


Compound interest - 1

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

$P \rightarrow$ Principal $R \rightarrow$ Rate
 $n \rightarrow$ No. of years.

$$\text{Compound Interest} = A - P$$

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

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

$$\text{Difference b/w S.I \& C.I for } 2 \text{ yrs} = \frac{PR^2}{100^2}$$

$$\text{Difference b/w S.I \& C.I for } 3 \text{ yrs} = \frac{PR^2}{100^2} \left(3 + \frac{R}{100} \right)$$

The compound interest on Rs. 1000 at 10% per annum for 3 years in (Rs.) is :

- (1) Rs. 1331 (2) Rs. 331
 (3) Rs. 300 (4) Rs. 1300

$$10: 11$$

$$100: 121$$

$$1000: 1331$$

$$10\% \rightarrow 11\%$$

$$31 \rightarrow ?$$

$$C.I \rightarrow 331$$

100
100 10
100 21
331

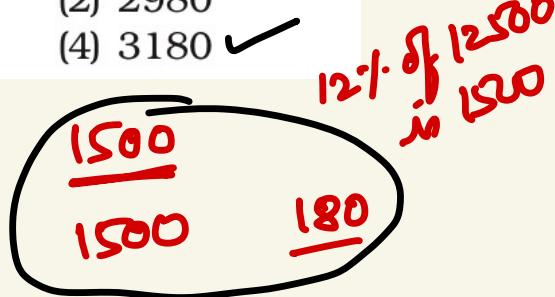
$$\begin{aligned} A &= P \left(1 + \frac{R}{100}\right)^n \\ &= 1000 \left(1 + \frac{10}{100}\right)^3 = 1000 \times \left(\frac{11}{10}\right)^3 \\ &= 1000 \times \frac{1331}{1000} \\ A &= 1331 \\ P &= 1000 \end{aligned}$$

$$C.I = 331$$

What is the compound interest (in Rs.) on Rs. 12500 at the rate of 12% per annum compounded yearly for 2 years?

- (1) 3000 (2) 2980
(3) 3050 (4) 3180 ✓

T
R



$$C.I = 3180$$

What will be the amount on Rs. 12500 at the rate of 20% per annum compounded yearly for 3 years?

- (1) Rs. 21080
- (2) Rs. 21560
- (3) Rs. 20600
- (4) Rs. 21600

100:120

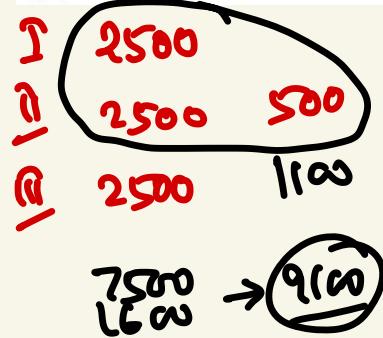
5:6

25:36

125:216

\downarrow
P A

21600
12500
7100



What will be the amount received
on Rs. 25000 at the rate of 20%
per annum compounded yearly
for 4 years?

- (1) Rs. 51840
- (2) Rs. 50350
- (3) Rs. 53550
- (4) Rs. 48750

$$6 \times 5 \rightarrow 25000$$
$$1296 \rightarrow ?$$

$$\underline{1296 \times 40}$$

$$\begin{array}{r} I \\ 1 \\ 2 \\ 3 \\ 4 \\ \hline 1296 \end{array}$$
$$\begin{array}{r} S : 6 \\ 25 : 36 \\ 125 : 216 \\ 625 : 1296 \\ \downarrow \qquad \downarrow \\ P \qquad A \end{array}$$
$$\frac{216}{1296}$$

The amount (in Rs.) received at 10% per annum compound interest after 3 years is Rs. 1,19,790.
What was the principal?

- (1) 90000 (2) 1,00,000
(3) 80000 (4) 75000

$$\frac{1331}{1000} \rightarrow \frac{119790}{P}$$

$$\begin{array}{l} \text{I} \quad \log : 110 \\ \text{II} \quad 100 : 121 \\ \text{III} \quad 1000 : 1331 \\ \qquad \qquad \downarrow \qquad \qquad \downarrow \\ \qquad \qquad P \qquad \qquad A \end{array}$$

$$\begin{array}{r} 22 \\ (33) \\ \hline 11979 \end{array}$$

$$P = \text{Rs. } 90000$$

The amount received at 8% per annum compound interest after 2 years is Rs. 72,900. What was the principal (in Rs.)?

- (1) 65000 (2) 67500
(3) 60000 (4) 62500

$$729 \rightarrow 72\cancel{9}00$$

$$625 \rightarrow ?$$

$$62500$$

$$100 : 108$$

$$\begin{matrix} \uparrow & \\ \text{I} & 25 : 27 \end{matrix}$$

$$\begin{matrix} \downarrow & \\ \text{II} & 625 : 729 \end{matrix}$$

$$\begin{matrix} \downarrow & \downarrow \\ \text{P} & \text{A} \end{matrix}$$

What will be the compound interest on a sum of Rs. 1200 for 2 years at the rate of 20% per annum when the interest is compounded yearly?

- (1) Rs. 624 (2) Rs. 504
(3) Rs. 576 (4) Rs. 528 ✓

1200
I 240
R 240 48

$\frac{I}{P} = \frac{100}{120}$
 $\frac{I}{P} = \frac{5}{6}$
 $\frac{I}{P} = \frac{25}{36}$
 $P \quad A$
 $C.I = 36 - 25 = 11$

$480 + 48$
 $C.I = 528$
 ~~$25 \rightarrow 1200$~~
 $11 \rightarrow ?$
528
 ~~480~~
 ~~48~~

A sum of Rs. 3000 is invested at the rate of 20% per annum compound interest compounded annually. What will be the compound interest after 2 years?

- (1) Rs. 1360 (2) Rs. 1200
~~(3)~~ Rs. 1320 (4) Rs. 1440

$$\begin{array}{r} \cancel{I} \quad \cancel{5:6} \\ \underline{\cancel{II}} \quad \cancel{25:36} \\ \cancel{25 \rightarrow 3000}^{\cancel{120}} \\ (1 \rightarrow ?) \\ \hline 1320 \\ \begin{array}{c} 12 \\ 11 \\ \hline 12 \\ 12 \\ \hline 132 \end{array} \end{array}$$

$\angle I = 36 - 25 = 11$

The compound interest for two years at 12% per annum is Rs. 477. What is the principal amount (in Rs.) invested?

- (1) 1875 ✓ (2) 1500
(3) 2000 (4) 1650

$$100 : 112$$

I $25 : 28$

B $625 : 784$

$$\frac{125}{477}$$

$$\frac{784}{625}$$

$$\begin{array}{l} 17 \rightarrow 477 \\ 625 \rightarrow ? \\ P = 1875 \end{array}$$

What will be the compound interest on a sum of Rs. 5120 at the rate of 12.5% per annum (compounded annually) in 3 years ?

- (1) Rs. 2280 (2) Rs. 1960
(3) Rs. 2120 (4) ~~Rs. 2170~~

100: 112.5

I 8 : 9

II 64 : 81

III 512 : 729

↓ ↓
P A

$\frac{729}{512}$
 $\frac{217}{217}$

~~512 → 8120~~
217 → ?

2170

Compound interest - 2

The compound interest on ₹30,000 at 7% per annum for a certain time is ₹4,347. The time is

- (1) 3 years
- (2) 4 years
- (3) 2 years
- (4) 2.5 years

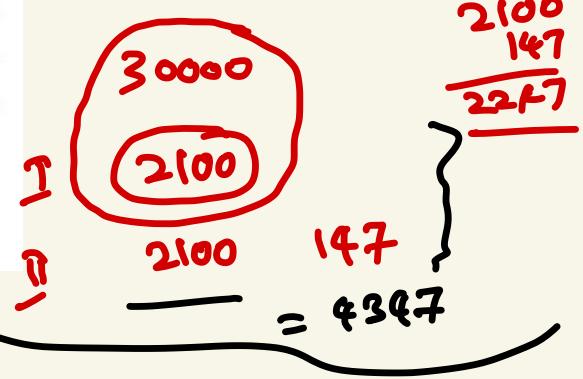
$$C.I = 4347$$

$$P = 30000$$

$$A = 24347$$

$$34347 = 30000 \left(1 + \frac{7}{100}\right)^n$$

Solve for n

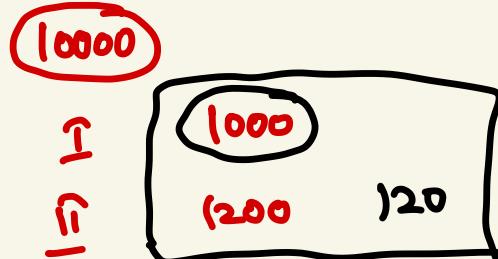


$$\frac{11449}{30000} = \left(1 + \frac{7}{100}\right)^n$$

$$\frac{11449}{10000} = \left(\frac{107}{100}\right)^n$$

A principal of ₹ 10,000, after 2 years compounded annually, the rate of interest being 10% per annum during the first year and 12% per annum during the second year (in rupees) will amount to :

- (1) ₹ 12,000 (2) ₹ 12,320
(3) ₹ 12,500 (4) ₹ 11,320



$$C.I = 10000 + 2320 = 12320.$$

The sum of money that yields a compound interest of ₹420 during the second year at 5% p.a is
 (1) ₹4,000 (2) ₹42,000
 (3) ₹8,000 (4) ₹21,000

$$R = 5\%.$$

$$2^{\text{nd}} \text{ yr} = \underline{\underline{420}}$$

$$105\% \rightarrow f_2 0$$

$$100\% \rightarrow ?$$

P

]
R

400

400

20

$$\begin{array}{l} 5 \rightarrow 400 \\ 100 \rightarrow ? \\ \hline 800 \end{array}$$

$$\begin{aligned} P \times \frac{5}{100} &= 400 \\ P &= \underline{\underline{800}} \end{aligned}$$

The compound interest on a certain sum of money for 2 years at 5% is ₹ 328, then the sum is

- (1) ₹ 3000 (2) ₹ 3600
(3) ₹ 3200 (4) ₹ 3400

100 : 105

↑
20 : 21

400 : 441
↓ ↓
P A

$$\text{C.I.} = 441 - 400 = 41$$

~~41 → 328~~

400 → ?

3200

41
328

The compound interest on a sum of money for 2 years is ₹ 615 and the simple interest for the same period is ₹ 600. Find the principal.

- (1) ₹ 6,500 (2) ₹ 6,000 ✓
 (3) ₹ 8,000 (4) ₹ 9,500

2 yr S.I. → 600

1 yr → 300

S.I.

C.I.

300

300

300

15

$$P \times \frac{5}{100} = 300$$

\$ \rightarrow 300\$

100 → ?

P
₹

$$I = P \times R \times T$$

$R = 5\%$

$$P = P_0 - \underline{\underline{600}}$$

$$\frac{15}{360} \times 100 = \underline{\underline{5\%}}$$

Rekha invested a sum of ₹ 12000 at 5% per annum compound interest. She received an amount of ₹ 13230 after n years. Find n .

- (1) 2.8 years (2) 3.0 years
(3) 2.5 years (4) 2.0 years

12000 13230

1230

12000

↑
n
↓

600

600

30

$$\underline{1200 + 30 = 1230}$$

$n = 2 \text{ years}$

At what rate of compound interest per annum will a sum of Rs. 1200 become Rs. 1348.32 in 2 years?

- (1) 7.5% (2) 6.5%
 (3) 7% (4) 6%

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

$$1348.32 = 1200 \left(1 + \frac{r}{100}\right)^2$$

$$\frac{11236}{1200} = \left(1 + \frac{r}{100}\right)^2$$

$$\frac{1348.32}{1200} = \left(1 + \frac{r}{100}\right)^2$$

$$\frac{11236}{1200} = \left(1 + \frac{r}{100}\right)^2$$

$$\left(\frac{53}{50}\right)^2 = \left(1 + \frac{r}{100}\right)^2$$

$$1 + \frac{r}{100} = \frac{53}{50}$$

$$\frac{r}{100} = \frac{53}{50} - 1 \Rightarrow \frac{r}{100} = \frac{3}{50}$$

$$\frac{53}{50} = \frac{265}{250} = \frac{53}{50}$$

$$\frac{r}{100} = \frac{3}{50} \Rightarrow r = 6\%$$

$$1200 \rightarrow 1348.32$$

$$\begin{array}{r} 148.32 \\ \hline 12 \quad 72 \\ 12 \quad 4.32 \\ \hline 67. \end{array}$$

A long division calculation in red ink. The dividend is 148.32, the divisor is 12. The quotient is 12, and the remainder is 4.32. The digit 67 is circled at the bottom.

