

COMPOUND INTEREST

(चक्रवृद्धि ब्याज)

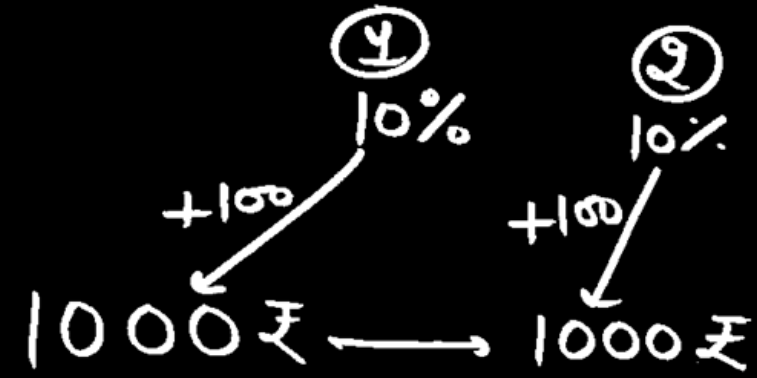
मूलधन / Principal

$$P = 1000 \text{ ₹}$$

$$r = 10\%$$

$$t = 2 \text{ years}$$

व्याज $\begin{cases} \text{साधारण Simple} \\ \text{चक्रवृद्धि Compound} \end{cases}$



$$SI = \underbrace{100 + 100}_{\substack{\downarrow P \quad \downarrow P}} = 200 \text{ ₹}$$

हमेशा मूलधन / Principal पर ही Interest की Calculation होती है।

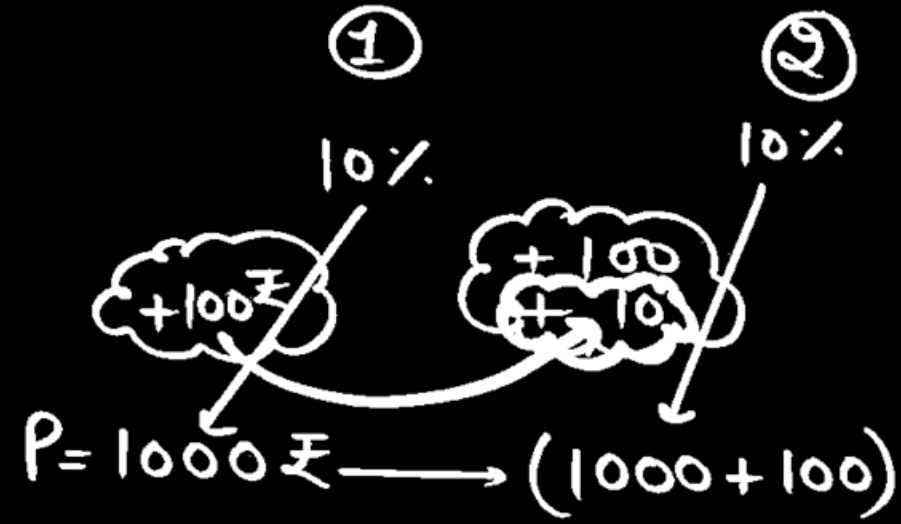
मूलधन / Principal

$$P = 1000 \text{ ₹}$$

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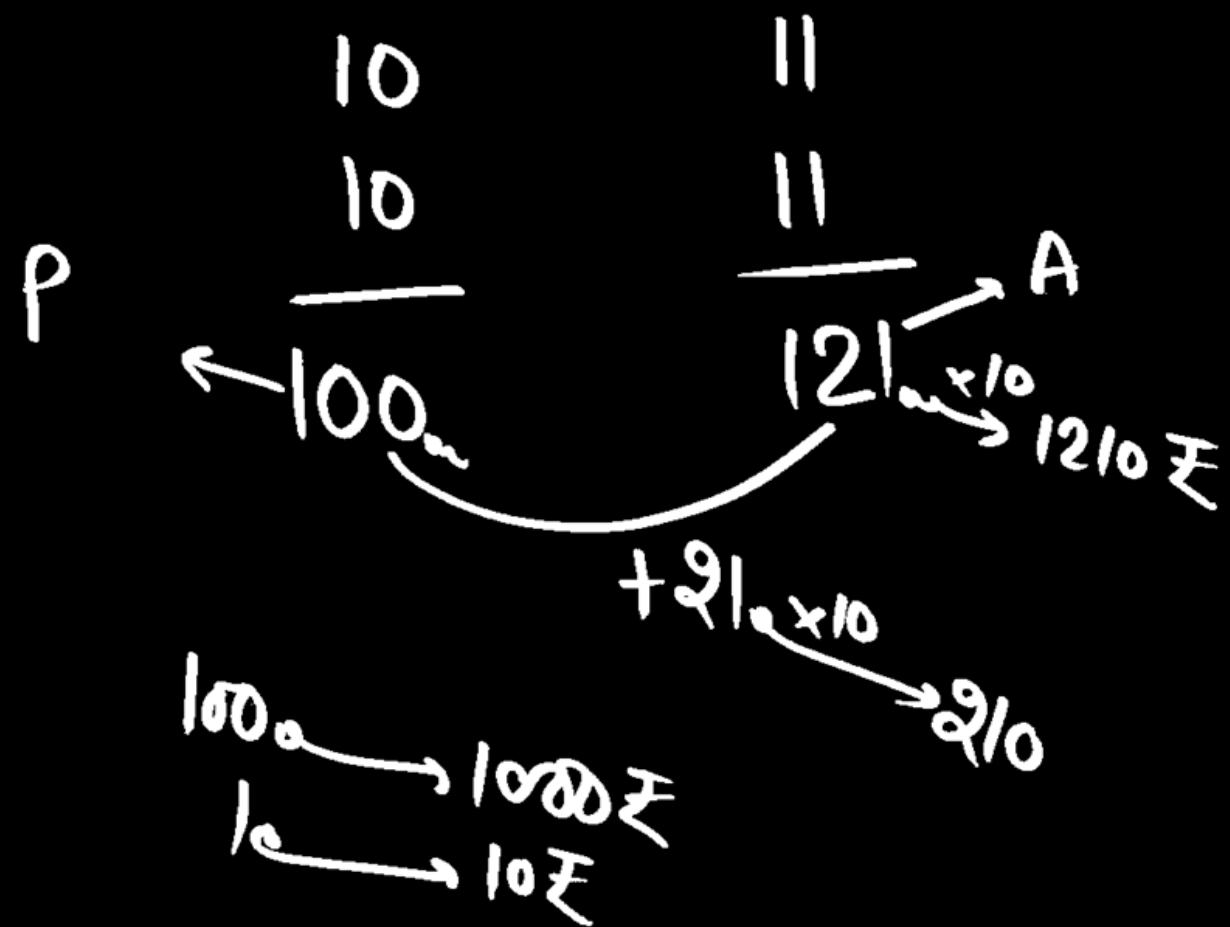
व्याज $\begin{cases} \text{साधारण Simple} \\ \text{चक्रवृद्धि Compound} \end{cases}$



