

COMPOUND INTEREST

COMPOUND INTEREST FORMULA

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

Amount

Principal

Interest rate
(decimal)

Number of times
interest is compounded
per year

Time
(years)

- Let us consider a principal P kept at compound interest of $r\%$ per annum, so the interest earned in the first year will be $r\%$ of P which is equal to

$$P \times \frac{r}{100}.$$

- For the second year, we have to first calculate the outstanding amount i.e. the principal plus the interest.

Thus, the amount outstanding at the start of second year will be

$$P + \frac{P \times r}{100} = P \left(1 + \frac{r}{100} \right).$$

- Interest for second year will be calculated as $r\%$ of this amount and using the same result, the amount at the end of the second year will be

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

Similarly, amount after 3 years = $P \left(1 + \frac{r}{100}\right)^3$ and so on.

So, amount after n years = $P \left(1 + \frac{r}{100}\right)^n$

Please note that this formula is for the amount and if one needs to calculate the compound interest, one must deduct principal from the amount.

i.e. Compound Interest = Amount – Principal

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

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

RELATION BETWEEN THE VALUE OF CI AND SI FOR 2 YEARS

Let us consider an amount kept at SI and the same amount is kept at CI for two years.

Let, the simple interest for 1st year = I

So, compound interest for 1st year = I

Now, for 2nd year the Simple Interest will be the same as 'I' but the Compound Interest will be $I + r\% \times I$, as every year the compound interest increases by r%.

Year	SI	CI
1st	I	I
2nd	I	$I + r\% \times I$

$$\frac{\text{SI for first 2 years}}{\text{CI for first 2 years}} = \frac{2I}{2I + r\% \times I} = \frac{2}{2+r\%}$$

DIFFERENCE BETWEEN SI AND CI FOR 2 AND 3 YEARS

Year	SI	CI
1		$\frac{PR}{100}$
2		$\frac{PR}{100} + \frac{R}{100} \left(\frac{PR}{100} \right) = \frac{PR}{100} + \frac{PR^2}{100^2}$
3		$\begin{aligned} & \frac{PR}{100} + \frac{PR^2}{100^2} + \frac{R}{100} \left(\frac{PR}{100} + \frac{PR^2}{100^2} \right) \\ &= \frac{PR}{100} + \frac{2PR^2}{100^2} + \frac{PR^3}{100^3} \end{aligned}$

$$\text{So, } \text{CI}_{2\text{yrs}} - \text{SI}_{2\text{yrs}} = \left(\frac{2PR}{100} + \frac{PR^2}{100^2} \right) - \left(\frac{2PR}{100} \right) = \frac{PR^2}{100^2}$$

$$\text{CI}_{2\text{yrs}} - \text{SI}_{2\text{yrs}} = \frac{PR^2}{100^2}$$

$$\text{Now, } \text{CI}_{3\text{yrs}} - \text{SI}_{3\text{yrs}} = \left[\frac{3PR}{100} + \frac{3PR^2}{100^2} + \frac{PR^3}{100^3} \right] - \frac{3PR}{100}$$

$$\therefore \text{CI}_{3\text{yrs}} - \text{SI}_{3\text{yrs}} = \frac{3PR^2}{100^2} + \frac{PR^3}{100^3}$$

COMPOUND INTEREST

Q1. Raviraj invested an amount of 10,000 at compound interest rate of 10 per cent per annum for a period of three years. How much amount will Raviraj get after 3 years?

- (1) 12340 (2) 13210 (3) 13320 (4) 13310 (5) None of these

COMPOUND INTEREST

Q1. Raviraj invested an amount of 10,000 at compound interest rate of 10 per cent per annum for a period of three years. How much amount will Raviraj get after 3 years?

- (1) 12340 (2) 13210 (3) 13320 **(4) 13310** (5) None of these

COMPOUND INTEREST

Q 2. What principal will amount of 1352 in 2 years at 4 per cent compound interest?

- (1) 1520 (2) 1260 (3) 1250 (4) 1220 (5) None of these

COMPOUND INTEREST

Q 2. What principal will amount of 1352 in 2 years at 4 per cent compound interest?

(1) 1520

(2) 1260

(3) ~~1250~~

(4) 1220

~~4/100~~

(5) None of these

$(25)^2 \Rightarrow \text{Always}$

$$625 \times \frac{1}{25} \quad 25 \times \frac{1}{25}$$

$$1352 = n \left(1 + \frac{4}{100}\right)^n$$

$$1352 = n \left(1 + \frac{4}{100}\right)^2$$

$$1352 = \frac{26}{25} \times \frac{26}{25}$$

$$= \frac{25}{24} \times \frac{25}{26} \times 1352 \cancel{\times \frac{104}{104}}$$

$$625 \times 2 = 1250$$

AN

I, 625

I 25

II $\frac{25}{675+1} \quad 1$

$$625 \times 2$$

$$676 = 1352 \quad = 1250 \text{ Ans}$$

I = 2

COMPOUND INTEREST

Q 3. On what principal will the compound interest for 3 years at 5 per cent amount to 63.05?

- (1) 400
- (2) 500
- (3) 450
- (4) 550
- (5) None of these

COMPOUND INTEREST

Q 3. On what principal will the compound interest for 3 years at 5 per cent amount to 63.05?