The compound interest on Rs. 30,000 at 7% per annum for n years is Rs. 4347. The value of n is

- (1) 3 ~~(2)~~ 2
- (3) 4 (4) 5

A sum of Rs. 2420 is accumulated in 2 years at 10% compound interest on a certain amount. Then the original amount is :

- (1) Rs. 1000 (2) Rs. 2000 ✓
(3) Rs. 1500 (3) Rs. 2500

$$\frac{P}{F} = \frac{100}{121}$$

$$\frac{121}{100} \rightarrow \frac{20}{20}$$
$$100 \rightarrow ?$$

Rs. 2000

A sum of money invested at compound interest amounts to Rs. 800 in 3 years and to Rs. 840 in 4 years. The rate of interest per annum is :

- (1) $2\frac{1}{2}\%$ (2) 4%
~~(3) 5%~~ (4) $6\frac{2}{3}\%$

$$\frac{40}{800} \times 100 \\ = 5\%$$

Compound interest - 3

The compound interest on ₹ 10,000 in 2 years at 4% per annum, the interest being compounded half-yearly, is :

- (1) ₹ 636.80 (2) ₹ 824.32 I
 (3) ₹ 912.86 (4) ₹ 828.82 II

I

II

III

IV

2%.

2 yrs

↓
q half

200

200

200

200

200

200

200

200

200

200

200

200

200

200

200

200

200

200

4:
—
4 · 4

0.08

4 · 4 · 4 · 3 × 0.08

800 + 24 + 0.32

824.32

0.08

0.08

0.08

0.08

0.32

In what time will ₹ 10,000 amount to ₹ 13310 at 20% per annum compounded half yearly?

- (1) $1\frac{1}{2}$ years (2) 2 years
(3) $2\frac{1}{2}$ years (4) 3 years \times

$$R=10\%.$$

$$\left. \begin{array}{l} \text{I} \\ \text{II} \\ \text{III} \end{array} \right\} \begin{array}{l} 10: 11 \\ 100: 12 \\ 1000: 1331 \end{array} \right\}$$

$$\begin{array}{l} 1000 \rightarrow 10000 \\ 1331 \rightarrow 13310 \end{array}$$

(3 half years)
↓
1.5 years.

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

The sum is

- (1) ₹ 7,000 (2) ₹ 7,200
(3) ₹ 7,500 ✓ (4) ₹ 7,700

$$R = \frac{4+1}{2} = 2 \cdot 1$$

$$100 : 102$$

$$50 : 51 \rightarrow$$

$$\underline{\underline{1}} \quad 2500 : 2601 \rightarrow$$

$$2601 \rightarrow \cancel{7803}^3$$

$$2500 \rightarrow ?$$

$$P = ₹ 7500$$

$$\cancel{\frac{2601}{7803}}$$

In what time ₹ 8,000 will amount to ₹ 9,261 at 10% per annum compound interest, when the interest is compounded half yearly ?

- (1) $3\frac{1}{2}$ years (2) $1\frac{1}{2}$ years
(3) $2\frac{1}{2}$ years (4) 2 years

$10\% \rightarrow 5\%$

$$\begin{array}{r} 1 \\ \overline{R} \\ \overline{i} \end{array} \quad \begin{array}{r} 20 : 21 \\ 400 : 441 \\ 8000 : 9261 \end{array}$$

$$8000 \rightarrow 9261$$

3 half years
↓
1.5 years

In how many years will a sum of ₹ 800 at 10% per annum compound interest, compounded semi-annually becomes ₹ 926.10 ?

- (1) $1\frac{1}{2}$ years (2) $1\frac{2}{3}$ years
(3) $2\frac{1}{3}$ years (4) $2\frac{1}{2}$ years

$$926.1 = 800 \left(1 + \frac{5}{10}\right)^n$$

$$\frac{9261}{8000} = \left(1 + \frac{1}{20}\right)^n$$

$$\frac{9261}{8000} = \left(\frac{21}{20}\right)^n$$

$$21^3 = 9261$$

$$n=3$$

half year
1.5 years.

In what time will ₹ 1000 amounts to ₹ 1331 at 20% per annum, compounded half yearly ?

$$R \rightarrow 10\text{-f.}$$

- (1) $1\frac{1}{2}$ years (2) 2 years
(3) 1 year (4) $2\frac{1}{2}$ years

$$\left. \begin{array}{l} \text{P} \\ \text{R} \\ \text{F} \end{array} \right| \quad \left. \begin{array}{l} 10 : 11 \\ 100 : 121 \\ 1000 : 1331 \end{array} \right\}$$

3 half years

The time in which ₹ 80,000 amounts to ₹ 92,610 at 10% p.a. compound interest, interest being compounded semi annually is :

- (1) $1\frac{1}{2}$ years (2) 2 years
(3) $2\frac{1}{2}$ years (4) 3 years

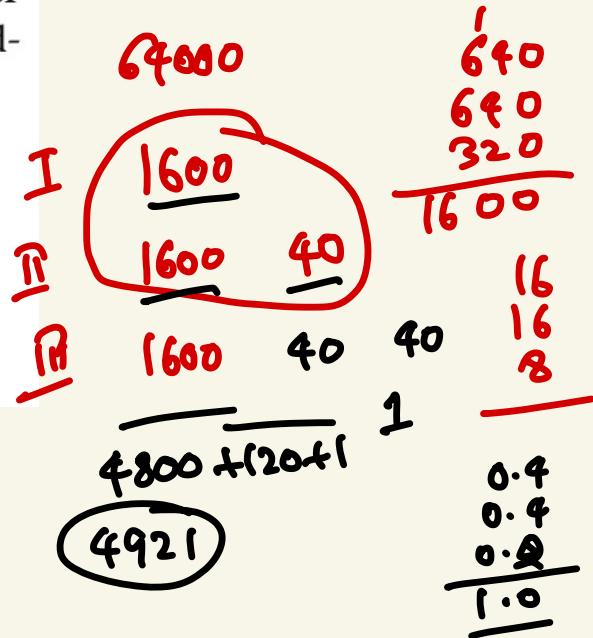
In what time will Rs. 64,000 amount to Rs. 68,921 at 5% per annum, interest being compounded half yearly?

- (1) 3 years (2) $2\frac{1}{2}$ years

- (3) 2 years (4) $1\frac{1}{2}$ years

$$\begin{array}{r} 64000 \\ - 4921 \\ \hline 68921 \end{array}$$

5%. 2.5%.



Find the amount which Shyam will get on Rs. 4096, if he gives

it for 18 months at $12 \frac{1}{2}\%$ per annum, interest being compounded half yearly.

- (1) Rs. 5,813 (2) Rs. 4,515
(3) Rs. 4,913 (4) Rs. 5,713

$$100 : 106.25 = \frac{12.5}{2} = 6.25\%$$

$$\text{I} : 16 : 17$$

$$\text{II} : 256 : 289$$

$$\text{III} : 4096 : 4913$$

$\downarrow \qquad \downarrow$
P A

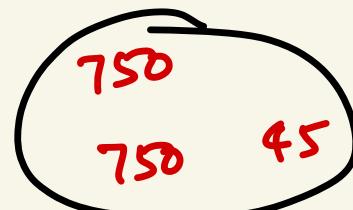
If a sum of Rs. 12500 is invested for 1 year at 12% per annum interest being compounded semi-annually, then interest earned is :

- (1) Rs. 1505 (2) Rs. 1535
~~(3)~~ Rs. 1545 (4) Rs. 1550

1 year \rightarrow 2 half years.

I
II

12500



1545

The compound interest on Rs.

24000 at 10% per annum for $1\frac{1}{2}$ years, interest being compounded semi-annually is :

- (1) Rs. 3783 (2) Rs. 3777
(3) Rs. 3780 (4) Rs. 3781

3 half years

10%. 5%.

I 1200

II 1200

III 1200

3600 180 3

3783

What is the compound interest (in Rs.) for 1 year on a sum of Rs. 20000 at the rate of 40% per annum compounded half yearly?

- (1) 8000 (2) 8650
(3) 8750 (4) 8800

40% 20%

4000

4000 800

8800

I 5:6

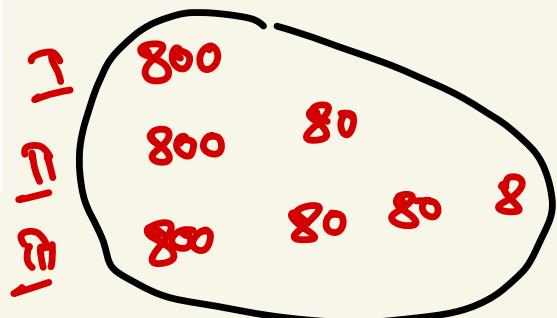
II 25:36

75 → 20000
11 → ?
8800

In how many months will Rs. 8,000 yield Rs. 2,648 as compound interest at 20% per annum compounded semi-annually?

- (1) 18 (2) 24
(3) 12 (4) 30

$$R = 10\%$$



3 half years
18 months

$$\begin{array}{r} 2000 + 200 + 8 \\ \hline 2628 \end{array}$$

Compound interest - 4

The compound interest on ₹ 16,000 for 9 months at 20% per annum, interest being compounded quarterly, is

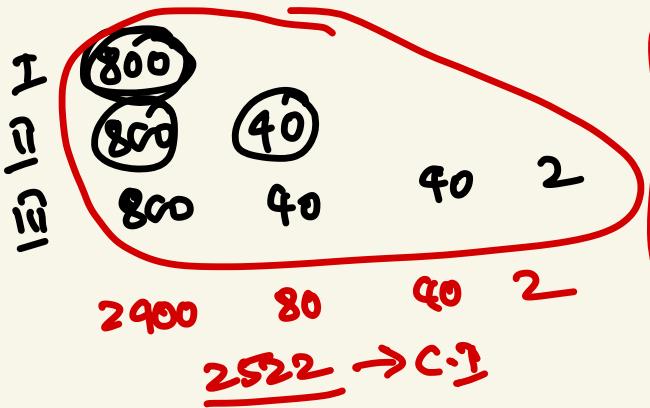
- (1) ₹ 2,520 (2) ₹ 2,524
~~(3) ₹ 2,522~~ (4) ₹ 2,518

$$\frac{P}{4} \quad \frac{20}{4} = \underline{5\cdot1}$$

9 months = 3 quarters.

$3+3+3$

16000



$$\begin{aligned}
 &16000:105 \\
 &\text{I} \quad 20:21 \\
 &\text{II} \quad 400:441 \\
 &\text{III} \quad 8000:9261 \\
 &\downarrow \quad \downarrow \\
 &P \quad 4 \\
 &\text{C.I.} = 1261
 \end{aligned}$$

At what rate per annum will ₹ 32000 yield a compound interest of ₹ 5044 in 9 months interest being compounded quarterly?