$$CI = 100 + 10 + 10 = 210$$

↓
दो साल का

$$P = 1000 \text{ ₹} \quad r = 10\%$$



દર %

$$\frac{\text{rate \%}}{100} = \frac{\text{rate \%}}{100} \times \frac{\text{per annum}}{100}$$

100 રૂ પર 1 સાર વા લ્યા

Type – 01



$$P = 7500 \text{ ₹}$$

$$r = 4\%$$

$$t = 2 \text{ years}$$

$$CI = 612 \text{ ₹}$$

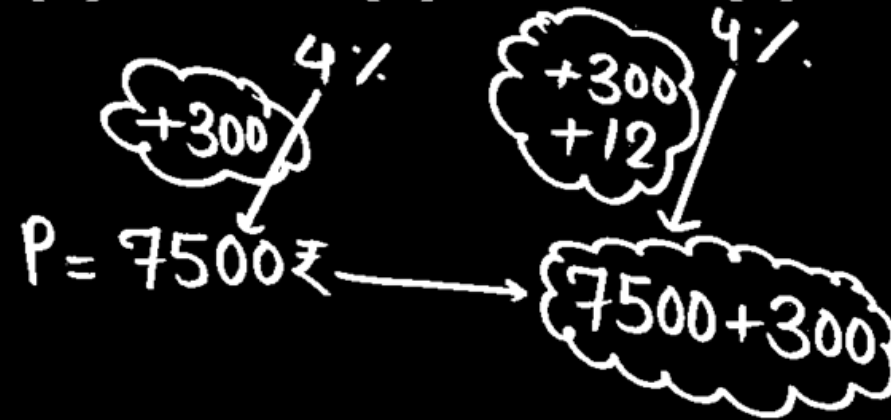
$$300 + 312$$

$$612$$

1. What will be the compound interest in 2 years on a sum of Rs 7500 at 4%?

रु. 7500 की राशि पर 4% की दर से 2 वर्षों में चक्रवृद्धि ब्याज क्या होगा?

- (a) 618 (b) 612 (c) 624 (d) 606



$$P = 7500 \text{ ₹}$$

$$r = 4\%$$

$$t = 2 \text{ year}$$

CI

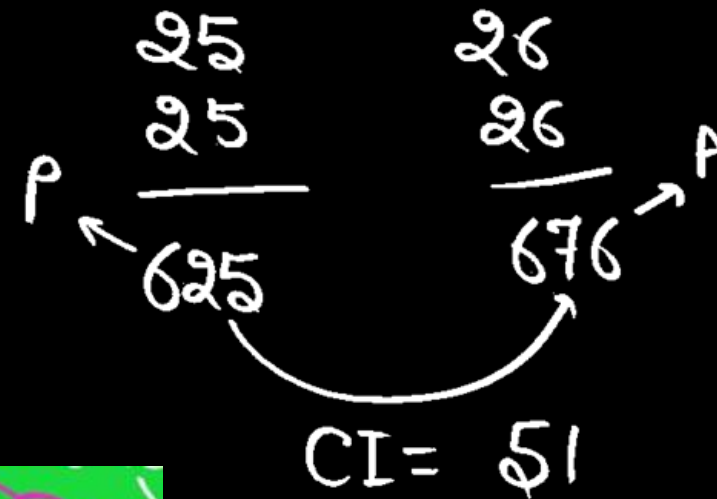
$$625 \rightarrow \frac{7500}{625} \times 51$$

$$= 612 \text{ ₹}$$

1. What will be the compound interest in 2 years on a sum of Rs 7500 at 4%?

रु. 7500 की राशि पर 4% की दर से 2 वर्षों में चक्रवृद्धि ब्याज क्या होगा? \rightarrow 51