- (1) 400 (2) 500 (3) 450

$$C.I = P \left[\left(1 + \frac{5}{100} \right)^3 - 1 \right]$$

$$63.05 = P \times \frac{9261 - 8000}{9261} = 63.05$$

$$P = 63.05 \times \frac{8000}{9261} = 400$$

- (4) 550

$$\frac{5}{100}$$

- (5) None of these

$$P = \frac{400}{\left(1 + \frac{5}{100} \right)^3} = \frac{400}{1.157625} = 344.77$$

$$P = \frac{400}{1.157625} = 344.77$$

Square And

COMPOUND INTEREST

Q 4. Seema invested an amount of 16000 for two years at compound interest and received an amount of 17640 on maturity. What is the rate of interest?
(1) 8 pcpa (2) 5 pcpa (3) 4 pcpa (4) 3 pcpa (5) None of these

COMPOUND INTEREST

Q 4. Seema invested an amount of 16000 for two years at compound interest and received an amount of 17640 on maturity. What is the rate of interest?

- (1) 8 pcpa (2) 5 pcpa (3) 4 pcpa (4) 3 pcpa (5) None of these

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

$$17640 = 16000 \left(1 + \frac{r}{100}\right)^2$$

$$\sqrt{\frac{17640}{16000}} = 1 + \frac{r}{100}$$

$$\frac{42}{40} - 1 \Rightarrow \frac{2}{40} \times 100 = 5\% \text{ Ans}$$

$$\begin{aligned} & \frac{17640}{16000} = 1 + \frac{r}{100} \\ & = \frac{42}{40} = \frac{42}{40} \times 100 \\ & = \frac{2}{40} \times 100 = 5\% \text{ Ans} \end{aligned}$$

COMPOUND INTEREST

- Q 5.** 50000 is borrowed at CI at the rate of 1% for the first year, 2% for the second year and 3% for the third year. Find the amount to be paid after 3 years.
- (1) 50355.3 (2) 53055.3 (3) 53505.3 (4) 53053.5 (5) None of these

COMPOUND INTEREST

Q 5. 50000 is borrowed at CI at the rate of 1% for the first year, 2% for the second year and 3% for the third year. Find the amount to be paid after 3 years.

- (1) 50355.3 (2) 53055.3 (3) 53505.3 (4) 53053.5 (5) None of these

$$\begin{aligned} & \cancel{50000} \times \frac{101}{100} \times \frac{102}{100} \times \frac{103}{100} \\ & \quad \begin{array}{r} 101 \\ \times 103 \\ \hline 10403 \end{array} \\ & \quad \begin{array}{r} 10403 \\ \times 51 \\ \hline 53055.3 \text{ Ans} \end{array} \end{aligned}$$

COMPOUND INTEREST

Q 6. Find the compound interest on 8000 in 2 years, the rate of interest being 5% for the first year and 10% for the second year.

- (1) 1340 (2) 1420 (3) 1240 (4) 1350 (5) None of these

COMPOUND INTEREST

Q 6. Find the compound interest on 8000 in 2 years, the rate of interest being 5% for the first year and 10% for the second year.

- (1) 1340 (2) 1420 (3) 1240 (4) 1350 (5) None of these

$$\begin{array}{r} \cancel{8000} \times \frac{105}{100} \times \frac{110}{100} \\ = 840 \\ \times 11 \\ \hline 840 \\ \underline{+ 840} \\ \hline 9240 \end{array}$$

9240 - 8000
= 1240 Ans

COMPOUND INTEREST

Q 7. Find the compound interest on 9375 in 2 years, the rate of interest being 2% for the first year and 4% for the second year.

- (1) 570 (2) 1140 (3) 1155 (4) 670 (5) None of these

COMPOUND INTEREST

Q 7. Find the compound interest on 9375 in 2 years, the rate of interest being 2% for the first year and 4% for the second year.

- (1) 570 (2) 1140 (3) 1155 (4) 670 (5) None of these

$$\begin{array}{r} 75 \\ \cancel{375} \quad \cancel{7875} \\ 9375 \times \frac{51}{102} \times \frac{26}{104} \\ \hline 100 \\ 50 \\ 25 \\ \hline 10 \\ = 9945 \\ = 9945 - 9375 = 570 \text{ Ans} \end{array}$$

COMPOUND INTEREST

- Q 8.** What sum of money at compound interest will amount to 562.38 in 3 years, if the rate of interest is 3% for the first year, 4% for the second year and 5% for the third year?
- (1) 400 (2) 450 (3) 500 (4) 520 (5) None of these

COMPOUND INTEREST

Q 8. What sum of money at compound interest will amount to 562.38 in 3 years, if the rate of interest is 3% for the first year, 4% for the second year and 5% for the third year?