- ~~(1) 20% 5%~~ (2) 32% ~~8%~~
 (3) 50% ~~12.5%~~ (4) 80% ~~20%~~

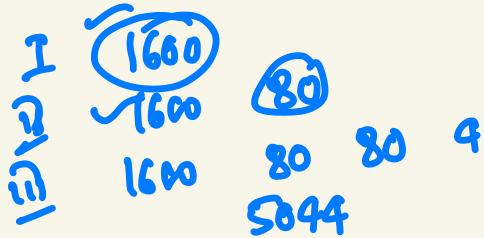
$$A = P \left[1 + \frac{r}{100} \right]^n$$

9 months = 3 quarters.

$$n = 3$$

$$A = 32000 + 5044$$

$$A = 37044$$



$$37044 = 32000 \left[1 + \frac{r}{100} \right]^3$$

$$\frac{37044}{32000} = \left[1 + \frac{r}{100} \right]^3$$

$$\frac{9261}{8000} = \left(1 + \frac{r}{100} \right)^3$$

$$\left(\frac{21}{20} \right)^3 = \left(1 + \frac{r}{100} \right)^3$$

$$\frac{21}{20} = 1 + \frac{r}{100} \Rightarrow \frac{r}{100} = \frac{1}{20}$$

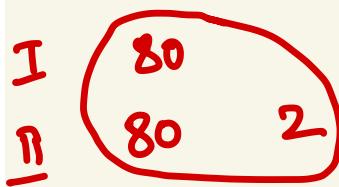
$$r = 5\%$$

$$R = 4 \times 5 = 20\%$$

A sum of ₹ 3,200 invested at 10% p.a. compounded quarterly amounts to ₹ 3,362. Compute the time period.

- (1) $\frac{1}{2}$ year (2) 1 year
(3) 2 years (4) $\frac{3}{4}$ year

$$\frac{R}{q} = \frac{10}{4} = 2.5\%$$



2 Qtrs = 6 months
= $\frac{1}{2}$ year

$$\begin{array}{r} 3200 \\ 162 \\ \hline 3362 \end{array}$$

The compound interest on a sum of Rs. 5000 at 8% per annum for 9 months when interest is compound quarterly is :

- (1) Rs. 300 (2) Rs. 300.12
(3) Rs. 306.04 (4) Rs. 308

~~9 months = 3 quarters~~

$$\frac{8\%}{4} = 2\%$$

I	100	
II	100	2
III	100	2 \times 2 $^{0.09}$

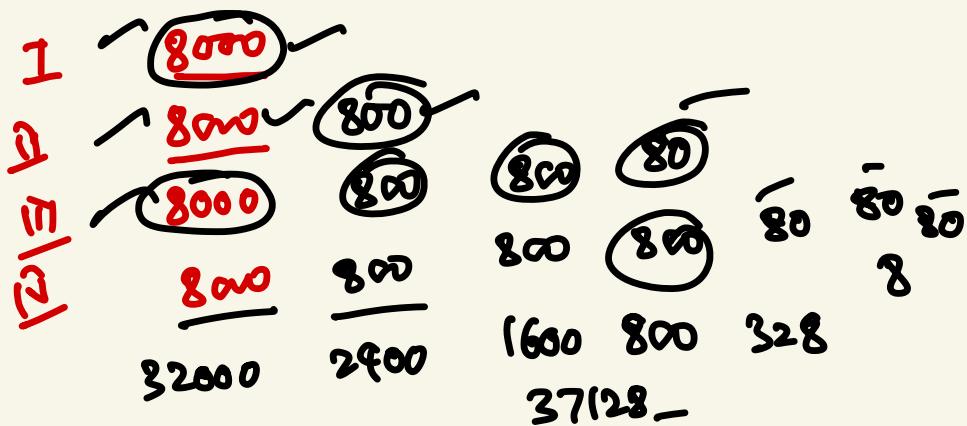
306.04

What is the compound interest earned on Rs. 80,000 at 40% per annum in 1 year compounded quarterly?

- (1) 28317 (2) 37128 ✓
(3) 18732 (4) 21387

$$\frac{R}{4} = \frac{40}{4} = 10\%$$

1 year = 4 quarters



The compound interest on Rs. 12000 for 9 months at 20% per annum, interest being compounded quarterly is :

- (1) Rs. 1750
- (2) Rs. 2089.70
- (3) Rs. 1891.50 \rightarrow
- (4) Rs. 2136.40

$$\frac{20}{4} = 5\%.$$

$$\begin{array}{r} I \quad 600 \\ \overline{\underline{R}} \quad \underline{\underline{600}} \quad \underline{\underline{30}} \\ \overline{\underline{\overline{R}} \quad 600 \quad 30 \quad 30 \quad 1.5} \\ \hline 1800 + 90 + 1.5 \\ 1891.5 \end{array}$$

At what rate per annum will Rs.48000 yield a compound interest of Rs.7566 in 9 months , compounded quarterly.

- a) 5% b) 16% c) 20% d) 15%

$\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$
1.25 $\boxed{4}$ 5 4.25

$\frac{3}{4} \overline{480} \overline{\overline{4}} \overline{19.2} \overline{19.2} \overline{19.2} \overline{19.2} \overline{768}$

48000
2400
2400 120
2400 120 120 6
7200 + 360 + 6 \rightarrow 7566

A certain sum of money becomes $\frac{625}{256}$ times of itself in 1 year. Then find the rate of interest per annum if interest is compounded quarterly.

- a) 25% b) 66.66% c) 80% d) 100% ✓

$$A = \frac{625}{256} P$$

$$1 + r = 4 \text{ after } \uparrow$$

$$A = P \left[1 + \frac{r}{100} \right]^4 \quad n=4$$

$$\frac{625}{256} = \left[1 + \frac{r}{100} \right]^4$$

$$\left(\frac{5}{4} \right)^4 = \left(1 + \frac{r}{100} \right)^4 \Rightarrow \frac{5}{4} = 1 + \frac{r}{100}$$

$$\frac{r}{100} = \frac{1}{4}$$

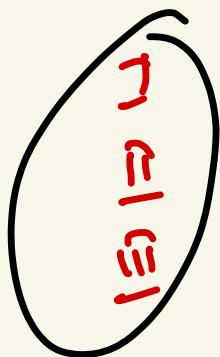
$$r = 25\%$$

$$25 \cdot 4 = 100 = R$$

In how many months will Rs. 24000 will become Rs.27783 at compound interest at 20% per annum compounded quarterly

- a) 12 b) 18 c) 6 d) 9

$$\frac{20}{4} = 5\%$$



1200 →

1200 → 60

1200 60 60 3
—————
3600 + 183

$$\begin{array}{r} 27783 \\ 24000 \\ \hline 3783 \end{array}$$

3783 →

3 Quarters = 9 months

Compound interest - 5

The compound interest on a certain sum in $2\frac{1}{2}$ years at 10% p.a., interest compounded yearly, is ₹ 1,623. The sum is :
 ✗(1) ₹ 5,000 ✗(2) ₹ 6,000 ✓
 (3) ₹ 6,500 (4) ₹ 7,200

$$\begin{array}{r}
 \text{I} \quad \boxed{\begin{array}{r} 600 \\ - 600 \\ \hline 60 \end{array}} \quad 30 \quad 3 \\
 \text{II} \quad \boxed{\begin{array}{r} 300 \\ - 300 \\ \hline \end{array}} \quad 30 \quad 3 \\
 \text{III} \quad \begin{array}{r} 1500 \\ 123 \\ \hline 1623 \end{array} \\
 27.05 \% \rightarrow 1623 \\
 100 \% \rightarrow ?
 \end{array}$$

$$\begin{aligned}
 & x+y+\frac{xy}{100} \\
 & 10+10+\frac{10 \times 10}{100} = 21\%
 \end{aligned}$$

$$21+5+\frac{21 \times 5}{100}=26+1.05$$

$$\begin{array}{r}
 100 \times 1623 \times 100 \\
 \hline
 27.05 \\
 \hline
 541
 \end{array}$$

$$\begin{array}{r}
 \frac{100 \times 1623}{27.05} \\
 541 \times 3 = 1623 \\
 = 6000/- \\
 \end{array}$$

What will be the compound interest (nearest to Re. 1) on a sum of Rs. 25,000 for 2 years at 12% p.a., if the interest is compounded 8-monthly?

- (1) Rs. 6,394 (2) Rs. 6,439
~~(3) Rs. 6,493~~ (4) Rs. 6,349

~~12 → 12~~
8 → ?

8-f.

2 years → 24 months
8+8+8

I	2000
II	<u>2000</u> 160
III	<u>2000</u> <u>160</u> 160
	<u>6000 + 480 + 12.8</u>

$$\begin{array}{r} 12.8 \\ \hline 12.8 \\ 9.6 \\ \hline 12.8 \\ 6492.8 = 6493 \end{array}$$

What is the compound interest on a sum of ₹ 10,000 at 14% p.a. for $2\frac{5}{7}$ years while the interest is compounded yearly? (nearest to ₹ 1)

- (1) ₹ 4,259 (2) ₹ 4,296 ✓
(3) ₹ 4,439 (4) ₹ 4,394

I	1400		
II	1400	196	
III	1000	140	140

111
3800

196
280
19.6

4295.6
4296

$$\frac{5}{7} \times 14^2 = 10\%$$

What is the compound interest on a sum of Rs. 8,100 for

$1\frac{1}{4}$ years at 8% per annum, if

the interest is compounded 5 - monthly? (Nearest to Rs. 1)

- (1) Rs. 837 ~~—~~ (2) Rs. 873
(3) Rs. 842 ~~—~~ (4) Rs. 824

$$1\frac{1}{4} = 15 \text{ months}$$

$$5+5+5$$

$$12 \rightarrow 8\%$$

$$5 \rightarrow ?$$

$$\frac{10}{3}\%$$

$$100 : 100 + \frac{10}{3}$$

I $30 : 31$ $\begin{array}{r} 31 \\ \times 3 \\ \hline 93 \end{array}$

II $900 : 961$ $\begin{array}{r} 961 \\ \times 3 \\ \hline 2883 \\ - 2700 \\ \hline 181 \end{array}$

III $27000 : 29791$ $\begin{array}{r} 29791 \\ \times 3 \\ \hline 2791 \\ \hline 2791 \end{array}$

8100

$$\begin{array}{r} 22 \\ 2791 \\ \times 3 \\ \hline 8373 \end{array}$$

837.3

$$\begin{array}{r} 10 \\ 2700 \\ \times 3 \\ \hline 2790 \\ - 2791 \\ \hline 1 \end{array}$$

$2791 \rightarrow ?$

$$\frac{2791 \times 3}{10}$$

$$P = 8100$$

$$R = \frac{10}{3} - 1$$

$$81 \times \frac{10}{3}$$

I 270

II 270 9

III 270 9 9 0.3

$$2.7 \times \frac{10}{3}$$

$$0.09 \times \frac{10}{3}$$

$$\overline{810 + 27.3}$$

$$0.3$$

$$\underline{837.3}$$

What is the compound interest on a sum of Rs. 4,096 at 15%

per annum for $2\frac{1}{2}$ years, if the

interest is compounded 10-monthly?

- (1) Rs. 1,726 (2) Rs. 1,736
(3) Rs. 1,636 (4) Rs. 1,763

$$\frac{24}{12} - \frac{5}{10} - ?$$

12.5%.

30 months

10 + 10 + 10

$$\begin{array}{r} 11^{\frac{3}{2}} \\ 409.6 - 10 \\ 40.96 \rightarrow 1 \\ 40.96 \rightarrow 1 \\ 20.48 \rightarrow 1.5 \\ \hline 512.00 \end{array}$$

$$\begin{array}{r} 1536 \\ 192 \\ \hline 1728 \\ 6 \\ \hline 1734 \end{array} \quad \begin{array}{l} \text{I} \\ \text{II} \\ \text{III} \end{array} \quad \begin{array}{r} 512 \\ 512 \\ 512 \end{array} \quad \begin{array}{c} 64 \\ \circledcirc \\ 64 \end{array} \quad \begin{array}{r} 64 \\ 192 \\ \hline 64.00 \end{array}$$

I	100 : 112.5	
I	8 : 9	
<u>II</u>	64 : 81	
<u>III</u>	512 : 729	$\frac{729}{512}$
	$512 \rightarrow 4096^{\frac{8}{8}}$	$\frac{257}{8}$
	$217 \rightarrow ?$	<u>1736</u>
	<u>1736</u>	

What is the compound interest

on a sum of Rs.37,500 for $1\frac{1}{3}$

years at the rate of 12% per annum if the interest is compounded 8-monthly?

- (1) Rs.6,440
- (2) Rs.6,240
- (3) Rs.6,420
- (4) Rs.6,448

$$12 + 4 = 16 \text{ months}$$

$$8 + 8$$

$$12 \rightarrow 12$$

$$8 \rightarrow ?$$

8-s.