- (a) 618 (b) 612 (c) 624 (d) 606



$$P = 7500 \text{ ₹}$$

$$r = 4\% = \left(\frac{1}{25}\right)^2$$

$$\text{2nd year का CI} = 26 \times 12$$

$$SI = 50 \times 12$$

$$CI = 51 \times 12$$

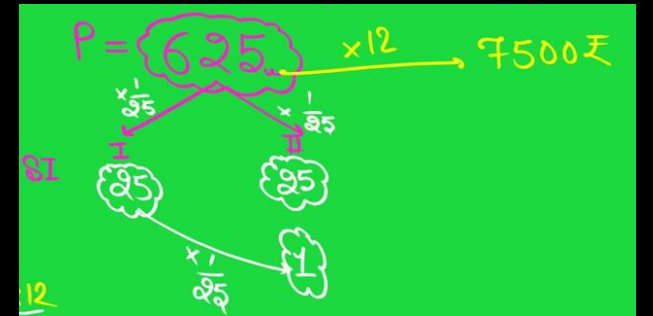
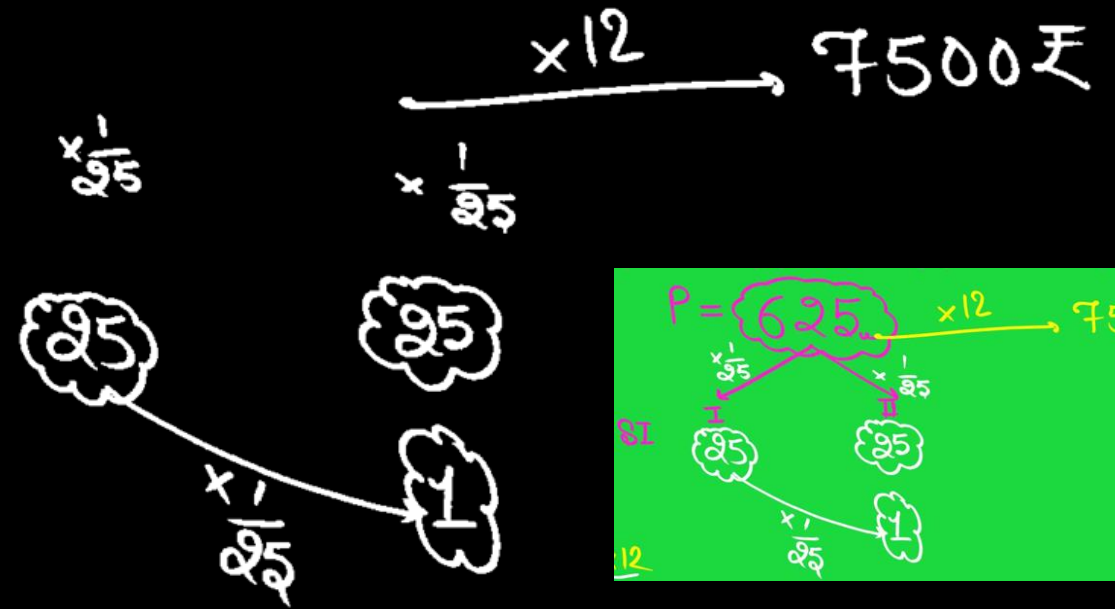
$$CI - SI = 1 \times 12$$

$$\text{Amount} = 625 + 51 = 676 \times 12$$

1. What will be the compound interest in 2 years on a sum of Rs 7500 at 4%?

रु. 7500 की राशि पर 4% की दर से 2 वर्षों में चक्रवृद्धि ब्याज क्या होगा?

- (a) 618 (b) 612 (c) 624 (d) 606



$$\text{Amount / મિલ્લધન} = \text{Principal} + \text{CI}$$

$$P = 7200 \text{ ₹}$$

$$r = 5\% = \frac{1}{20}$$

$$t = 2 \text{ साल}$$

$$CI = 41 \times 18 = 738 \text{ ₹}$$

$$\begin{array}{l} 400 \longrightarrow 7200 \\ 1 \longrightarrow 18 \text{ ₹} \end{array}$$

2. What will be the compound interest on an amount of Rs 7200 at the rate of 5% per annum for 2 years?

रु. 7200 की राशि पर 5% प्रतिवर्ष की दर से 2 वर्ष के लिए चक्रवृद्धि ब्याज कितना होगा?

(a) Rs. 841

(c) Rs. 793

~~(b)~~ Rs. 738

(d) Rs. 812

$$\begin{array}{r} 20 \quad 21 \\ 20 \quad 21 \\ \hline 400 \quad 441 \end{array}$$

CI = 41

$$P = 7200 \text{ ₹}$$

$$r = 5\% \Rightarrow \left(\frac{1}{20}\right)^2$$

$$t = 2 \text{ साल}$$

$$SI = 400 \times 18$$

$$CI = 41 \times 18$$

$$CI - SI = 1 \times 18$$

$$\text{2nd year का CI} = 21 \times 18$$

2. What will be the compound interest on an amount of Rs 7200 at the rate of 5% per annum for 2 years?

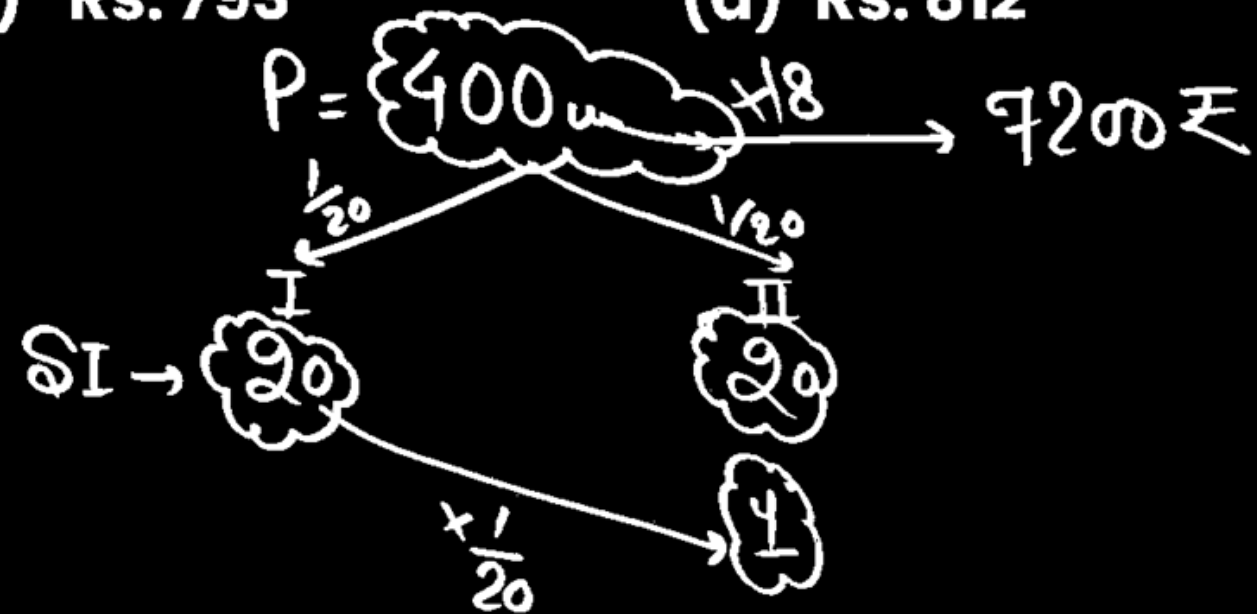
रु. 7200 की राशि पर 5% प्रतिवर्ष की दर से 2 वर्ष के लिए चक्रवृद्धि ब्याज कितना होगा?