- (1) 400 (2) 450 (3) 500 (4) 520 (5) None of these

$$x \times \frac{103}{100} \times \frac{104}{100} \times \frac{105}{100} = 562.38$$

$$\Rightarrow \underline{\underline{500 \text{ Ans}}}$$

COMPOUND INTEREST

- Q 9.** On what sum will the amount for 2.5 years at 10% becomes 6352.50?
- (1) 4900 (2) 5500 (3) 5000 (4) 5800 (5) None of these

$$x \times \frac{10}{100} \times \frac{110}{(10)} \times \frac{155}{[25]} = 6352.50$$

COMPOUND INTEREST

- Q 9.** On what sum will the amount for 2.5 years at 10% becomes 6352.50?
- (1) 4900 (2) 5500 (3) 5000 (4) 5800 (5) None of these

$$x \times \frac{110}{100} \times \frac{110}{100} \times \frac{105^1}{100} = 6352.50$$

= 5000 Ans

COMPOUND INTEREST

Q 10. Find the amount of 1000 in 1 year at 5 per cent compound interest payable half yearly.

ToS

- (1) 1050 (Approx) (2) 950 (Approx) (3) 1125 (Approx) (4) 1025 (Approx)
- (5) None of these

COMPOUND INTEREST

Q 10. Find the amount of 1000 in 1 year at 5 per cent compound interest payable half yearly.

- (1) 1050 (Approx) (2) 950 (Approx) (3) 1125 (Approx) (4) 1025 (Approx)

(5) None of these

$$\frac{1600 \times 1}{4} = 400$$

$$\frac{5}{100} = \frac{1}{20}$$
 Always Square \Rightarrow

$$\begin{array}{r} 1600 \\ \times 40 \\ \hline 1681 \end{array}$$

$$\frac{1}{20} \times \frac{1}{20} = \frac{1}{400}$$

$$1600 = 1000 \quad \frac{1000 \times 1681}{1600} = 1056.25$$

Ans

COMPOUND INTEREST

Q 11. Find the compound interest on 10000 in 9 months at 4 per cent interest payable quarterly.

- (1) 303 (Approx)
- (2) 313 (Approx)
- (3) 20 (Approx)
- (4) 204 (Approx)
- (5) None of these

COMPOUND INTEREST

Q 11. Find the compound interest on 10000 in 9 months at 4 per cent interest payable quarterly.

- (1) 303 (Approx) (2) 313 (Approx) (3) 20 (Approx) (4) 204 (Approx)

(5) None of these

$$\begin{array}{r} 30000 \\ - 301 \\ \hline 29699 \end{array}$$

$$\begin{array}{l} 10000000 \times \frac{1}{100} \\ \text{I} \rightarrow 10000 \\ \hline \end{array}$$
$$\begin{array}{l} \text{II} \rightarrow 10000 \\ 100 \\ \hline \end{array}$$
$$\begin{array}{l} \text{III} \rightarrow \underline{10000} \\ \underline{30,000} \\ 100 \\ 100 \\ \hline 301 \end{array}$$

$$\frac{4}{100} \times \frac{3}{12} = \frac{1}{100} = (100)^3$$

$$10,00000 = 10000$$

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

$$\frac{30301}{100} = \underline{\text{Ans}}$$

COMPOUND INTEREST

Q 12. Find the compound interest on 8000 in 3 months at 5 per cent interest payable quarterly.

- (1) 250 (2) 200 (3) 150 (4) 100 (5) None of these

COMPOUND INTEREST

Q 12. Find the compound interest on 8000 in 3 months at 5 per cent interest payable quarterly.

- (1) 250 (2) 200 (3) 150 (4) 100 (5) None of these

$$5\% = 12 \text{ month}$$

$$3 \text{ month} = \left(\frac{5}{12}\right) \times 3 = \frac{5}{4}\%$$

$$\text{Amount} = 8000 \left(1 + \frac{\frac{5}{4}}{100}\right)$$

$$\begin{aligned} &= 8000 \times \left(1 + \frac{5}{400}\right) \\ &= 8000 \times \frac{81}{80} = 8100 \end{aligned}$$

$$\begin{aligned} \text{Interest} &= 8100 - 8000 \\ &= 100 \\ \text{Ans} & \end{aligned}$$

COMPOUND INTEREST

Q 13. At what rate per cent compound interest will 625 amount to 676 in 2 years?

- (1) 3% (2) 2% (3) 4% (4) 5% (5) None of these

$$\frac{676P}{625} = P \left(1 + \frac{r}{100}\right)^2$$

COMPOUND INTEREST

Q 13. At what rate per cent compound interest will 625 amount to 676 in 2 years?

- (1) 3% (2) 2% (3) 4% (4) 5% (5) None of these

$$\frac{676P}{625} = P \left(1 + \frac{\gamma}{100}\right)^2 = \frac{26}{25} = 1 + \frac{\gamma}{100}$$

$$\frac{676}{625} = \left(1 + \frac{\gamma}{100}\right)^2 \quad \frac{58}{100} = \frac{26}{25} - 1$$

$$\left(\frac{26}{25}\right)^2 = \left(1 + \frac{\gamma}{100}\right)^2 \quad = \frac{\gamma}{100} = \frac{1}{25} \quad \gamma = 4\%$$

Arl

F : P
 $\sqrt{A} : \sqrt{P}$
 $\sqrt{676} : \sqrt{625}$
 $26 : 25$
 $= \frac{1}{25} \times 100 = 4\%$

COMPOUND INTEREST

Q 14. A sum of money placed at compound interest doubles itself in 6 years.
In how many years will it amount to 16 times itself?