I
II

3000

3000 240

$\frac{69}{8}$
3000

6240

The compound interest on a cer-

tain sum at 10% p.a. for $2\frac{1}{3}$ years is Rs 1,201.60, interest compounded yearly. The sum is :

$$\begin{array}{r} I \quad 480 \\ II \quad 480 \quad 48 \\ III \quad 160 \quad 16 \quad 16 \\ \hline 1120 \\ 48 \\ 32 \\ 1.6 \\ \hline 1201.6 \end{array}$$

A sum of Rs. 8,000 invested at 10% p.a. amounts to Rs. 9261 in a certain time, interest compounded half-yearly. What will be the compound interest (in Rs.) on the same sum for the same time at double the earlier rate of interest, when interest is compounded annually?

- (1) Rs. 2,520 (2) Rs. 2,480
 (3) Rs. 2,500 (4) Rs. 2,560 ✓

I	<u>400</u>				
II	<u>400</u>	<u>20</u>			
III	400	20	<u>20</u>	<u>1</u>	

1261 1.5 years

8000 1.5 years
 R = 20%

I	1600			
II	800	160		
		2560		

R = 10%

Compound interest - 6

A sum of Rs. 2000 amounts to Rs. 4000 in two years at compound interest. In how many years will the same amount become Rs. 8000 ?

- (1) 2 (2) 4 ✓
(3) 6 (4) 8

$$\cancel{4000^2} = 2000 \left[1 + \frac{P}{100} \right]^2$$

$$\left(1 + \frac{R}{100}\right)^n = 2$$

$$\textcircled{4} \quad g_{2000} = 2000 \left[1 + \frac{P}{100} \right]^n$$

$$\frac{4}{(1 + \frac{R}{100})^n}$$

$$\left(1 + \frac{R}{100}\right) = 4$$

A man invested a sum of money at compound interest. It amounted to Rs. 2420 in 2 years and to Rs. 2662 in 3 years. Find the sum.

- (1) Rs. 1000 (2) Rs. 2000
 (3) Rs. 5082 (4) Rs. 3000

$$\frac{(2420 - 2)}{(2662 - 3)}$$

$$\frac{2420 \times 11}{2662} = \frac{P = 10\%}{P = 10\%}$$

$$\frac{P}{R} = \frac{10:11}{100:101} \downarrow ? \downarrow \frac{2420}{20}$$

$$2662 = P \left(1 + \frac{R}{100}\right)^3$$

$$2420 = P \left(1 + \frac{R}{100}\right)^2$$

$$1 + \frac{R}{100} = \frac{2662}{2420} \Rightarrow \frac{11}{10}$$

A sum of Rs. 3000 amounts to Rs. 6000 in two years at compound interest. The interest for four years is :

- (1) Rs. 9000 (2) Rs. 12000
(3) Rs. 6000 (4) Rs. 3000

The diagram illustrates the growth of a principal amount over time through compound interest. It starts with a principal of 3000, which grows to 6000 after 2 years. This 6000 then grows to 12000 after another 2 years, totaling 4 years. The growth factor for each 2-year period is labeled as 2, and the total growth factor for 4 years is labeled as 4.2.

$$\begin{array}{ccccccc} 3000 & \xrightarrow{\text{2}} & 6000 & \xrightarrow{\text{2}} & 12000 \\ & \underbrace{\hspace{1cm}}_{\times 2} & & \underbrace{\hspace{1cm}}_{\times 2} & & & \end{array}$$

$3000 \rightarrow 12000$
Interest = ?

If a certain sum becomes two times in 7 years at compound interest, then in how many years, it will become eight times ?

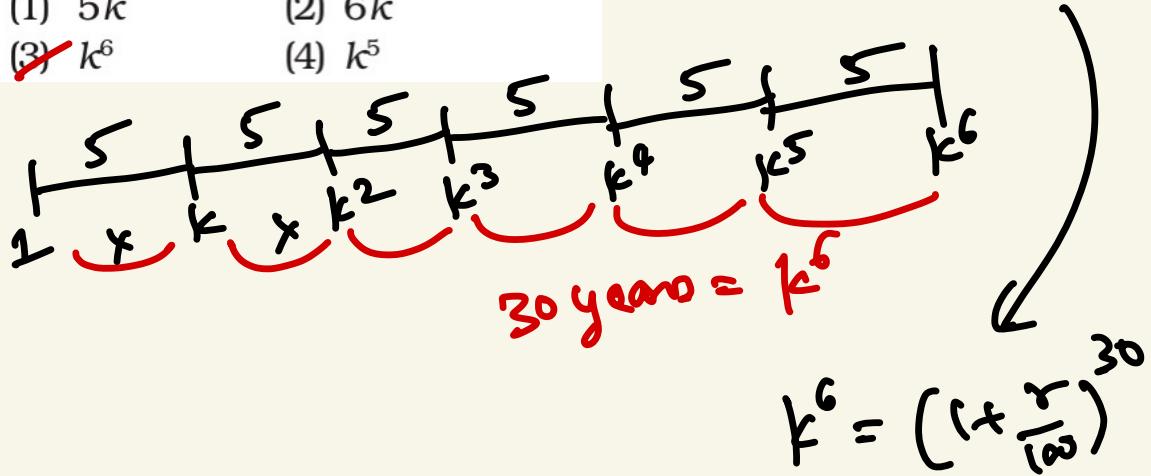
- (1) 14 (2) 21
(3) 28 (4) 35

$$8 = \left(1 + \frac{R}{100}\right)^n$$
$$2P = P \left(1 + \frac{R}{100}\right)^7$$
$$A = 2P$$
$$8 = \left(1 + \frac{R}{100}\right)^n$$

A certain sum becomes k times
in 5 years at compound interest.
In 30 years it will become how
many times?

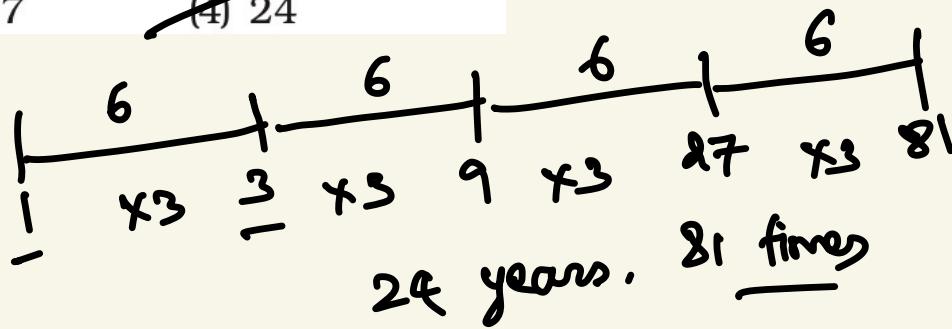
- (1) $5k$ (2) $6k$
~~(3) k^6~~ (4) k^5

$$A = kp$$
$$kp = p \left(1 + \frac{r}{100}\right)^5$$



If a certain sum becomes 3 times in 6 years at compound interest, then in how many years, it will become 81 times?

- (1) 81 (2) 162
(3) 27 ~~(4) 24~~



A sum amounts to Rs. 8,028 in 3 years and to Rs. 12,042 in 6 years at a certain rate per cent per annum, when the interest is compound yearly. The sum is :

- (1) Rs. 5,352 (2) Rs. 5,235
 (3) Rs. 5,325 (4) Rs. 5,253

$$\frac{P}{x?} \xrightarrow[8028]{(1+\frac{x}{100})^3} \frac{12042}{x?}$$

$$\frac{P}{\cancel{8028}} = \frac{\cancel{8028}}{\cancel{12042}} \cdot \frac{2}{3}$$

$$P = 2 \times 2676 = \underline{\underline{5352}}$$

$$\frac{12042}{8028} = \frac{(1+\frac{x}{100})^6}{(1+\frac{x}{100})^3}$$

$$(1+\frac{x}{100})^3 = \frac{3}{2}$$

An amount of Rs. 5000 becomes Rs. 7200 in 8 years at a certain rate of compound interest compounded annually. What will be the compound interest on Rs. 6550 in 4 years at the same rate of interest?

- (1) Rs. 1,285 (2) ~~Rs. 1,310~~
 (3) Rs. 1,290 (4) Rs. 1,415

$$7200 = 5000 \left(1 + \frac{r}{100}\right)^8$$

$$\frac{36}{25} = \left(1 + \frac{r}{100}\right)^8$$

$$\left(\frac{6}{5}\right)^2 = \left(1 + \frac{r}{100}\right)^8$$

$$\frac{6}{5} = \left(1 + \frac{r}{100}\right)^4$$

$$P = \text{Rs. } 6550 \quad n = 4$$

$$A = 6550 \times \left[1 + \frac{r}{100}\right]^4$$

$$A = \frac{1310}{6550} \times \frac{6}{5} = 7860$$

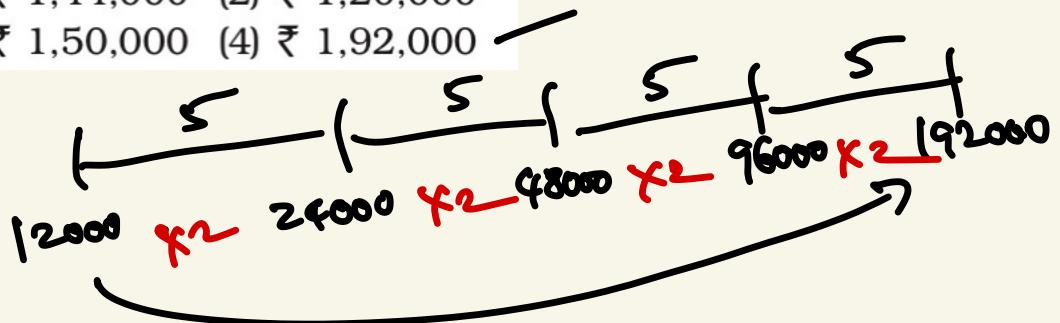
{31
6}

7860

$$\frac{7860}{6550} \rightarrow C-I$$

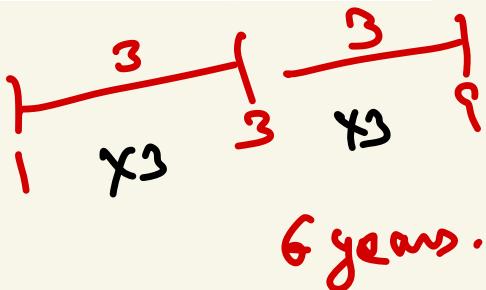
A sum of ₹ 12,000, deposited at compound interest becomes double after 5 years. How much will it be after 20 years ?

- (1) ₹ 1,44,000 (2) ₹ 1,20,000
(3) ₹ 1,50,000 (4) ₹ 1,92,000



A sum of money at compound interest amounts to thrice itself in 3 years. In how many years will it be 9 times itself ?