(a) Rs. 841

(b) Rs. 738

(c) Rs. 793

(d) Rs. 812



$$P = 400 \xrightarrow{\times 4} \Rightarrow$$

$$A = 441 \xrightarrow{\times 4} \Rightarrow$$

$$CI = 41 \xrightarrow{\quad} 164 \text{ ₹}$$

$$1 \xrightarrow{\quad} 4 \text{ ₹}$$

3. What amount at the compound interest for 2 years at the rate of 5% per annum will be Rs 164?

किस राशि पर 5% ^{1/20} वार्षिक ब्याज की दर से 2 वर्ष का चक्रवृद्धि ब्याज रु. 164 होगा ?

~~(a)~~ Rs. 1600

(b) Rs. 1500

(c) Rs. 1400

(d) Rs. 1700

$$P = \frac{20}{400} \quad \frac{21}{441} \rightarrow A$$

$$CI = 41 \rightarrow$$

$$P = 400 \rightarrow$$

$$A =$$

$$SI = 40 \rightarrow$$

$$CI = 41 \times 4 \rightarrow 164 \text{ ₹}$$

$$CI - SI = 1 \rightarrow$$

$$2^{\text{nd}} \text{ year का CI} = 21 \rightarrow$$

3. What amount at the compound interest for 2 years at the rate of 5% per annum will be Rs 164? $\rightarrow \left(\frac{1}{20}\right)^2$

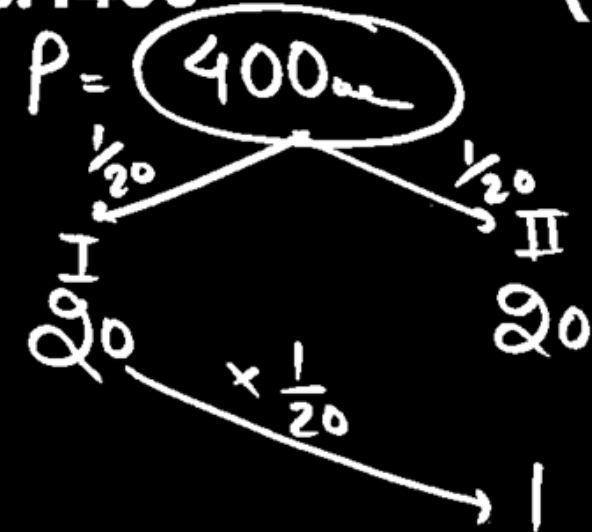
किस राशि पर 5% वार्षिक ब्याज की दर से 2 वर्ष का चक्रवृद्धि ब्याज रु. 164 होगा?

(a) Rs. 1600

(b) Rs. 1500

(c) Rs. 1400

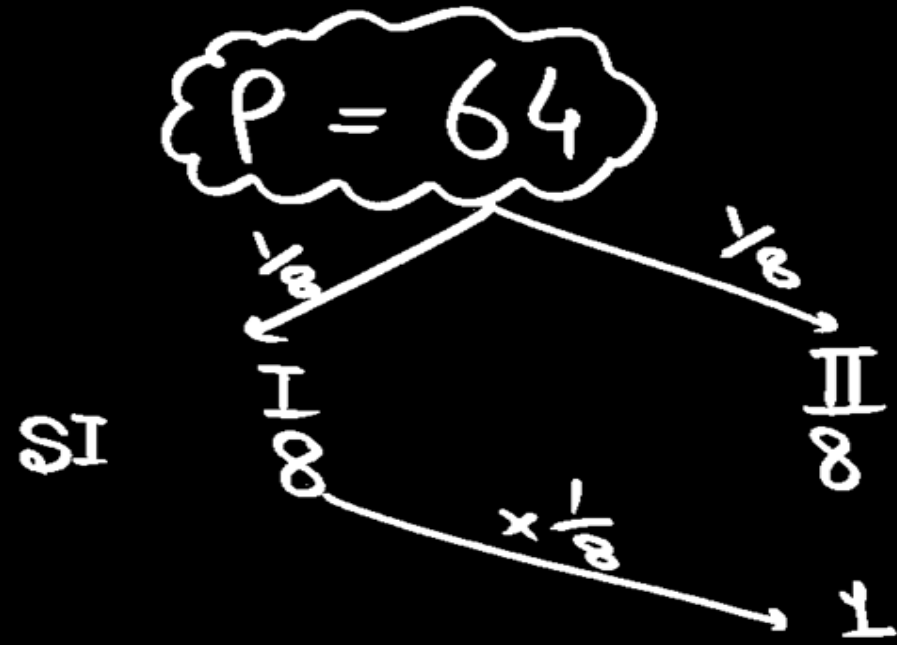
(d) Rs. 1700



$$\begin{array}{c}
 \begin{array}{cc}
 \frac{8}{8} & \frac{9}{9} \\
 \leftarrow P & \rightarrow A \\
 \frac{\quad}{64} & \frac{\quad}{81}
 \end{array} \\
 \text{CI} = 17\% \rightarrow \begin{array}{l} 6.80 \text{ ₹} \\ 0.40 \text{ ₹} \end{array} \\
 64 \times 0.4 \\
 \textcircled{25.6 \text{ ₹}}
 \end{array}$$

4. Principal = ?, Time = 2yr, Rate = $12\frac{1}{2}\%$,
 Compound Interest = Rs. 6.80
 समय = 2 वर्ष दर = $12\frac{1}{2}\%$ चक्रवृद्धि ब्याज =
 रु 6.80 मूल धन = ? $\frac{1}{8}$

- [A] Rs. 15.6
☒ [B] Rs. 25.6
 [C] Rs. 20.1
 [D] Rs. 24.7



4. Principal = ?, Time = 2yr, Rate = $12\frac{1}{2}\%$,

Compound Interest = Rs. 6.80

समय = 2 वर्ष, दर = $12\frac{1}{2}\%$ चक्रवृद्धि ब्याज =
रु. 6.80 मूल धन = ?