- (1) 24 years (2) 26 years (3) 22 years (4) 20 years (5) None of these

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



COMPOUND INTEREST

Q 14. A sum of money placed at compound interest doubles itself in 6 years.
In how many years will it amount to 16 times itself?

- (1) 24 years (2) 26 years (3) 22 years (4) 20 years (5) None of these

Formula

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

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

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

Amount after 6 yrs = $2x$

$$(2)^4 = \left[\left(1 + \frac{r}{100}\right)^6\right]^4$$

$$16 = \left(1 + \frac{r}{100}\right)^{24}$$

16 times in 24 yrs Ans

COMPOUND INTEREST

Q 15. A sum of money placed at compound interest thrice itself in 4 years. In how many years will it amount to 27 times itself?

- (1) 12 years (2) 15 years (3) 14 years (4) 10 years
- (5) None of these

COMPOUND INTEREST

Q 15. A sum of money placed at compound interest thrice itself in 4 years. In how many years will it amount to 27 times itself?

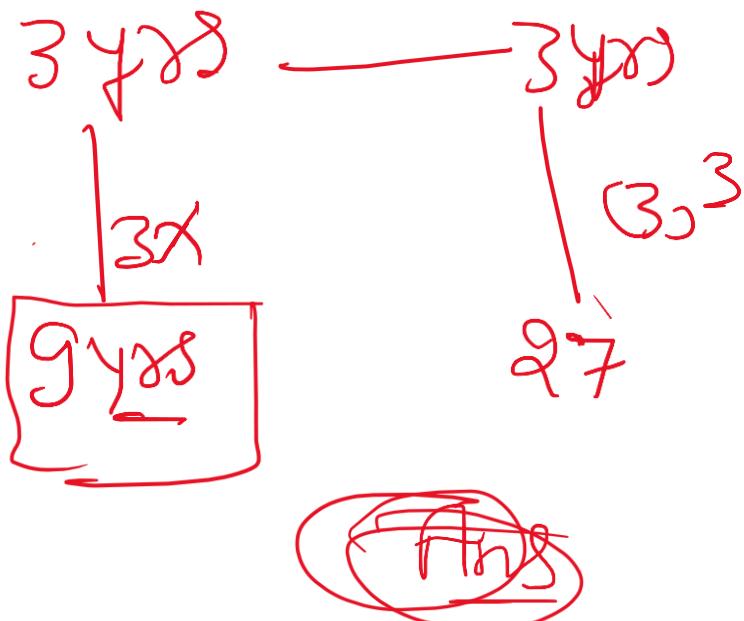
(1) 12 years

(2) 15 years

(3) 14 years

(4) 10 years

(5) None of these



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

$$A = 3P \quad R = 3\% \quad T = 4$$

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

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

Ans

$$27P = P \left(1 + \frac{R}{100}\right)^T$$

$$27 = 3^3$$

$$3^3 = 3^{T/3}$$

$$3 = T/3 \quad T = 9 \text{ yrs}$$

COMPOUND INTEREST

Q 16. At what rate per cent will the compound interest, does a sum of money become four fold in 2 years?

- (1) 150%
- (2) 100%
- (3) 200%
- (4) 75%
- (5) None of these

COMPOUND INTEREST

Q 16. At what rate per cent will the compound interest, does a sum of money become four fold in 2 years?

- (1) 150% (2) 100% (3) 200% (4) 75% (5) None of these

$$4x = x \left(1 + \frac{r}{100}\right)^2$$

$$\therefore \left(1 + \frac{r}{100}\right)^2 = 4 \Rightarrow \sqrt{4} = 2$$

$$r = 100\% \text{ p.a.}$$

COMPOUND INTEREST

Q 17. At what rate per cent will the compound interest, does a sum of money become 27 times in 3 years?

- (1) 100% (2) 150% (3) 75% (4) 200% (5) None of these

COMPOUND INTEREST

Q 17. At what rate per cent will the compound interest, does a sum of money become 27 times in 3 years?

- (1) 100% (2) 150% (3) 75%

- (4) 200%** (5) None of these

$$P : A = \sqrt[3]{1} : \sqrt[3]{27}$$

$$P : A = 1 : 3$$

$$\text{Rate} = \frac{\text{Difference}}{\text{Original}} \times 100$$

$$\text{Rate} = \frac{2}{1} \times 100 = 200\%$$

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

$$\frac{27}{1} = \left(1 + \frac{R}{100}\right)^3$$

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

$$2 = \frac{R}{100} = 200\%$$

COMPOUND INTEREST

Q 18. If the CI on a certain sum for 2 years at 4% be 510, what would be the SI? (1) 500 (2) 505 (3) 400 (4) 475 (5) None of these

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

$$S.I = \frac{P R T}{100}$$

COMPOUND INTEREST

Q 18. If the CI on a certain sum for 2 years at 4% be 510, what would be the SI? (1) 500 (2) 505 (3) 400 (4) 475 (5) None of these

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

$$S.I. = \left(\frac{R \times R \times T}{100} \right)$$

Method

$\frac{4}{100} \quad \frac{1}{25} (25)$

$625 \times \frac{1}{25}$

$625 \times 10 = 6250$

$S.I. = 125$

$\frac{1}{25} \quad 25$

$\frac{1}{25} \quad 25 \quad 1$

$\frac{S.I. = S.I.}{1 = 10}$

~~$6250 \times 2 \times 4$~~

~~$\frac{125 \times 2 \times 4}{100}$~~

~~25~~

$= \underline{\underline{500 \text{ Ans}}}$

COMPOUND INTEREST

Q 19. If the CI on a certain sum for 2 years at 6% be 25.75, what would be the SI?