- (1) 9 years (2) 27 years
~~(3) 6 years~~ (4) 3 years



Compound interest - 7

A sum of money becomes 1.331 times in 3 years as compound interest. The rate of interest is

- (1) 8% (2) 7.5%
(3) 10% ✓ (4) 50%

$$A = 1.331 P$$

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

$$1.331 P = P \left[1 + \frac{r}{100} \right]^3$$

$$\frac{1331}{1000} = \left[1 + \frac{r}{100} \right]^3$$

$$\frac{11}{10} = 1 + \frac{r}{100}$$

$$\frac{r}{100} = \frac{1}{10} - 1 = \frac{1}{10}$$

$r = 10\%$

If the amount is $3\frac{3}{8}$ times the sum after 3 years at compound interest compounded annually, then the rate of interest per annum is

- (1) 25% (2) 50%
(3) $16\frac{2}{3}\%$ (4) $33\frac{1}{3}\%$

$$A = 3\frac{3}{8}P$$

$$A = \frac{27}{8}P$$

$$\frac{27}{8}P = P \left[1 + \frac{r}{100} \right]^3$$

$$\frac{3}{2} = 1 + \frac{r}{100}$$

$$\frac{r}{100} = \frac{3}{2} - 1 = \frac{1}{2}$$

$$\boxed{r = 50\%}$$

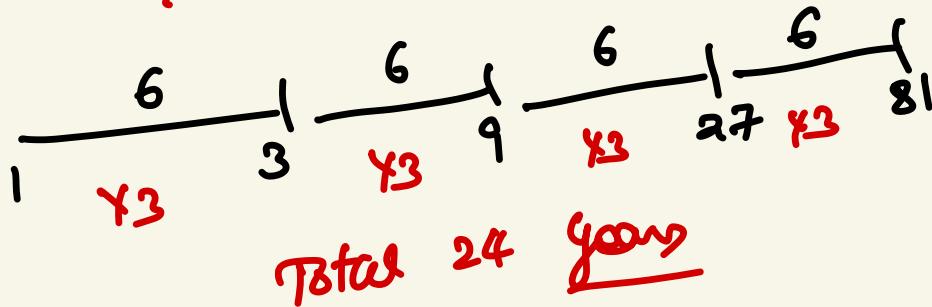
$\frac{1}{2} : \frac{1}{3}$
 $2 : 3$
 $4 : 9$
 $8 : 27 \checkmark$

If a certain sum becomes 3 times in 6 years at compound interest, then in how many years, it will become 81 times?

- (1) 81 (2) 162
(3) 27 (4) 24

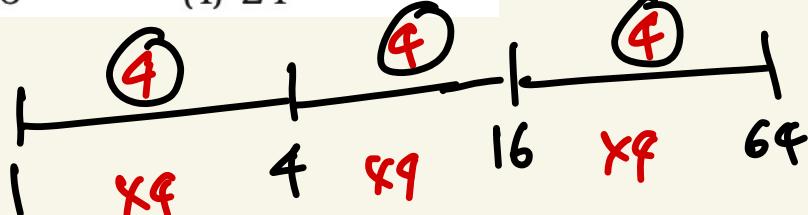
$$3^4 = \left(1 + \frac{r}{100}\right)^{6 \times 4}$$

24



If a certain sum becomes 4 times in 4 years at compound interest, then in how many years, it will become 64 times?

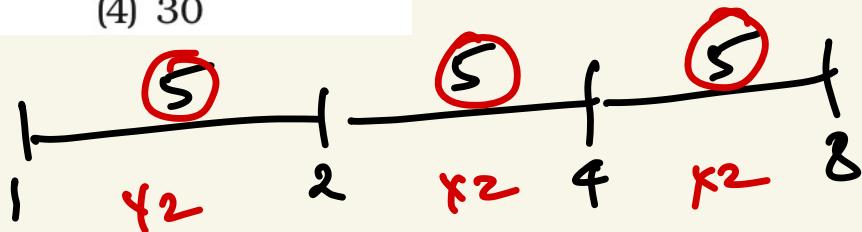
- (1) 5 (2) 12
(3) 16 (4) 24



12 years.

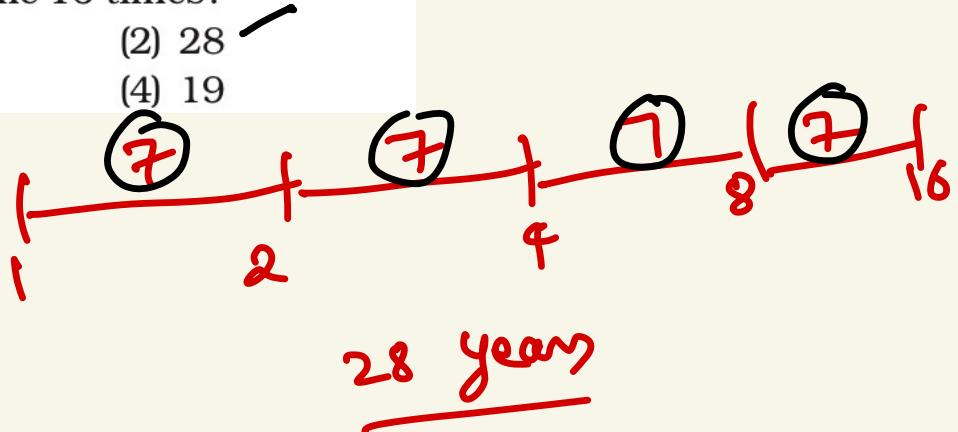
If a certain sum becomes two times in 5 years at compound interest, then in how many years, it will become eight times?

- (1) 10 (2) 20
~~(3) 15~~ (4) 30



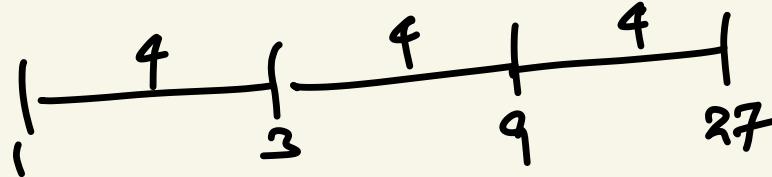
A sum becomes two times in 7 years at compound interest. In how many years the same sum will become 16 times?

- (1) 21 (2) 28
(3) 35 (4) 19



If a sum of money on compound interest becomes three times in 4 years, then at the same interest rate, the sum will become 27 times in:

- (1) 15 years (2) 12 years ✓
(3) 16 years (4) 10 years



12 years.

An amount of money appreciates to ₹ 7,000 after 4 years and to ₹ 10,000 after 8 years at a certain compound interest compounded annually. The initial amount of money was

- (1) ₹ 4,700 (2) ₹ 4,900 ✓
 (3) ₹ 4,100 (4) ₹ 4,300

$$7000 = P \left(1 + \frac{r}{100}\right)^4$$

$$10000 = P \left(1 + \frac{r}{100}\right)^8$$

$$\left(1 + \frac{r}{100}\right)^8 = \frac{10}{7}$$

$$P \times \frac{10}{7} = \frac{7000}{\cancel{10000}}$$

$$P \times \frac{10}{7} = 7000$$

$$P = \underline{\underline{4900}}$$

$$\frac{10000}{7000}$$

A sum of Rs. 6000 becomes Rs. 7200 in 2 years, when invested in a scheme of simple interest. If the same sum is invested in a scheme of compound interest with same yearly interest rate (compounding of interest is done yearly), then what will be the amount (in Rs.) after 3 years?

- (1) 7434 (2) 8244
 (3) 7864 (4) 7986 ↗

$$\begin{aligned} & 6000 + 1986 \\ & = 7986 \end{aligned}$$

*6000 → 7200
2 years in S.I*

<u>6000</u>	<u>600</u> —	<u>60</u> —	<u>6</u>
<u>600</u> —	<u>60</u> —	<u>6</u>	
<u>600</u>	<u>60</u>	<u>6</u>	
<hr/>			
(800 + 186)			
<u>1986</u>			

A sum of Rs. 20000 becomes Rs. 32000 in 12 years, when invested in a scheme of simple interest. If the same sum is invested in a scheme of compound interest with same yearly interest rate (compounded annually), what will be the amount (in Rs.) after 2 years?

- (1) 21750 (2) 22050 ✓
 (3) 23250 (4) 24650

$$\frac{1000}{12000} = \frac{1}{2000} \times 12 \times \frac{P}{100}$$

$$P = 5\%$$

$$\text{I } 20:21$$

$$\text{II } 400: 441$$

$$400 \rightarrow 20000 \xrightarrow{50}$$

$$441 \rightarrow ?$$

$$\begin{array}{r} 2 \\ 441 \xrightarrow{5} \\ \hline 2205 \end{array}$$

$$A = 22050$$

Compound interest - 8

The difference between compound interest and simple interest on an amount of Rs. 15,000 for 2 years is Rs. 96. The rate of interest per annum is

- (1) 6% (2) 7%
(3) 8% ✓ (4) 9%

$$P = \text{Rs. } 15000 \quad N = 2 \text{ years} \quad D = 96.$$

$$\frac{PR^2}{100^2} = 96 \Rightarrow \frac{(1+x)^2 - 1}{(1+x)(1+x)} = 96$$
$$P^2 = \frac{32}{2} = 64$$
$$P = 8\%.$$

The difference between simple and compound interests compounded annually on a certain sum of money for 2 years at 4% per annum is Rs. 8. The sum is

- (1) Rs. 10000 (2) Rs. 20000
~~(3)~~ Rs. 5000 (4) Rs. 15000

$$D = 8.$$
$$R = 4\%$$

$$\frac{P \times R \times T}{100 \times 100} = 8.2$$

$$P = \text{Rs. } 5000$$

What is the difference (in Rs.) between compound interest (compounded annually) and simple interest for 3 years on a principal of Rs. 4000 at the rate of 30% per annum?

- (1) 976 (2) 1024
(3) 1188 ✓ (4) 1276

$$D = ?$$
$$P = 4000 \quad R = 30\%$$
$$N = 3 \text{ years}$$

$$\frac{PR^2}{100^2} \left(3 + \frac{R}{100} \right) = D$$

$$\frac{4000 \times 30 \times 30}{100 \times 100} \times \frac{33}{10} = 36 \times 33 = 1188.$$

If the difference of the compound interest and the simple interest on a sum of money for 3 years is Rs. 186. Find the sum of money, if the rate of interest in both cases be 10%.

- (1) Rs. 5500 (2) Rs. 7200
(3) Rs. 6500 (4) Rs. 6000 ✓

$$\frac{P \times 100}{100 \times 100} \left(3 + \frac{10}{100} \right) = 186$$

$$\frac{P}{100} \times \frac{31}{10} = 186$$

$$P = \boxed{Rs. 6000}$$

The difference between the compound interest and simple interest on ₹ x at 8% per annum for 2 years is ₹ 19.20. What is the value of x ?

- (1) 2,500 (2) 3,200
(3) 2,800 (4) 3,000

$$\frac{x \times 8 \times 8}{100 \times 100} = 19.2$$
$$x = \frac{19.2 \times 100 \times 100}{64}$$

$$x = 3000$$

The difference between the compound interest and simple interest on Rs. x at 7.5% per annum for 2 years is Rs. 45. What is the value of x ?

- (1) 7000 (2) 8000 ✓
(3) 9000 (4) 10,000

$$\frac{x \times 7.5 \times 7.5}{\cancel{100} \times \cancel{100}} = 45$$
$$x = 5 \times 1600 = \underline{\underline{8000}}$$

The difference of compound interest and simple interest for 3 years and for 2 years are in ratio 23 : 7 respectively. What is rate of interest per annum (in %)?

(1) $\frac{200}{7}$ (2) $\frac{100}{7}$

(3) $\frac{300}{7}$ (4) $\frac{400}{7}$

$$\frac{\frac{P}{100} \left(3 + \frac{R}{100} \right)^2 - P}{\frac{P}{100}^2} = \frac{23}{7}$$

$$\frac{9P^2}{100^2}$$

$$21 + \frac{7P}{100} = 23$$

$$\frac{7P}{100} = 2$$

$$P = \frac{200}{7} \text{ %.}$$

What is the difference (in Rs.) between the compound interests on Rs. 12,500 for 1 year at 8% per annum compounded yearly and half-yearly?

- (1) 16 (2) 25
(3) 20 (4) 40

$$\begin{array}{l} 8\text{-f.} \quad \frac{1000}{100} \\ 4\text{-f.} \quad \frac{500}{500} \end{array}$$

↓
20

$$P = 8\text{-f.}$$

$$P = 4\text{-f.}$$

$$\frac{P(1+\frac{R}{2})^2 - P(1+\frac{R}{100})^2}{100^2} = \frac{\cancel{12500} \times 4 \times 4}{\cancel{100} \times \cancel{100}}$$
$$= 20$$

On a certain sum of money lent out at 16% p.a. the difference between the compound interest for 1 year, payable half yearly, and the simple interest for 1 year is ₹ 56. The sum is

- (1) ₹ 1080 ~~X~~ (2) ₹ 7805 ~~X~~
 (3) ₹ 8750 (4) ₹ 5780 ~~X~~

$I = 2$ half years.

$$\frac{PR^2}{100^2} = 56$$

$$R = \frac{16}{2} = 8\%$$

$$\frac{P \times 8 \times 8}{100 + 100} = 56.$$

$$P = 7 \times 25 \times 50 = \frac{875}{875}.$$

What sum will give ₹ 244 as the difference between simple interest and compound interest at 10%

in $1\frac{1}{2}$ years compounded half yearly?