$$P = 64 \times 0.4$$

$$SI = 16$$

$$CI = 17 \times 0.4 = 6.80 \text{ रु}$$

$$CI - SI = 1$$

[A] Rs. 15.6

[B] Rs. 25.6

[C] Rs. 20.1

[D] Rs. 24.7

$$P = 360$$

$$CI = 1300 - 30$$

$$SI = 120$$

$$A = 360 + 130$$

$$= 490 \rightarrow 1470$$

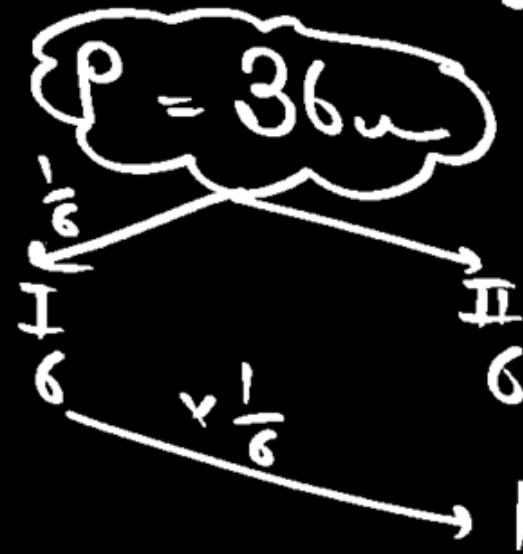
$$100 \rightarrow 30$$

5. Rate = $16\frac{2}{3}\%$, Time = 2 yr, Compound

Interest = ?, Amount = Rs 1470.

दर = $16\frac{2}{3}\%$ समय = 2 वर्ष, कुल धनराशि =

Rs. 1470, चक्रवृद्धि ब्याज = ?



[A] 360

[B] 430

☒ [C] 390

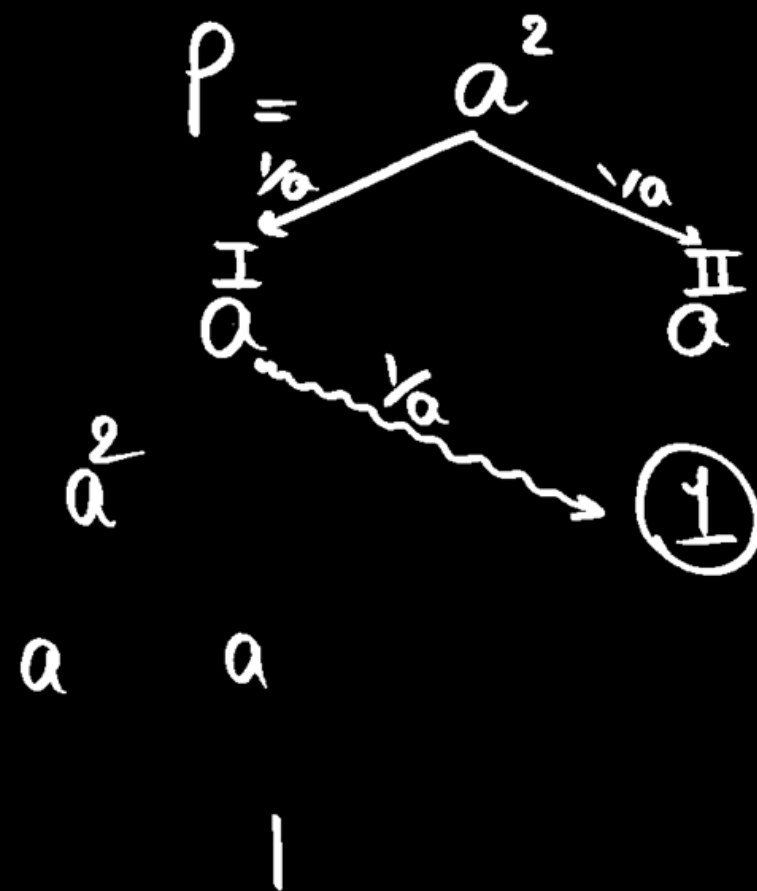
[D] 450

$$r\% = \frac{1}{a}$$

$$t = 2 \text{ year}$$

$$SI = 2a$$

$$CI = 2a + 1$$



$$\textcircled{4} \times \frac{1}{2} = \textcircled{2} \times \frac{1}{2} = \boxed{1}$$

$$P = 100 \times 12$$

$$CI = 21 \rightarrow$$

$$SI = 20$$

$$CI - SI = 1$$

$$2^{\text{nd}} \text{ year} = 11 \rightarrow 132 \text{ ₹}$$

$$1 \rightarrow 12 \text{ ₹}$$

6. The compound interest for the second year was Rs. 132 at the rate of 10% per annum.

What was the sum?

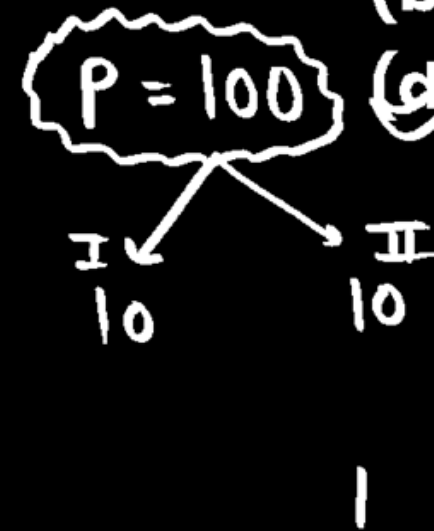
किसी मूल राशि पर 10% प्रतिवर्ष की दर पर दूसरे वर्ष चक्रवृद्धि ब्याज 132 बना। मूल राशि कितनी थी?