- (1) 25
- (2) 24
- (3) 20
- (4) 15
- (5)

None of these

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

$$S.I. = \frac{P \times r \times T}{100}$$

COMPOUND INTEREST

Q 19. If the CI on a certain sum for 2 years at 6% be 25.75, what would be the SI?

(1) 25

(2) 24

(3) 20

(4) 15

(5)

~~None of these~~

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

$$S.I. = \frac{P \times R \times T}{100}$$

$$25.75 = \left(\frac{106}{105} \right)^2 - P$$

$$25.75 = \frac{11236P}{10000} - P$$

$$25.75 = \frac{1236P}{10000} - P$$

$$\underline{\underline{P = 208.33}}$$

~~S.I.~~

$$\frac{208.33 \times 6 \times 2}{100}$$

$$\underline{\underline{25 P.a.f}}$$

COMPOUND INTEREST

- Q 20.** The simple interest on a certain sum of money for 2 years at 5% per annum is 100. Find the compound interest at the same rate and for the same time.
- (1) 102.50 (2) 103 (3) 103.50 (4) 102.25 (5) None of these

COMPOUND INTEREST

- Q 20.** The simple interest on a certain sum of money for 2 years at 5% per annum is 100. Find the compound interest at the same rate and for the same time.
- (1) 102.50 (2) 103 (3) 103.50 (4) 102.25 (5) None of these

$$S.I. = \frac{PRT}{100} = \frac{100}{100} = \frac{P \times 5 \times 2}{100} = \frac{10000}{100}$$
$$C.I. = P \left[\left(1 + \frac{R}{100} \right)^T - 1 \right]$$
$$1000 \left(1 + \frac{5}{100} \right)^2 - 1000$$
$$\Rightarrow \cancel{1000} \times \frac{21}{20} \times \frac{21}{20} - 1000$$
$$\frac{5 \times 441}{2} - 1000$$
$$\frac{2205}{2} - 1000$$
$$1102.5 - 1000$$
$$= 102.5$$

Ans

COMPOUND INTEREST

Q 21. The simple interest on a certain sum of money for 2 years at 6% per annum is 300. Find the compound interest at the same rate and for the same time.

(1) 310

(2) 308

(3) 307

(4) 309

(5) None of these

$$S.I = \frac{P \times 6 \times 2}{100} = 300 \quad \left(A = P \left(1 + \frac{6}{100} \right)^T - P \right)$$

$$P = 2500$$

COMPOUND INTEREST

Q 21. The simple interest on a certain sum of money for 2 years at 6% per annum is 300. Find the compound interest at the same rate and for the same time.

(1) 310

(2) 308

(3) 307

(4) 309

(5) None of these

$$S.I = \frac{P \times 6 \times 2}{100} = 300$$

$$P = 2500$$

$$\begin{aligned} A &= P \left(1 + \frac{6}{100}\right)^2 \\ &= 2500 \times \frac{106}{100} \times \frac{106}{100} \\ &= 2809 - 2500 \\ &\Rightarrow 309 \text{ Ans} \end{aligned}$$

COMPOUND INTEREST

Q 22. The compound interest on a certain sum for 2 years is 60.60 and simple interest is 60. Find the rate of interest per annum and the sum.

- (1) 2%, 1600 (2) 2%, 1400 (3) 3%, 1500 (4) 2%, 1500
(5) None of these

$$S.I = \frac{PRT}{100}$$

$$60 = \frac{P \times R \times 2}{100}$$

$$C.I = A - P$$

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

COMPOUND INTEREST

Q 22. The compound interest on a certain sum for 2 years is 60.60 and simple interest is 60. Find the rate of interest per annum and the sum.

- (1) 2%, 1600 (2) 2%, 1400 (3) 3%, 1500 (4) 2%, 1500

(5) None of these

$$S.I. = \frac{P \times R \times T}{100}$$

$$60 = \frac{P \times R \times 2}{100}$$

$$6000 = 2PR$$

$$P \times R = 3000$$

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

$$\frac{P(1+r)^2 - P}{100}$$

III

Difference B/w S.I. - C.I.

$$60.60 - 60 = 60 \times R$$

$$0.60 \times 200 > 60 \times R$$

$$R = 2\%$$

COMPOUND INTEREST

Q 23. A person invested a certain amount at simple interest at the rate of 6 per cent per annum earning 900 as an interest at the end of three years. Had the interest been compounded every year, how much more interest would he have earned on the same amount with the same interest rate after three years?

- (1) 38.13 (2) 25.33 (3) 55.08 (4) 35.30 (5) None of these

$$S.I = 900 = \frac{6 \times 3 \times P}{100} \quad P = 5000$$

COMPOUND INTEREST

Q 23. A person invested a certain amount at simple interest at the rate of 6 per cent per annum earning 900 as an interest at the end of three years. Had the interest been compounded every year, how much more interest would he have earned on the same amount with the same interest rate after three years?