- (1) ₹ 40,000 (2) ₹ 36,000
(3) ₹ 32,000 (4) ₹ 28,000

$$1\frac{1}{2} \rightarrow 3 \text{ half years}$$
$$R = \frac{10}{2} = 5\%$$

$$\frac{P R^2}{(100)^2} \left(3 + \frac{R}{100} \right) = 244$$

$$\frac{P \times 5 \times 5}{20 \times 20} \times \frac{61}{20} = 244$$

$$P = 8000 \times 4 = \underline{\underline{32000}}$$

What is the difference between the compound interest, when interest is compounded 5-monthly, and the simple interest on a

sum of Rs. 12,000 for $1\frac{1}{4}$ year at 12% per annum?

- a) 90 b) 91.5 c) 94 d) 93.5

$$1\frac{1}{4} = 15 \text{ months.}$$

$$5+5+5 \quad (3 \text{ months})$$

$$12 \rightarrow 12\%.$$

$$5 \rightarrow ?$$

$$\underline{5\%}$$

$$\frac{P(1+\frac{R}{100})^n - P}{100} = ?$$

$$\frac{12000 \times 5 \times 5}{100 \times 100} \left(3 + \frac{5}{20} \right) = ?$$

$$\frac{12000 \times 5 \times 5}{100 \times 100} = \frac{15 \times 61}{2 \times 10} = \frac{183}{2} = 91.5$$

$$\frac{12000 \times 5 \times 5 \times 61}{100 \times 20 \times 4}$$

Compound interest - 9

The simple interest on a certain sum for $3\frac{1}{2}$ years at 10% per annum is Rs. 2,940. What will be the compound interest on the

same sum for $2\frac{1}{2}$ years at the same rate when interest is compounded yearly (nearest to a rupee)?

- (1) Rs. 2,272 (2) Rs. 2,227
 (3) Rs. 2,327 (4) Rs. 2,372

$$\frac{2100}{2272}$$

$$C.I =$$

$$2940 = P \times 3.5 \times \frac{10}{100}$$

$$420$$

$$P = \frac{10 \times 2940 \times 2}{7}$$

$$P = 8400$$

$$\begin{array}{r} I \\ \hline II \\ \hline III \end{array} \quad \begin{array}{r} 840 \\ \hline 840 \\ \hline 420 \end{array} \quad \begin{array}{r} 84 \\ \hline 42 \\ \hline 42 \end{array} \quad \begin{array}{r} 5\% \\ 4.2 \\ 4.2 \end{array}$$

$$2100 + 84 + 84 + 4.2$$

A sum of Rs. 7,500 amounts to Rs. 8,748 after 2 years at a certain compound interest rate per annum. What will be the simple

interest on the same sum for $4\frac{3}{5}$

years at double the earlier interest rate?

- (1) Rs. 4,140 (2) ~~Rs. 5,520~~
 (3) Rs. 8,180 (4) Rs. 2,760

$$S.I = \frac{7500}{100} \times 16 \times \frac{23}{5}$$

$$= 15 \times 16 \times 23$$

$$= 5520.$$

$$8748 = 7500 \left(1 + \frac{R}{100}\right)^2$$

2187

$$\frac{8748}{7500} = \left(1 + \frac{R}{100}\right)^2$$

1875

$$\frac{729}{625} = \left(1 + \frac{R}{100}\right)^2$$

$$\frac{27}{25} = 1 + \frac{R}{100}$$

$$\frac{R}{100} = \frac{2}{25} \Rightarrow R = 8\%$$

The compound interest on a certain sum for 3 years at 15% per annum, interest compound yearly, is Rs. 4167, What is the simple interest on the same sum in

$4\frac{4}{5}$ years at the same rate?

- (1) Rs. 6144 (2) Rs. 6000
 (3) Rs. 4800 (4) Rs. 5760

$$\begin{array}{r}
 100 : 115 \\
 20 : 23 \\
 400 : 529 \\
 8000 : 12167 \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 529 \\
 23 \\
 + 1587 \\
 \hline
 1058 \\
 \hline
 12167
 \end{array}$$

\downarrow \downarrow
 P A

$$\begin{array}{r}
 12167 \\
 8000 \\
 \hline
 4167
 \end{array}$$

C.I

$$\begin{aligned}
 P &= \underline{\underline{Rs. 8000}} \\
 S.I &= 8000 \times \frac{15 \times 24}{100} \\
 S.I &= \underline{\underline{240 \times 24 = 5760}}
 \end{aligned}$$

A sum invested at 8% p.a. amounts to Rs. 20280 at the end of one year, when the interest is compounded half yearly. What will be the simple interest on the

same sum for $4\frac{3}{5}$ years at double the earlier rate of interest?

- (1) Rs. 13500 (2) Rs. 13800 ✓
 (3) Rs. ~~14200~~ (4) Rs. 14500 ~~X~~

$$P = 4 \cdot 1 \cdot$$

$$100 : 104$$

$$\text{I } 25 : 26$$

$$\text{II } 625 : 676$$

$$\downarrow \quad \downarrow \\ P \quad A$$

$$A \rightarrow 20280 \xrightarrow[?]{3} 676 \rightarrow 625$$

$$P = \underline{18750}$$

$$\frac{676}{2028}$$

$$S.I. = \cancel{18750} \times \frac{23}{5} \times \frac{16}{100} \frac{8}{5}$$

$$S.I. = \underline{75 \times 23 \times 8} \\ = 13800$$

The compound interest on a certain sum of money at 21% for 2 years is Rs. 9,282. Its simple interest (in Rs.) at the same rate and for the same period is :

- (1) 8,750 (2) 8,400 ✓
(3) 8,000 (4) 8,500

21%.

$$x + y + \frac{xy}{100}$$

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

$$42 + 4.41$$

$$46.41$$

$$\cancel{46} \cancel{41} \% \rightarrow \cancel{9282}^{200}$$

$$42 \% \rightarrow ?$$

$$\underline{\underline{8400}}$$

There is 40% increase in an amount in 10 years at simple interest. What will be the compound interest of Rs. 30000 after 3 years at the same rate?

- (1) Rs. 3745.92 ✓
- (2) Rs. 7491.84
- (3) Rs. 9364.8
- (4) Rs. 5618.88

$$\begin{array}{r} \text{3600} \\ \text{145.92} \\ \hline \text{3745.92} \end{array}$$

10 → 40%
1 → ? 4%

R = 4%

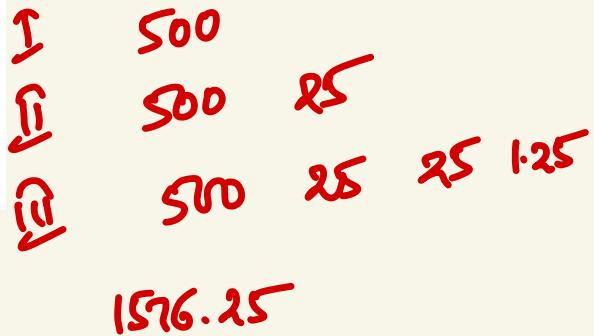
$$\begin{array}{r} 1200 \\ 1200 \\ \hline 1200 & 48 \\ & 48 & 48^{1.92} \end{array}$$

$$3600 + 144 + 1.92$$

There is 40% increase in an amount in 8 years at simple interest. What will be the compound interest on Rs. 10000 after 3 years at the same rate?

- (1) Rs. 1576.25 ✓
- (2) Rs. 6305 ✗
- (3) Rs. 7881.25 ✗
- (4) Rs. 4728.75 ✗

$$R = \frac{40}{8} = 5\%$$



The simple interest on a sum of money for 3 years is Rs. 240 and the compound interest on the same sum, at the same rate for 2 years is Rs. 170. The rate of interest is :

(1) 8% (2) $29\frac{1}{6}\%$

(3) $12\frac{1}{2}\%$ (4) $5\frac{5}{17}\%$

	S.I	C.I
I	80	<u>80</u>
R	80	80
R^2	80	10

$$P = \frac{10}{80} \times 100 = 12.5\%$$

A sum of Rs. 12,000 is invested for 15 months at 10% per annum com-pounded half yearly. What is the percentage gain, at the end of 15 months, correct to one decimal place?

- (1) 13.0% (2) 13.1%
(3) 12.8% (4) 12.9%

$$\underline{6+6+3}$$

$$5+5+\frac{5 \times 5}{100} = \underline{\underline{10.25\%}}$$

$$10.25+2.5+\frac{10.25 \times 2.5}{100}$$

$$12.75 + \underline{0.25625}$$

$$\underline{\underline{13.00625}}$$

$$\underline{\underline{1025}}$$

$$\underline{\underline{25}}$$

$$\underline{\underline{5025}}$$

$$\underline{\underline{2050}}$$

$$\underline{\underline{25625}}$$

SI & CI

QUESTIONS ASKED IN CGL

MAINS – 2019

1. In how much time will the simple interest on a certain sum of money be $\frac{6}{5}$ times of the sum at 20% per annum?

$$S.I = \frac{6}{5} P$$

- A) 5 yrs B) 8 yrs C) 6 yrs D) 7 yrs

$$\frac{6}{5} P = \frac{P \times N \times 20}{100}$$

$$N = 6 \text{ years.}$$

2. At what rate per cent per annum will a sum of Rs.15,625 amount to Rs.21,952 in three years, if the interest is compounded annually?

- A) 12% B) 8% C) 9% D) 10%

$$21952 = 15625 \left(1 + \frac{R}{100}\right)^3$$

$$\frac{21952}{15625} = \left(1 + \frac{R}{100}\right)^3 \Rightarrow \frac{28}{25} = 1 + \frac{R}{100}$$
$$\frac{R}{100} = \frac{3}{25} \Rightarrow R = 12\%$$

3. Rahul invested equal sums of money at compound interest under two schemes A and B. Under scheme A, the interest rate was 10% per annum and under scheme B, the interest rate was 12% per annum. The compound interest after two years on the sum invested in scheme A was Rs.1,050. How much is the interest earned under scheme B after two years, if the interest is compounded annually in both schemes?

- A) Rs.1,270 B) Rs.1,372 C) Rs.1,722 D) Rs.1,272

A	B
$R = 10\%$	$R = 12\%$
$N = 2$	$N = 2$
↓	↓ ?
1050	<u>5000</u>
I 10:11	I 600
II 100:121	II 600 72
$21 \rightarrow 1050$	<u>1272</u>
$100 \rightarrow ?$	
<u>5000</u>	

4. At what rate of interest will a sum of Rs.4,500 amount to Rs.6,525 at simple interest for 5 years?

- A) 8% B) 12% C) 10% D) 9%

$$\frac{6525 - 4500}{2025} = \frac{225}{2025}$$

$$2025 = \frac{4500 \times 5 \times R}{100}$$

$$R = \frac{225}{\cancel{45} \times 5}$$

$$\boxed{R = 9\text{--}\cdot}$$

5. Sum of Rs.10,500 amounts to Rs.13,650 in 2 years at a certain rate per cent per annum simple interest. The same sum will amount to what in 1 year at the same rate, if the interest is compounded half yearly (nearest to Rs.1)?