(a) 1000

(b) 1320

(c) 1250

(d) 1200



7. Amount = ?, Rate = $11\frac{1}{9}\%$, Time = 2 yr,

$$P = 81 \times 7 = 567 \text{ ₹ Cl of 2nd yr.} = \text{Rs. 70}$$

कुल धनराशि = ?, दर = $11\frac{1}{9}\%$, समय = 2 वर्ष, 2nd

वर्ष का चक्रवृद्धि ब्याज = Rs. 70

[A] 900

[B] 800

[c] 500

~~[B]~~ 700

2nd year का CI = 10 \rightarrow 70 ₹
1 \rightarrow 7 ₹

$$A = P + CI$$

$$= 81 + 19 = 100 \times 7$$

$$15\% = \left(\frac{3}{20}\right)$$

$$P = 400$$

$$SI = 120$$

$$CI = 129 \times 0.3 = 38.70$$

$$CI - SI = 9 \times 0.3 = 2.70$$

$$\text{2nd year का CI} = 69$$

$$\text{Amount} = 529$$

8. Rate = 15%, Time = 2 yr. (CI - SI) = Rs. 2.70, CI = ?

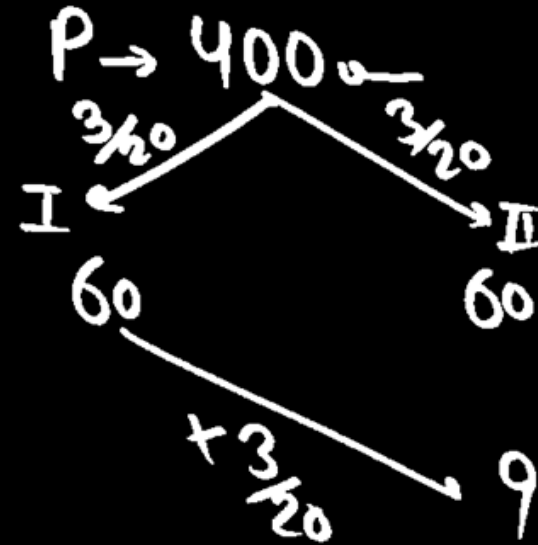
दर = 15%, समय = 2 वर्ष, (चक्रवृद्धि ब्याज - साधारण ब्याज) = Rs. 2.70 तो चक्रवृद्धि ब्याज = ?

[A] 40.79

[B] 41.80

~~[C] 38.70~~

[D] 40.50



$$8\% = \frac{8}{100}$$

$$SI = 100 \rightarrow$$

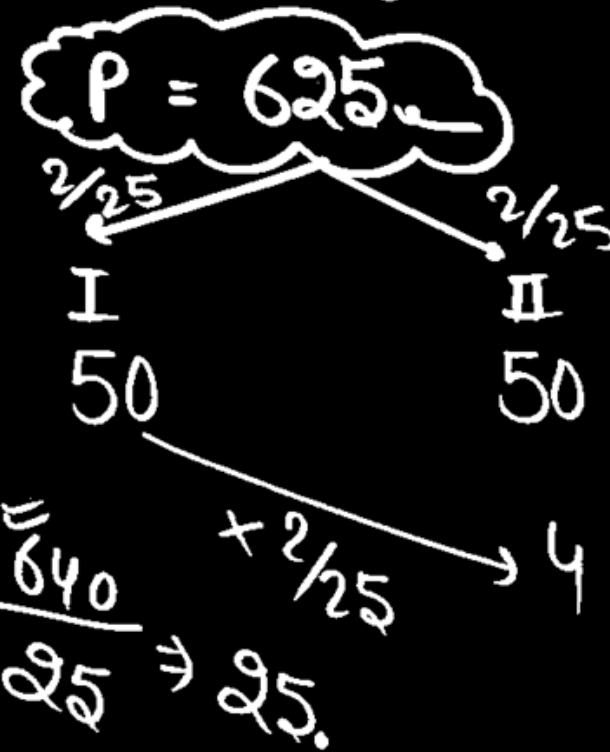
$$CI = 104 \rightarrow$$

$$CI - SI = 4 \rightarrow$$

$$P = 625 \rightarrow \frac{4000}{625} \times 4 = \frac{640}{25} = 25.6$$

9. Principal = Rs. 4000, Rate = 8%, Time = 2 year. Find (CI - SI) = ?

मूलधन = Rs. 4000, समय = 2 वर्ष, दर = 8% (चक्रवृद्धि ब्याज - साधारण ब्याज) = ?



[A] 25.6

[B] 10

[C] 15.5

[D] 20

$$P = ?$$

$$r = \begin{cases} I = 14\frac{2}{7}\% \Rightarrow \frac{1}{4} \\ II = 11\frac{1}{9}\% \Rightarrow \frac{1}{9} \end{cases}$$

$$SI = 16$$

$$CI = 17$$

$$CI - SI = 1 \rightarrow 40 \text{ ₹}$$

10. Principal = ?, Time = 2 yr, CI - SI = Rs. 40, Rate for 1st year = $14\frac{2}{7}\%$ Rate for 2nd year = $11\frac{1}{9}\%$

मूलधन = ?, समय = 2 वर्ष, (चक्रवृद्धि ब्याज - साधारण ब्याज) = Rs. 40, R% (पहले वर्ष के लिए) = $14\frac{2}{7}\%$ तथा R% (दूसरे वर्ष के लिए) = $11\frac{1}{9}\%$