- (1) 38.13 (2) 25.33 (3) 55.08 (4) 35.30 (5) None of these

$$S.I \equiv 900 = \frac{6 \times 3 \times P}{100} \quad P = 5000$$

$$G.F = 5000 \left(1 + \frac{6}{100}\right)^3 \rightarrow 5550$$

$$5550 - 5000 = 550$$

$$C.I - S.I = 550 - 900 = 55.08 \text{ Ans}$$

COMPOUND INTEREST

Q 24. On a certain sum of money, the simple interest for 2 years is 150 at the rate of 3% per annum. Find the difference in CI and SI.

- (1) 5 (2) 4.5 (3) 2.5 (4) 2.25 (5) None of these

$$S.I = 150 = \frac{P \times 3 \times 2}{100}$$

COMPOUND INTEREST

Q 24. On a certain sum of money, the simple interest for 2 years is 150 at the rate of 3% per annum. Find the difference in CI and SI.

- (1) 5 (2) 4.5 (3) 2.5 (4) 2.25 (5) None of these

$$SI = 150 = \frac{P \times 3 \times 2}{100} \quad P = 2500$$

$$A = 2500 \left(1 + \frac{3}{100}\right)^2 = 2500 \times \frac{103}{100} \times \frac{103}{100} = 2652.25$$

$$CI = A - P = 2652.25 - 2500 = 152.25$$

$$152.25 - 150 = 2.25 \text{ Ans}$$

COMPOUND INTEREST

Q 25. On a certain sum of money, the simple interest for 2 years is 200 at the rate of 7% per annum. Find the difference in CI and SI.

- (1) 7 (2) 6 (3) 3.5 (4) 45 (5) None of these

COMPOUND INTEREST

Q 25. On a certain sum of money, the simple interest for 2 years is 200 at the rate of 7% per annum. Find the difference in CI and SI.

- (1) 7 (2) 6 (3) 3.5 (4) 45 (5) None of these

$$\text{SI} = 200 \text{ rs} \\ 1 \text{ yr SI} = 100$$

$$\text{CI} = 100 \text{ } 7\% \text{ yrs} \\ \downarrow 2 \text{ yrs} = 100 + \frac{100 \times 7}{100} = 107 \\ \therefore \text{I. } 2 \text{ yrs } \therefore = 107$$

$$207 - 200$$

$$= 7\% =$$

COMPOUND INTEREST

Q 26. Find the difference between the compound interest and the simple interest for the sum 625 at 8% per annum for 2 years.

- (1) 3 (2) 4 (3) 4.5 (4) 1.5 (5) None of these

$$\frac{P(r^3)}{(P_0)^2}$$

COMPOUND INTEREST

Q 26. Find the difference between the compound interest and the simple interest for the sum 625 at 8% per annum for 2 years.

- (1) 3 (2) 4 (3) 4.5 (4) 1.5 (5) None of these

$$\frac{P(R)^2}{(1+8)^2}$$

COMPOUND INTEREST

Q 27. Find the difference between the compound interest and the simple interest for the sum 2500 at 6% per annum for 2 years.

- (1) 9 (2) 8 (3) 7.5 (4) 6 (5) None of these

COMPOUND INTEREST

Q 27. Find the difference between the compound interest and the simple interest for the sum 2500 at 6% per annum for 2 years.

- (1) 9 (2) 8 (3) 7.5 (4) 6 (5) None of these

$$\frac{2500 \times 36}{100 \times 100} = \underline{\underline{7.5}}$$

$$\frac{P(R)^2}{(100)^2}$$

COMPOUND INTEREST

Q 28. On what sum will the difference between the simple and compound interests for 3 years at 5 per cent per annum amount to 12.20?

- (1) 1600 (2) 800 (3) 1200 (4) 1500 (5) None of these

$$\frac{P(RS)^2}{(100)^2} \times \frac{300+R}{100} = 12.20$$

~~$$\frac{800}{10000} \times \frac{305^2}{100} = 12.20$$~~

COMPOUND INTEREST

Q 28. On what sum will the difference between the simple and compound interests for 3 years at 5 per cent per annum amount to 12.20?

- (1) 1600 (2) 800 (3) 1200 (4) 1500 (5) None of these

$$\frac{25}{10000} \times \frac{61}{400} = 12.20$$

$\frac{2}{1220 \times 400 \times 20}$
~~6~~

$$= 1650 \text{ Ans}$$

COMPOUND INTEREST

Q 29. Find the difference between the simple and compound interest on 10000 for 3 years at 3 per cent.

- (1) 27.8 ~~(2) 27.27~~ (3) 37.27 (4) 37.8 (5) None of these

$$\frac{PCR^2}{(100)^2} \times \frac{300+R}{100} =$$

COMPOUND INTEREST

Q 29. Find the difference between the simple and compound interest on 10000 for 3 years at 3 per cent.

