609$$

$$500 \text{ ₹}$$

$$\begin{aligned} C.I &\rightarrow \frac{500 \times 609}{10000} \\ &= \frac{3045}{100} = 30.45 \text{ ₹} \end{aligned}$$



## Golden rule

① 2 वर्ष

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

② 3 वर्ष

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

③ 4 वर्ष

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

### III-method (percentage method)

$$\left. \begin{array}{l} r \rightarrow 3\% \\ t \rightarrow 2 \text{ yrs} \end{array} \right\} C.I = 6.09\%$$

$$C.I = \frac{500 \times 6.09}{100} \\ = 30.45 \text{ Ans.}$$

### IV-method (golden rule)

$$C.I \rightarrow \frac{2}{15} : \frac{1}{0.45}$$

$$C.I = 30 + 0.45 \\ = 30.45 \text{ ₹}$$

$$\frac{500 \times 3}{100} = 15$$

$$\frac{15 \times 3}{100} = 0.45$$

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

$C.I = 10.25\%$

$$C.I = \frac{30000 \times 10.25}{100 \times 100} = 3075 ₹$$

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

$$C.I \rightarrow \frac{15000 \times 27.05}{100 \times 100}$$

$$\frac{40575}{10} = 4057.50$$

2 वर्ष +  $\frac{1}{2}$  वर्ष  $\times 10\%$   
 $\downarrow$   
 10%, 10%  
 C.I  $\rightarrow 21\%$   
 $\searrow$   
 5%

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

$$26 + \frac{105}{100} = 27.05\%$$

3. How much will the sum of ₹ 1250 become in two years at 8% annual compound interest?

₹ 1250 की राशि 8% वार्षिक चक्रवृद्धि ब्याज पर 2 वर्ष में कितनी हो जाएगी?

$$C.I = 16.64\%$$

(A) ₹ 1280 (B) ₹ 1526 (C) ₹ 1458 (D) ₹ 1566

$$\frac{1250 \times 16.64}{100 \times 2} = 208 \text{ ₹ (C.I.)}$$

$$\begin{aligned} A &= P + C.I \\ &= 1250 + 208 \\ &= 1458 \text{ ₹} \end{aligned}$$

4. In how many years will ₹ 2500 become ₹ 3136 at the rate of 12% P.A. at compound interest ?

₹ 2500 कितने वर्ष में 12% वार्षिक चक्रवृद्धि ब्याज की दर से ₹ 3136 होगी?

→  $+\frac{3}{25}$

~~(A)~~ 2 Years

(B)  $1\frac{1}{2}$  Years

(C)  $2\frac{1}{2}$  Years

(D) 3 Years

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

$$\frac{3136}{2500} = \left(\frac{28}{25}\right)^t \quad t = 2$$

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

$t = 2$  वर्ष