$$P = 63 \times 40 \text{ ₹} = 2520 \text{ ₹}$$

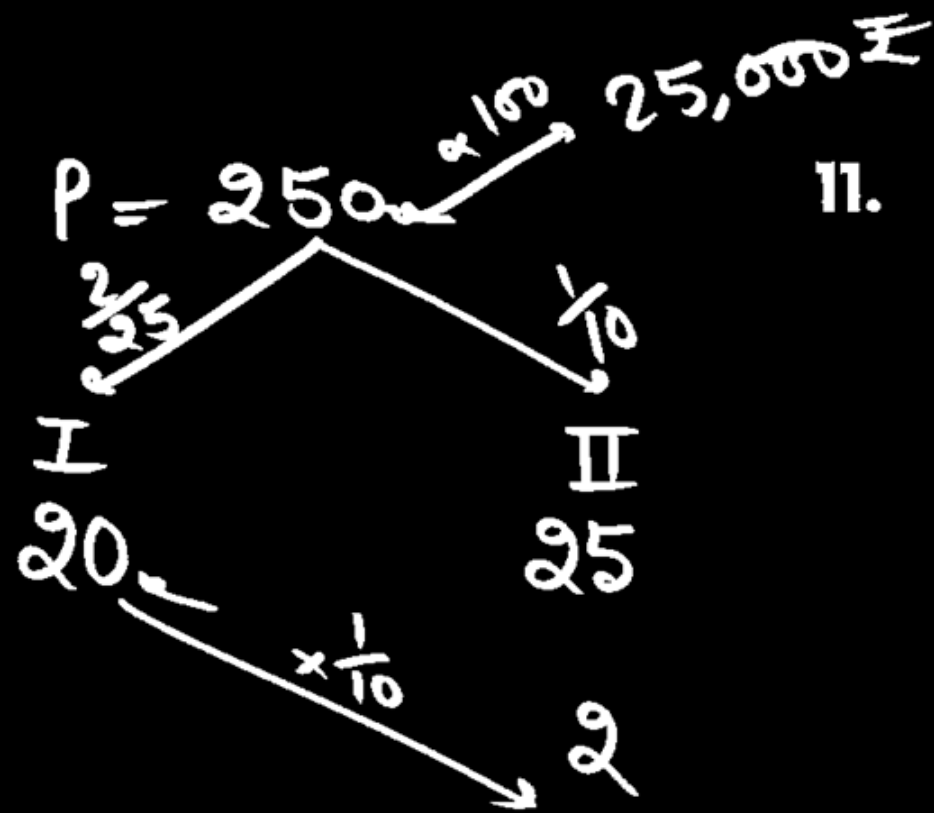


$$[A] \quad 3100$$

$$[B] \quad 2520$$

$$[C] \quad 3090$$

$$[D] \quad 2670$$



$$CI = 47 \times 100 \Rightarrow 4700 \text{ ₹}$$

11. The interest on Rs. 25,000 in 2 years compounded annually when the rates are 8% p.a and 10% p.a for two successive years is:

Rs. 25000 पर दो वर्षों का चक्रवृद्धि ब्याज, जब ब्याज की दर क्रमशः 8% और 10% वार्षिक रूप से संयोजित होती है। $\frac{2}{25}$ $\frac{1}{10}$

(a) Rs. 3,994

(b) Rs. 4,512

(c) Rs. 5,040

☒ Rs. 4,700

$$\begin{array}{r} 20 \\ 50 \\ \hline 1000 \end{array} \quad \begin{array}{r} 21 \\ 53 \\ \hline 1113 \end{array}$$

$$1113 \rightarrow \begin{array}{r} 1113 \times 2 \\ \hline 2226 \\ 1113 \\ \hline 24486 \end{array} \times \frac{1000}{1000}$$

12. A invested an amount of x rupees in a bank for 2 years which gave 5% interest in year 1 and 6% interest in year 2. The amount received after 2 years is Rs 24, 486. What is the value of x? $\frac{1}{20}, \frac{3}{50}$

A ने एक बैंक में x रुपये की राशि का निवेश 2 वर्ष के लिए किया जिसने उन्हें पहले वर्ष में 5% और दूसरे वर्ष में 6% की दर से ब्याज दिया। 2 वर्ष बाद उन्हें 24,486 रु मिले। x का मान क्या है?

(a) 23000 ✓
(c) 22000 ✓

(b) 22500
(d) 21500

$$15\% = \frac{3}{20}$$

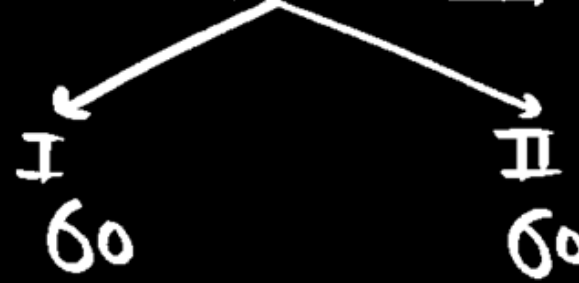
$$t = 1 \text{ year } 6 \text{ months}$$

$$\frac{60}{34.5} \xrightarrow{(1 \text{ year} + 6 \text{ m})} \frac{94.5}{94.5} \rightarrow 9.45 \text{ ₹}$$

$$1 \rightarrow \frac{1}{10}$$

13. Principal = ?, Rate = 15%, Time = 1 year 6 month, Compound Interest = Rs. 9.45
 मूलधन = ?, दर = 15%, समय = 1 वर्ष 6 महीने, चक्रवृद्धि ब्याज = Rs. 9.45