- (1) 27.8 (2) 27.27 (3) 37.27 (4) 37.8 (5) None of these

$$\left(\frac{R}{100}\right)^2 \times \frac{303}{100}$$

$$\frac{9}{10000} \times \frac{303}{100} = \cancel{150.50}$$

27.27 Ans

COMPOUND INTEREST

Q 30. The difference between the compound interest and the simple interest on a certain sum of money at 10% per annum for 2 years is 2.50. Find the sum.

- (1) 350 (2) 275 (3) 250 (4) 325 (5) None of these

COMPOUND INTEREST

Q 30. The difference between the compound interest and the simple interest on a certain sum of money at 10% per annum for 2 years is 2.50. Find the sum.

- (1) 350 (2) 275 (3) 250 (4) 325 (5) None of these

$$\frac{P \times 10}{100} = 2.50$$

$$\frac{P (R^2)}{100} = 250$$

COMPOUND INTEREST

Q 31. The difference between the compound interest and the simple interest on a certain sum of money at 4% per annum for 2 years is 1.40. Find the sum.

- (1) 875 (2) 857 (3) 785 (4) 925 (5) None of these

COMPOUND INTEREST

Q 31. The difference between the compound interest and the simple interest on a certain sum of money at 4% per annum for 2 years is 1.40. Find the sum.

12

- (1) 875 (2) 857 (3) 785 (4) 925 (5) None of these

$$\frac{16}{10000} = 1.40$$

$$\frac{P(B)}{(100)^2} = 1.40$$

$$\begin{array}{r} 35 \\ \times 40 \\ \hline 140 \\ +12 \\ \hline 142 \end{array}$$

$$875$$

COMPOUND INTEREST

Q 32. Find the ratio of CI to SI on a certain sum at 5% per annum for 2 years.
(1) 41 : 40 (2) 42 : 41 (3) 43 : 40 (4) 41 : 35 (5) None of these

CI

SI

COMPOUND INTEREST

Q 32. Find the ratio of CI to SI on a certain sum at 5% per annum for 2 years.

- (1) 41 : 40 (2) 42 : 41 (3) 43 : 40 (4) 41 : 35 (5) None of these

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

$$\text{C.I.} : P \left[\left(1 + \frac{5}{100} \right)^2 - P \right]$$

$$\frac{\frac{41P}{400}}{\frac{P}{10}} : \frac{P \times 40}{10 \times 40}$$

41 : 40 Ans

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

$$P \times \frac{441}{400} - P = \frac{41P}{400}$$

COMPOUND INTEREST

Q 33. The compound interest on a certain sum for 2 years is 105 and simple interest is 100. Find the rate of interest per annum and the sum.

- (1) 10%, 500
- (2) 10%, 1000
- (3) 20%, 1000
- (4) 4%, 1500
- (5) None of these

COMPOUND INTEREST

Q 34. A certain amount of money at compound interest grows upto 7520 in 15 years and upto 7896 in 16 years. Find the rate per cent per annum.

- (1) 10%
- (2) 8%
- (3) 5%
- (4) 6.5%
- (5) None of these

COMPOUND INTEREST

Q 34. A certain amount of money at compound interest grows upto 7520 in 15 years and upto 7896 in 16 years. Find the rate per cent per annum.

- (1) 10% (2) 8% (3) 5% (4) 6.5% (5) None of these

$$\begin{array}{c} 7896 \quad 7520 \\ \underbrace{\qquad\qquad}_{376} \\ 376 \end{array}$$

$$\frac{376 \times 100}{7520} = 5\% \text{ Ans}$$

COMPOUND INTEREST

Q 35. What sum of money at compound interest will amount to 650 at the end of the first year and 676 at the end of the second year?

- (1) 625 (2) 630 (3) 620 (4) 720 (5) None of these

COMPOUND INTEREST

P + C.I.

Q 35. What sum of money at compound interest will amount to 650 at the end of the first year and 676 at the end of the second year?

- (1) 625 (2) 630 (3) 620 (4) 720 (5) None of these

$$\frac{676 - 650}{= 26}$$

$$\frac{26 \times 100}{650} = 4\%$$

$$4 = \frac{1}{25} \quad (25^2)$$

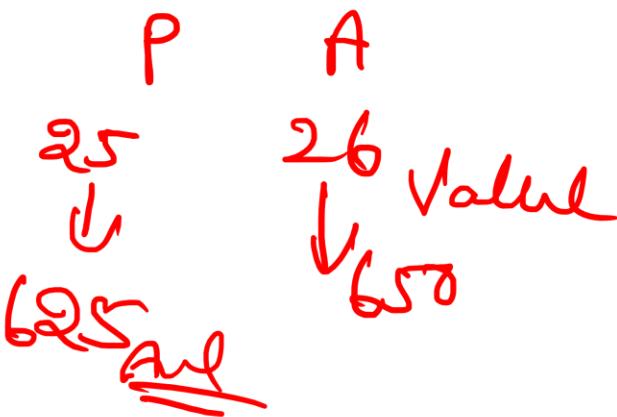
$$= 625$$

$$I = \frac{25}{25}$$

$$II = \frac{25}{25} \cdot 1$$

Ratio

$$4\%, \frac{1}{25} = \frac{26}{25}$$



COMPOUND INTEREST

Q 36. What sum of money at compound interest will amount to 480 at the end of the first year and 576 at the end of the second year?