- A) Rs.12,134
- B) Rs.12,314
- C) Rs.12,124
- D) Rs.12,143

$$\begin{array}{r} 13650 \\ 10500 \\ \hline 3150 \end{array}$$

$$3150 = 10500 \times 2 \times \frac{R}{100}$$

$$R = \frac{3150}{210} = \frac{45}{3} = 15\%$$

$$10500 \quad I \quad \textcircled{787.5}$$

~~$$\begin{array}{r} 10500 \\ 1635 \\ \hline 18135 \end{array}$$~~

$$10500 \quad I \quad \textcircled{787.5}$$

$$\begin{array}{r} 60 \\ 1575 \\ \hline 1635 \end{array}$$

$$\begin{array}{r} 78.75 \\ 19.68 \\ \hline 59 \end{array} \quad \begin{array}{r} 211 \\ 7.8750 \\ 7.8750 \\ 3.9375 \\ \hline 19.6875 \end{array}$$

6. A loan is to be returned in two equal yearly instalments. If the rate of interest is 10% p.a., compounded annually, and each instalment is Rs.5,808, then the total interest charged in this scheme is:

- A) Rs.1,536 B) Rs.1,632 C) Rs.1,602 D) Rs.1,563

$$\begin{array}{r} \cancel{121} \rightarrow \cancel{5808} \\ 32 \rightarrow ? \end{array}$$

1536

$$\begin{array}{r} 1 \\ 48 \\ -32 \\ \hline 16 \\ -16 \\ \hline 0 \end{array}$$

I
II

$$11 \times 10 : 11 \times 11$$

$$100 : 121$$

$$110 : 121$$

$$100 : 121$$

210 242

(21) \rightarrow Installment
 210 \rightarrow Total Principal
 $242 - 210 \rightarrow$ 32 \rightarrow Total interest charged

Rate = 10%.

10% : 11%

7. The compound interest on a sum of Rs.20,000 at 15% p.a. for $2\frac{2}{3}$ years, interest compounded yearly, is:

- A) Rs.9,098 B) Rs.9,095
C) Rs.8,896 D) Rs.9,000

B) Rs.9,095

I	3000
6	3000 450
R	2000 300 300 45

$$\frac{2}{3} \times 15 \\ 10\%.$$

$$\overline{8000 + 1050 + 45} \\ 9095$$

8. The rate of interest for the first 2 years is 6% p.a., for the next 3 years is 10% p.a. and for the period beyond 5 years is 12% p.a. If a person gets Rs.12,771 as simple interest after 7 years, then how much money did he invest?

- A) Rs.19,450 ~~B) Rs.19,350~~
C) Rs.19,300 D) Rs.20,000

$$2 \times 6 + 3 \times 10 + 2 \times 12$$

$$12 + 30 + 24$$

$$\cancel{3} \cancel{3} \cancel{6} \rightarrow \cancel{12} \cancel{7} \cancel{1} \quad \cancel{12} \cancel{7} \cancel{1} \quad 387$$

$$\cancel{150} \rightarrow ?$$

50

19350

$$\begin{array}{r} 43 \\ 387 \\ \hline 1935 \end{array}$$

9. The compound interest on a sum of Rs.5,500 at 15% p.a. for 2 years, when the interest is compounded 8-monthly, is:

- A) Rs.1,880 B) Rs.1,820.50
C) Rs.1,773.75 D) Rs. 1,850

$$P \rightarrow 5 \\ 12 \rightarrow 15 \\ 2 \rightarrow ?$$

$$10\% \rightarrow ?$$

$8+8+8 \rightarrow 24 \text{ months}$
 2 years.

10: 11

(100 : 133)

$$100 \rightarrow 5500 \\ 33 \rightarrow ?$$

1820.5

$$\begin{array}{r} 331 \\ \times 55 \\ \hline 1655 \\ 1655 \\ \hline 18205 \end{array}$$

10. A certain sum is lent at 4% p.a. for 3 years, 8% p.a. for the next 4 years and 12% p.a. beyond 7 years. If for a period of 11 years, the simple interest obtained is Rs.27,600, then the sum is (in Rs):

- A) Rs.27,000
- B) Rs.25,000
- C) Rs.30,000
- D) Rs.32,000

11. Surekha borrowed a sum of money and returned it in two equal annual instalments of Rs. 5,547 each. If the rate of interest was $7\frac{1}{2}\%$ p.a. compounded yearly, then the total interest paid by her was:

- A) Rs.1,144
- B) Rs.1,134
- C) Rs.1,096
- D) Rs.1,126

$$100 : 107.5$$

$$24 \times 40 : 43 \times 43$$

$$\underline{1600} : 1849$$

$$\begin{array}{r}
 3698 \\
 3320 \\
 \hline
 378 \\
 1849 \rightarrow 5547 \\
 378 \rightarrow ?
 \end{array}$$

$$\begin{array}{r}
 1720 : 1849 \\
 1600 : 1849 \\
 \hline
 3320 \quad 3698 \\
 \hline
 378 \quad 1134
 \end{array}$$

12. A certain sum amounts to Rs.15,500 in 2 years at 12% p.a. simple interest. The same sum will amount to what in $1\frac{1}{2}$ years at 10% p.a., if the interest is compounded half yearly (nearest to Rs.1)?

- A) Rs.14,470
- B) Rs.13,460
- C) Rs.14,360
- D) Rs.15,125

$$\begin{array}{r}
 12500 \\
 1965 \\
 \hline
 19465
 \end{array}$$

$$\begin{array}{r}
 \cancel{124} \rightarrow 1500500 \\
 \cancel{100} \rightarrow ? \\
 25
 \end{array}$$

$$P = 12500$$

$$\begin{array}{r}
 1 & 625 \\
 31 & 625 & 31.25 \\
 31 & 625 & 31.25 & 31.25 \\
 \hline
 & 1875 & & 1.5 \\
 & 90 & & \\
 \hline
 & 1965 & &
 \end{array}$$

SI & CI

QUESTIONS ASKED IN CHSL – 2020

1. If the difference between the compound interest compounded annually and the simple interest on a certain sum of money for three years at 10% per annum is 279, then the sum (in ') is:

- A) 10,000 B) 9,000 C) 7,500 D) 8,000

$$\frac{PR^2}{100^2} \left(3 + \frac{R}{100} \right) = 279$$
$$\frac{P \times 100}{100 \times 100} \left(3 + \frac{10}{100} \right) = 279$$
$$\frac{P \times 31}{1000} = 279 \quad P = \underline{\underline{9000}}$$

2. Varun and Madhur invested ₹ 25,000 each in different schemes. Varun earned simple interest 11% per annum, whereas Madhur earned compound interest 10% per annum compounded annually. Who received more interest after 2 years and how much?

- A) Madhur, 302.50 B) Madhur, 250 C) Varun, 500 D) Varun, 250

S.I $2 \text{ yrs} \rightarrow 2 \times 11 = \underline{\underline{22\%}}$ Varun.

C.I $2 \text{ yrs} \rightarrow \begin{matrix} 10:11 \\ 100:121 \end{matrix}$ $\underline{\underline{21\%}}$ Madhur

$P = \underline{\underline{25000}}$ $\frac{250 \text{ Rs.}}{1\% \text{ of } 25000}$

3. The simple interest on a sum of `8,000 at a certain rate per cent per annum for 3 years is `3,600. What will be the amount (in `) of the same sum after 2 years at the same rate, if the interest is compounded 8 monthly?

- A) 11,239 B) 10,450 C) 10,580 D) 10,648

$$3600 = \frac{8000 \times 3 \times R}{100}$$

$$R = \frac{3600 \times 100}{8000 \times 3} = 15\%$$

$\overline{12 \rightarrow 15.5}$ 10% $P = 8000$

$\overline{256 - ?}$ $8+8+8$

$\begin{array}{r} 12 \\ \times 15.5 \\ \hline 133 \\ + 800 \\ \hline 10648 \end{array}$

$\begin{array}{r} 100 : 1 \\ \times 12 \\ \hline 100 : 133 \end{array}$ $1000 - 8000$

$133 - ?$ 10648

4. What will be the compound interest (in Rs.) on a sum of Rs 7,200 for 18 months at a rate of 20 % per annum, if the interest is compound half-yearly (nearest to an integer)?

- A) 3,238 B) 2,338 C) 2,833 D) 2,383

$$R = 10\cdot\cdot$$

$$6+6+6$$

$$\text{Ans: } 1331$$

$$10:11$$

$$1000 \rightarrow 7200$$

$$331 \rightarrow ?$$

$$2383.2$$

$$\begin{array}{r} 331 \\ \times 7^2 \\ \hline 662 \\ 231 \quad 7 \\ \hline 23832 \end{array}$$

5. A sum of money lent at simple interest amount to Rs 9,920 after 2 years and to Rs 12,800 after 5 years. Find the rate of interest per annum.

- A) 6.57% B) 12% C) 18% D) 9.68%

$$\begin{array}{r} 12800 \\ 9920 \\ \hline 2880 \end{array}$$

2880 → 3 yrs interest

$$\frac{2880}{3} = \underline{\underline{960}}$$

$$P = \underline{\underline{8000}} \quad \begin{array}{r} 9920 \\ 1920 \\ \hline \end{array}$$

$$\begin{array}{r} 960 \\ 960 \\ \hline 1920 \end{array} \rightarrow \text{2 yrs S.I}$$

$$k = \frac{960 \times 100}{8000} = 12\%$$

6. The compound interest on a certain sum of money for 3 years, compounded annually, at a rate of interest of 10% per annum is 1,324. The sum is:

- A) 5,500 B) 4,500 C) 4,000 D) 5,000

$$\begin{array}{l} 10:11 \\ 1000:1324 \\ \cancel{3} \cancel{1} \rightarrow \cancel{1} \cancel{3} \overset{4}{\cancel{2}} \\ 1000 \rightarrow ? \end{array}$$

$$P = 4000$$

7. The simple interest on a certain sum of money for 5 years at the rate of 10% per annum is half the compound interest on Rs 5,000 for 2 Years at the years the rate of 10% per annum, interest yearly. The sum placed on simple interest is:

- A) 1,450 B) 1,050 C) 1,500 D) 1,540

5000 2 yrs R=10%.

I 500 500 50 } 1050 → C.I

$$S.I = \frac{1050}{2}$$
$$S.I = \frac{P \times 5 \times 10}{100}$$
$$P = 1050.$$

8. In what time will a sum of `1,25,000 amount to `1,48,877 at 12% per annum, if interest is being compounded half yearly?

- A) $1\frac{1}{2}$ year B) $2\frac{1}{2}$ years C) 1 year D) 3 years

$$R = 6\% \cdot$$

$$\cancel{100} : \cancel{106}$$

$$\cancel{1} \quad \cancel{50} : \cancel{53}$$

$$\cancel{50^3} : \cancel{53^3}$$

$$\downarrow \qquad \downarrow$$

$$\cancel{125000}$$

3 half years

1.5 years

9. The simple interest on a sum of `12,000 at the end of 5 years is 6,000. What would have been the compound interest on the same sum at the same rate for 3 years when compounded annually?

- A) 3,970 B) 3,972 C) 3,600 D) 2,520

$$\begin{array}{r} 12000 \\ \times R \\ \hline 12000 \\ 12000 \\ 12000 \\ \hline 3600 + 360 + 12 \\ 372 \\ \hline 3972 \end{array}$$

$R = 10\%$

10. A sum lent at simple interest amounts to Rs 6,240.80 in one year and to Rs 7,563.20 in 4 years. The sum (in Rs) and the rate of interest per annum, respectively are:

- X A) 6,200, 8.5% B) 5,800, 8.5% C) 5,800, 7.6% D) 6,200, 7.6%

$$\frac{310}{6510}$$

$$\frac{29}{58} \times \frac{17}{12}$$

$$58 \times 7.6$$

$$\frac{5800}{490.8}$$
$$\frac{6240.8}{}$$

$$\begin{array}{r} 4 \\ 76 \\ \hline 58 \\ -56 \\ \hline 20 \\ -16 \\ \hline 40 \\ -38 \\ \hline 20 \\ \end{array}$$

3

11. Anamika paid ₹4,965 as compound interest on a loan of ₹15,000 after 3 years when compounded annually. Suman took a loan of ₹10,000 at the same rate on simple interest. How much interest did Suman pay after 3 years?