$$P = 400 \times \frac{1}{10} = 40 \text{ ₹}$$



9

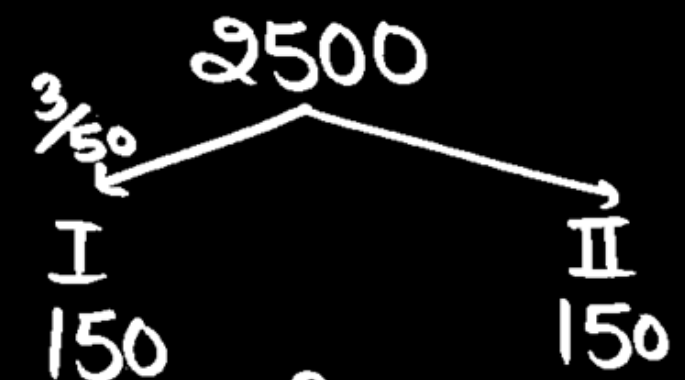
$$\frac{34.5}{69 \times 18} = 12.2$$

- [A] Rs. 50
 [B] Rs. 30
 [C] Rs. 10
☒ [D] Rs. 40

$$\begin{array}{r} 150 \\ + 79.5 \\ \hline 229.5 \end{array} \rightarrow 4590$$

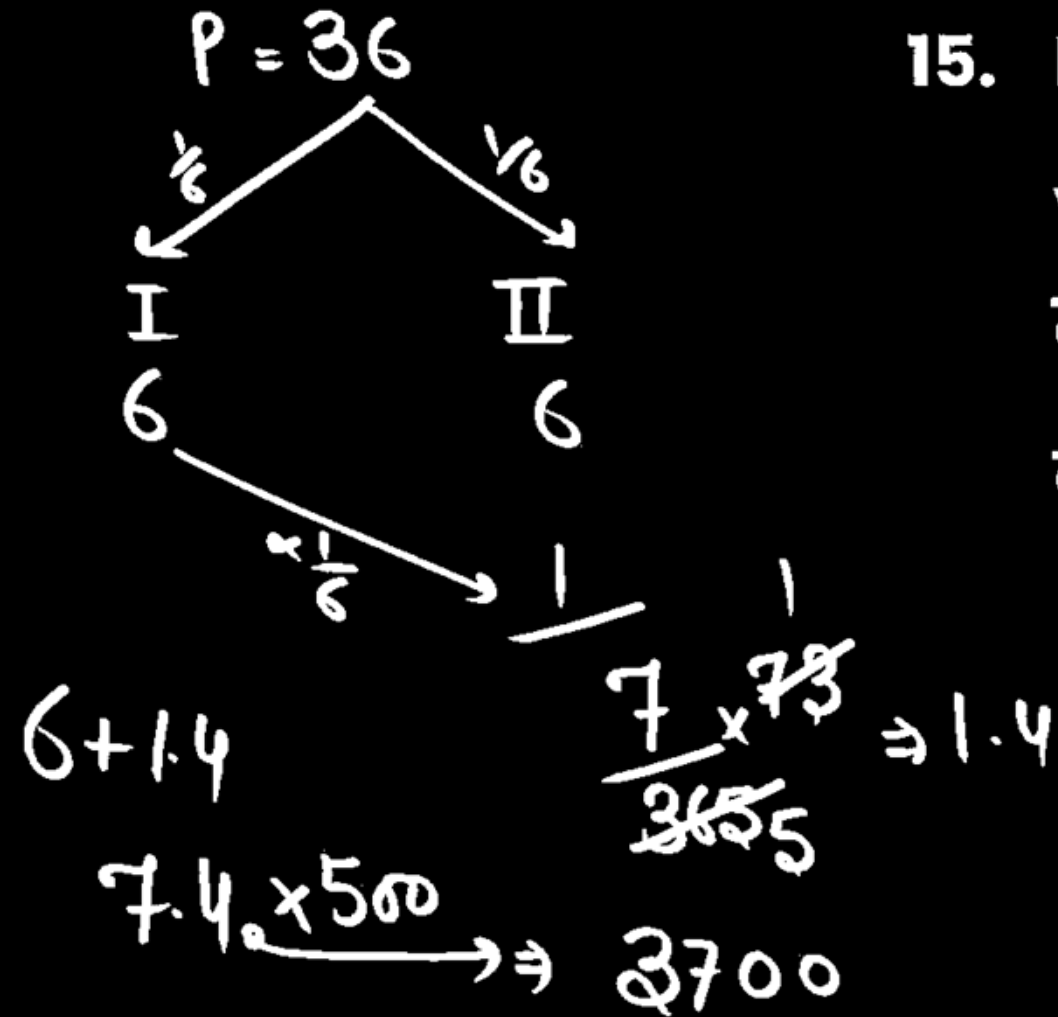
$$1 \rightarrow \frac{4590}{2} \times 25000 = 229.5$$

14. Principal = ?, Time = 1 year 6 month
 Rate = 6%, CI = Rs. 4590
 मूलधन = ?, समय = 1 वर्ष 6 महिने, दर = 6%
 चक्रवृद्धि ब्याज = रु. 4590



$$150 \xrightarrow{\times \frac{3}{50}} 9 \rightarrow \begin{array}{r} 79.5 \\ + 159 \times 6 \\ \hline 122 \end{array}$$

- $\left(\frac{3}{50}\right)^2$
- [A] 80,000
 - ☒ [B] 50,000
 - [C] 35,000
 - [D] 60,000



15. Principal = 18000, Rate = $16\frac{2}{3}\%$, Time = 1 yr. 73 days, Compound Interest = ?
 मूलधन = Rs. 18000, दर = $16\frac{2}{3}\%$ समय = 1 वर्ष, 73 दिन, चक्रवृद्धि ब्याज = ?

$36 \rightarrow \frac{500}{18000}$
 $\frac{36}{2}$

- ☒ [A] 3700
- [B] 3800
- [C] 4000
- [D] 3600



16. Principal = ?, Rate = 5%, Time = 1 year 73 days, CI = Rs. 302.50

**मूलधन = ?, समय = 1 वर्ष 73 दिन, दर = 5%,
चक्रवृद्धि ब्याज = रु. 302.50**

[A] 5,000

[B] 4,000

[C] 3,500

[D] 6,000

$$P =$$

$$r = 4\% \text{ P.A.} = 2\% \text{ per half year}$$

$$t = 1 \text{ year} = 2 \text{ Half year}$$

$$A = 7803$$

$$P \leftarrow \frac{50}{50} \times 3 = 7500 \text{ ₹}$$

$$\frac{51}{51} \times 3 \rightarrow A = 7803 \text{ ₹}$$

17. A certain sum, invested at 4% per annum compound interest, compounded half yearly, amounts to Rs. 7,803 at the end of one year. The sum is-

अर्द्ध वार्षिक रूप से नियोजित, कोई निश्चित धनराशि 4% वार्षिक चक्रवृद्धि ब्याज से 1 वर्ष के अंत में Rs. 7,803 हो जाती है। तो वह धनराशि है।

(a) Rs. 7,000

(b) Rs. 7,200

~~(c) Rs. 7,500~~

(d) Rs. 7,700

$$t = 1 \text{ y} = 2 \text{ H.Y.} = \frac{1}{25}$$

$$r = 8\% = 4\% \text{ P.H.Y.}$$

$$P \leftarrow \frac{25}{25} \quad \frac{26}{26} \rightarrow A$$

$$625 \times 10 \quad 676 \times 10 \text{ ₹}$$

$$6250 \text{ ₹} \quad 6760 \text{ ₹}$$

18 A certain sum invested at the rate of interest of 8% per annum become Rs. 6760 in the end of 1 year at compound interest half-yearly. Find the sum.

8% प्रतिवर्ष की ब्याज दर पर निवेश की गई एक निश्चित राशि 1 वर्ष की समाप्ति पर अर्द्ध वार्षिक चक्रवृद्धि ब्याज दर से रु. 6760 बैठती है। राशि ज्ञात कीजिए।

(a) 6000

(b) 6520

☒ (c) 6250

(d) 6500