- (1) 420 (2) 450 (3) 400 (4) 375 (5) None of these

COMPOUND INTEREST

P
C.I.

Q 36. What sum of money at compound interest will amount to 480 at the end of the first year and 576 at the end of the second year?

- (1) 420 (2) 450 (3) 400 (4) 375 (5) None of these

$$\frac{g^2 \times 100}{480} = 20\% \Rightarrow \frac{1}{5}$$

\boxed{I}

$$480 : 576$$
$$120 : 144$$
$$30 : 36$$
$$S : b = \frac{1}{5} = 20\%$$

$120\% = 480$
 $100\% = \frac{480 \times 100}{120}$
 $F 400$

$P \rightarrow A \rightarrow 480$

$S \downarrow$

$(400) \text{ Ans}$

COMPOUND INTEREST

Q 37. 2400 becomes 3000 in 3 years at a certain rate of compound interest.
What will be the sum after 6 years?

- (1) 4750 (2) 3750 (3) 3570 (4) 3850 (5) None of these

COMPOUND INTEREST

Q 37. 2400 becomes 3000 in 3 years at a certain rate of compound interest.
What will be the sum after 6 years?

- (1) 4750 (2) 3750 (3) 3570 (4) 3850 (5) None of these

0 yrs → 3 yrs

2400 3000

6 : 5

3 yrs 6 yrs
4 : 5
↓
3000
3750 All

COMPOUND INTEREST

Q 38. A man borrows 4000 at 20% compound rate of interest. At the end of each year he pays back 1500. How much amount should he pay at the end of the third year to clear all his dues?

- (1) 2592 (2) 2852 (3) 2952 (4) 2953 (5) None of these

COMPOUND INTEREST

$$\frac{4000 \times 20}{100} = 800 + 4000$$

Q 38. A man borrows 4000 at 20% compound rate of interest. At the end of each year he pays back 1500. How much amount should he pay at the end of the third year to clear all his dues?

- (1) 2592 (2) 2852 (3) 2952 (4) 2953 (5) None of these

1) $4000 - 1500$

2) $3960 \rightarrow 1500$

3) 2460

$$\begin{array}{r} +492 \\ \hline 2952 \end{array}$$

$$\begin{array}{r} 3300 \times 20 \\ \hline 100 \\ = 660 \\ \hline 3300 \end{array}$$

$$\begin{array}{r} 2460 \times 20 \\ \hline 100 \\ = 492 \end{array}$$

= 2952 Ans

COMPOUND INTEREST

Q 39. A man borrows 3000 at 30% compound rate of interest. At the end of each year he pays back 1000. How much amount should he pay at the end of the third year to clear all his dues?

- (1) 3602 (2) 3601 (3) 3603 (4) 3604 (5) None of these

COMPOUND INTEREST

$$\frac{3000 \times 30}{100} = 900$$
$$3000 - 900 = 2100$$

Q 39. A man borrows 3000 at 30% compound rate of interest. At the end of each year he pays back 1000. How much amount should he pay at the end of the third year to clear all his dues?

- (1) 3602 (2) 3601 ~~(3) 3603~~ (4) 3604 (5) None of these

$$\begin{array}{r} 2900 \times 30 \\ \hline 142 \\ \hline 2900 \\ \hline 3770 \end{array}$$

$$\begin{array}{r} 3770 - 1000 \\ \hline 2770 \end{array}$$

$$\begin{array}{r} 2770 - 1000 \\ \hline 1770 \end{array}$$

$$\begin{array}{r} 1770 - 1000 \\ \hline 770 \\ \hline \text{III} \\ \hline 3601 \end{array}$$

Ans

$$\begin{array}{r} 2770 \times 30 \\ \hline 142 \\ \hline 2770 \end{array}$$

$$\begin{array}{r} 2770 \\ \hline 3601 \end{array}$$

COMPOUND INTEREST

Q 40. Divide 2708 between A and B, so that A's share at the end of 6 years may equal B's share at the end of 8 years, compound interest being at 8%.

- (1) 1458, 1250 (2) 1448, 1260 (3) 1438, 1270 (4) 1468, 1240
- (5) None of these

$$x \left(1 + \frac{8}{100}\right)^6 = y \left(1 + \frac{8}{100}\right)^8$$

COMPOUND INTEREST

$$\text{RS} \text{ } 2708 \\ 1 = 2$$

Q 40. Divide 2708 between A and B, so that A's share at the end of 6 years may equal B's share at the end of 8 years, compound interest being at 8%.

- (1) 1458, 1250 (2) 1448, 1260 (3) 1438, 1270 (4) 1468, 1240

(5) None of these

$$\begin{aligned} \checkmark x \left(1 + \frac{8}{100}\right)^6 &= y \left(1 + \frac{8}{100}\right)^8 \\ x \left(\frac{27}{25}\right)^6 &= y \left(\frac{27}{25}\right)^8 \\ \frac{x}{y} &= \left(\frac{27}{25}\right)^2 = \left(\frac{27}{25}\right)^6 \\ \frac{x}{y} &= \left(\frac{27}{25}\right)^6 \\ \frac{729}{625} &= 1458 \text{ Ans} \\ 729 &+ 625 \\ \hline 1354 & \\ \end{aligned}$$