- A) 4,500 B) 4,000 C) 3,000 D) 3,500

$$\frac{4965}{15000} = \left(1 + \frac{r}{100}\right)^3$$
$$\frac{3993}{30000} \Rightarrow \frac{1331}{1000} = \left(1 + \frac{r}{100}\right)^3$$
$$r = 10\%$$

$P = 10000 \quad r = 10\% \quad N = 3 \text{ yrs}$ 30000

1500
1500 150
1500 150 15
150 15

12. A man invested a total of `12,050 in two parts, one at 10% p.a. simple interest for 2 years and the other at the same rate at compound interest, interest being compounded annually, for the same time. The amounts he received from both the parts are equal. The sum (in) invested at the compound interest is:

- A) 5,780 B) 5,850 C) 6,000 D) 5,800

$$10 + 10 + \frac{10 \times 10}{100} \\ 21\%$$

$$\begin{array}{c}
 \text{12050} \\
 \swarrow x \quad \searrow 12050-x \\
 \text{C.I.} \qquad \qquad \qquad \rightarrow S.I. = 20\%
 \end{array}$$

21·1·

$$\begin{array}{l}
 121x = 120(12050 - x) \\
 .121x = 120x(2050 - 120x) \\
 21x = 120x(\cancel{2050}) = \underline{\underline{6000}}
 \end{array}$$

$$12050$$
$$x \swarrow \nearrow y$$

$$121x = 120y$$

$$\frac{x}{y} = \frac{120}{121}$$

$$x+y = 12050$$

$$\begin{array}{r} 120 \\ 121 \\ \hline 6050 \end{array}$$

13. If the simple interest for 9 years be equal to 45% of the principal, then the rate of interest per annum is equal to:

- A) 5% B) 8% C) 9% D) 6%

$$\frac{45}{9} = 5\%$$

14. A sum of 4,000 amounts to 5,008 in three years at simple interest at the rate of $x\%$ per annum. If the interest rate becomes $(x + 2.6)\%$, then the revised maturity amount will be:

- A) 5,320 B) 5,420 C) 5,330 D) 5,200

$$5008 = 4000 + S.I$$

$$S.I = 1008$$

$$\frac{1008}{100} = 4000 \times \frac{3 \times x}{100}$$

$$\frac{336}{40} = x \Rightarrow 8.4 \cdot \text{f.}$$

$$S.I = 4000 \times 11 \times \frac{3}{100} = 1320$$

$$= A = 5320$$

$$\frac{\frac{33}{4}}{132}$$

$$\begin{array}{r} 8.4 \\ 2.6 \\ \hline 11.0 \end{array}$$

15. In how many years, will `5,450 amount to `8,175, if invested at simple interest at the rate of 12.5% per annum?

- A) 6
- B) 5
- C) 4
- D) 3

SI & CI

QUESTIONS ASKED IN CGL (PRE) – 2020

1. A sum of ₹7500 amounts to ₹9075 at 10% per annum, interest being compounded yearly in a certain time. The simple interest (in ₹) on the same sum for the same time and the same rate is:

- A. 1500 B. 1520 C. 1480 D. 1530

1500

7500

I
R

750
750

1575

Time = 2 yrs

→ S.I

2. Two equal sums were lent on simple interest at 6% and 10% per annum respectively. The first sum was recovered two years later than the second sum and the amount in each case was ₹1105. What was the sum (in ₹) lent in each scheme?

A. 850

B. 936

C. 891

D. 900

A

$$P + \frac{PxNx10}{100} = P + \frac{Px(N+2) \times 6}{100} = 1105$$

\downarrow

$$\frac{PxNx10}{100} = \frac{Px(N+2) \times 6}{100}$$

$$5N = 3N + 6 \rightarrow 2N = 6$$

$$N = 3$$

$$P + \frac{Px3x10}{100} = 1105 \rightarrow Px\frac{15}{10} = 1105 - 85$$

$$P = 850.$$

3. What is the compound interest (in ₹) on a sum of ₹8192 for $1\frac{1}{4}$ years at 15% per annum, if interest is compounded 5-monthly.

- A. 1634 B. 1740 C. 1735 D. 1640

~~12~~ → 15
5 → ?

$$\frac{512}{8192} \times \frac{1}{15}$$

$1\frac{1}{4} \rightarrow 15 \text{ months}$
 $5+5+5$ $\frac{25}{4} \text{-r.}$

$$\begin{array}{c} 8192 \\ I \quad \boxed{512} \\ \hline \text{II} \quad \boxed{512} \\ \text{III} \quad 512 \end{array} \quad . \quad 32 \quad 32 \cdot 2$$

100: $100 + \frac{25}{4}$

400: 425

16: 17
↓ ↓
P A
1 → C.J

4. A sum at a certain rate of simple interest becomes ₹14880 after three years and ₹16800 after 5 years. Find the simple interest on the same sum at 10% per annum for 4 years (in ₹)?

- A. 5184 B. 4860 C. 4800 D. 4740

$$2880 \rightarrow R \cdot t \\ 3 \text{ yrs}$$

$$\begin{array}{r} 16800 \\ 14880 \\ \hline 1920 \end{array} \rightarrow 2 \text{ years}$$

$$\begin{array}{r} 14880 \\ 2880 \\ \hline 12000 \end{array} \rightarrow P$$

$$\begin{array}{r} 40\% \\ 4800 \end{array}$$

$$\begin{array}{r} 960 \\ 960 \\ 960 \\ \hline 2880 \end{array}$$

5. A certain sum amounts to ₹291600 in two years and to ₹314928 in 3 years on compound interest compounded annually. How much will be the simple interest (in ₹) on ₹40000 at the same rate for 2 years?

- A. 6400 B. 8000 C. 7500 D. 9600

$$\begin{array}{r} 314928 \\ 291600 \\ \hline 23328 \end{array}$$

$\frac{8}{23328} \times 100$

$P = 8\%$

$$\begin{array}{r} 719 \\ 2916 \\ \hline 23328 \end{array}$$

16% of 40000

6400

6. A certain sum becomes ₹13650 at 15% per annum simple interest after 2 years. What will be the amount (in ₹) of the same sum after one year at the same rate of interest, if the interest is compounded half yearly? (Nearest to a ₹)

- A. 12134 B. 10500 C. 13625 D. 11000

$$2 \times 15\% = 30\%$$

30%

$$\begin{array}{l} 1050 \\ 131 \rightarrow 13650 \\ 149 \rightarrow ? \end{array}$$

$$P = \underline{\underline{10500}}$$

$$R = 15\% \quad \frac{15}{2} = 7.5\% \text{ (Half years)}$$

I

$$\begin{array}{r} 787.5 \\ \hline 787.5 \end{array}$$

II

$$\begin{array}{r} 787.5 \\ \hline 1575.0 \\ \hline 60 \end{array}$$

$$105 \times 7.5$$

$$\begin{array}{r} 105 \\ \hline 75 \\ \hline 525 \\ \hline 7875 \end{array}$$

$$\begin{array}{r} 10500 \\ \hline 1635 \\ \hline 12135 \end{array}$$

7. A man borrowed a certain sum and agrees to repay it by paying ₹4000 at the end of first year and ₹7700 at the end of second year. If the rate of compound interest compounded annually is 10% per annum, then find the sum (in ₹) borrowed.

- A. 11000 ~~B. 10000~~ C. 9000 D. 11500

$$\begin{array}{r} 4000 \\ 7700 \\ \hline 11700 \\ \hline \end{array} \quad \begin{array}{l} 2 \text{ yrs} \\ \hline \end{array}$$

10000 1000 + 3000 principal

$$7000 \quad 7000 + 700 = \underline{\underline{7700}}$$

8. A certain sum amounts to ₹81840 in 3 years and to ₹92400 in 5 years at x% per annum under simple interest. If the rate of interest becomes (x+2)% , then in how many years will the same sum double itself?

- A.8 B.10 C.20 D.12(1/2)

$$\begin{array}{r} \cancel{2} \\ \cancel{8} \\ \hline 15840 \end{array}$$

$$\begin{array}{r} 92400 \\ 81840 \\ \hline \cancel{10560} \\ \hline 2 \end{array} \rightarrow 2$$

$$P = 8\text{%.}$$

$$\begin{array}{r} 81840 \\ 15840 \\ \hline \cancel{66000} \end{array} \rightarrow P$$

$$\begin{array}{r} \cancel{5280} \rightarrow 1 \text{ yr S.I} \\ \hline \cancel{160} \end{array} \quad \frac{4}{518}$$

$$P = 66000 \quad R = (8+2) \quad S.I = 66000$$

$$66000 = 66000 \times 10 \times \frac{N}{100} \Rightarrow N = 10 \text{ yrs}$$

9. A sum of money was lent in two parts in the ratio 4 : 5 for 4 years and five years respectively, both at the rate of 8% per annum simple interest, if the difference between the interests earned from the two parts is ₹4680, then what was the total sum lent (in ₹)?

- A. 58500 B. 42120 C. 46800 D. 65000

\times

$$\text{Sum} = 4k \quad 5k$$

$9k \rightarrow \text{Total}$

$$\frac{5k \times 5 \times 8}{100} - \frac{4k \times 4 \times 8}{100} = 4680$$

$$\frac{4}{5} \frac{65}{9} \frac{58500}{100}$$

$$\frac{8}{100} [25k - 16k] = 4680$$

$$k = \frac{\frac{5k}{100} \times 100}{28 \times 9} = 260 \times 25 = \underline{\underline{6500}}$$

10. A sum of rupees ₹3125 amounts to ₹3515.20 in 3 years at $x\%$ per annum, interest being compounded yearly. What will be the simple interest (in ₹) on the same sum and for the same time at $(x+2)\%$ per annum?

- A. 562.50 B. 554 C. 550 D. 565.50

$$\frac{18 \times 3125}{10}$$

$$\frac{312.5}{312.5} = \frac{625.0}{625.0}$$

$$\frac{3515.20 \times 5}{25^2 \times 5 \times 5} = \left(1 + \frac{x}{100}\right)^3$$

$$\left(\frac{26}{25}\right)^3 = \left(1 + \frac{x}{100}\right)^3$$

$$1 + \frac{x}{100} = \frac{26}{25}$$

$$x = 4\% \quad \boxed{4\%}$$

$$\frac{3515.2}{5}$$

$$\underline{17576.0}$$

$$26 \times 6$$

$$676 \times 26$$

$$\frac{67.43}{18.1}$$

$$\underline{17576}$$

$$\begin{array}{r} 625.0 \\ 62.5 \\ \hline 562.5 \end{array}$$

11. A Loan is to be returned into ^{two} equal yearly installments. If the rate of interest is 10% per annum, compounded annually and each installment is ₹6534, then the total interest charged (in ₹) is:

- A.1642 B.1579 C.1728 D.1867

11x10 : 11x11

100 : 121

$$\frac{210}{242} \quad \begin{matrix} \nearrow \\ 32 \end{matrix}$$

$$\begin{matrix} 54 \\ 594 \\ \cancel{121} \rightarrow \cancel{6534} \\ 32 \rightarrow ? \end{matrix}$$

$$\begin{array}{r} 54 \\ 32 \\ \hline 108 \\ 162 \\ \hline 1728 \end{array}$$

12. At what rate percent per annum will ₹7200 amount to ₹7938 in 1 year, if interest is compounded half yearly?

A.5

B.8

C.12

D.10

s.j.

360

360

18

738

7200
738

7938

13. A person borrowed a sum of ₹30800 at 10% per annum for 3 years, interest compounded annually. At the end of 2 years, he paid a sum of ₹13268. At the end of 3rd year, he paid ₹x to clear the debt. What is the value of x?

- A. 26400 B. 26510 C. 26200 D. 26620

30800

I
II

3080

3080

308

3080
3080
308
6468

30800
6468
37268

24000 + 2400

→ 24000
26400

14. What is the difference between the compound interest (in ₹) compounded yearly and compounded half yearly for 18 months at 20% per annum on a sum of ₹12000?

- A.121 B.132 C.145 D.165

Com yearly

12000

$$\frac{2400}{1200}$$

240

18 months

Com Half

6+6+6

12000

$$\begin{array}{l} 1200 \\ 1200 \\ 1200 \end{array}$$

$$\begin{array}{l} 120 \\ 120 \\ 120 \end{array}$$

120 12

132

15. A sum of ₹9500 amounts to ₹11495 in 2 years at a certain rate percent per annum, interest compounded yearly. What is the simple interest (in ₹) on the same sum for the same time and double the rate?

- A.3990
- B.3420
- C.4560
- D.3800