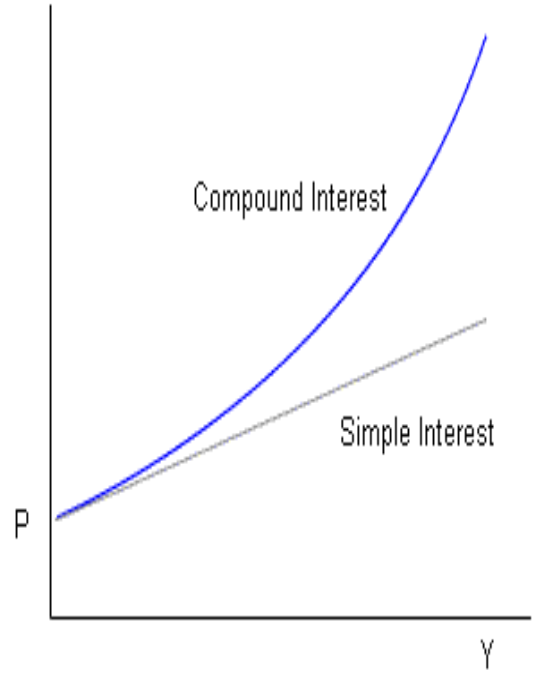
SIMPLE AND COMPOUND INTEREST

- P (principle), R(rate of interest per annum), T(time)

- **Simple Interest(SI)= (P × r × t)/100**

- P=(100×SI)/(r×t);
- r=(100×SI)/(P×t);
- t=(100×SI)/(P×r).



➢ COMPOUND INTEREST:

Amount = Principal + Interest

A= P (1+r/100) ^n

A= Amount,
P= Principal,
r= Rate %,
n= no. of years.

So Compound Interest = [P (1+r/100) ^ n - P]
= P [(1+r/100) ^ n – 1]

CONDITIONS ON COMPOUND INTEREST:-

1.When interest is compounded annually,
Amount = P(1+r/100)^n

2.When interest is compounded half yearly,
Amount = P(1+(r/2)/100)^2n

3.When interest is compounded Quarterly,
Amount =P(1+(r/4)/100)^4n

4.When interest is compounded annually but time is in fraction, say 3 whole 2/5 year
Amount = P(1+r/100)^3×(1+(2r/5)/100)

5.When Rates are different for different years, say r1%, r2%, and r3% for 1st, 2nd and 3rd year respectively.

Then,
Amount = $P(1+r1/100)\times(1+r2/100)\times(1+r3/100)$.

- **Difference between Compound Interest & Simple interest Concept For Two years**

CI – SI =P(r/100)^2

OR

CI/SI=(200+r)/200

- **For Three Year**

CI – SI =P(r^2/(100^2))×(300+r)/100)

- If a sum of money becomes “n” times in “T years” at simple interest, then the rate of interest per annum can be given be

$$R = \frac{100\ (n - 1)}{T}$$

- If an amount P1 is lent out at simple interest of R1% per annum and another amount P2 at simple interest rate of R2% per annum, then the rate of interest for the whole sum can be given by

$$\mathbf{R} = \frac{P1R1 + P2\ R2}{P1 + P2}$$

- A sum of money at simple interest n1 itself in t1 year. It will become n2 times of itself in (If Rate is constant)

$$\frac{t1}{t2} = \frac{(n1 - 1)}{(n2 - 1)}$$

- In what time will the simple interest be “n” of the principal at “r %” per annum:-

$$rt = n \times 100$$

QUESTIONS(?)

1. A sum of money at simple interest amounts to Rs. 815 in 3 years and to Rs. 854 in 4 years. The sum is:

A. Rs. 720 B. Rs. 698 C. Rs. 678 D. Rs. 696

2. A sum of money amounts to Rs. 9800 after 5 years and Rs. 12005 after 8 years at the same rate of simple interest. The rate of interest per annum is:

A.12 % B. 13 % C. 8 % D. 12.5 %

3. A person borrows Rs. 5000 for 2 years at 4% p.a. simple interest. He immediately lends it to another person at 6.25% p.a. for 2 years. Find his gain in the transaction per year.

A. Rs. 112.50 B. Rs. 175 C. Rs. 150 D. Rs. 125.50

4. A man took loan from a bank at the rate of 12% p.a. simple interest. After 3 years he had to pay Rs. 5400 interest only for the period. The principal amount borrowed by him was:

A. Rs. 12000 B. Rs.15000 C. Rs. 12500 D. Rs. 22000

5. How much time will it take for an amount of Rs. 450 to yield Rs. 81 as interest at 4.5% per annum of simple interest?

A. 3 year B. 4 year C. 5 year D. 6 year

6. A lent Rs. 5000 to B for 2 years and Rs. 3000 to C for 4 years on simple interest at the same rate of interest and received Rs. 2200 in all from both of them as interest. The rate of interest per annum is:

A. 5 % B. 7% C.10 % D. 12%

7. The compound interest on Rs. 30,000 at 7% per annum is Rs. 4347. The period (in years) is:

A. 2.5 B. 2 C. 3 D. 4

E. none of these

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

A. 8 % B. 9% C. 6 % D. 8.5 %

E. none of these

9. The least number of complete years in which a sum of money put out at 20% compound interest will be more than doubled is:

A. 4 B. 5 C. 6 D. 2.5

E. none of these

10. What will be the compound interest on a sum of Rs. 25,000 after 3 years at the rate of 12 p.c.p.a.?

A. Rs.10123.20 B. Rs. 9000 C. Rs. 12000

D. Rs. 10163.34 E. none of these

11. Simple interest on a certain sum of money for 3 years at 8% per annum is half the compound interest on Rs. 4000 for 2 years at 10% per annum. The sum placed on simple interest is:

A. Rs. 1650 B. Rs. 2000 C. Rs. 1750
D. Rs.1550 E. none of these

12. On a sum of money, simple interest for 2 years is Rs 660 and compound interest is Rs 696.30, the rate of interest being the same in both cases.

A. 5 % B. 12 C. 10% D. 11%

13. A certain sum at a simple interest amounts to Rs 1350 in 5 year and to Rs.1620 in 8 year. What is the sum

A. 700 B. 800 C. 900 D. 1000

15. The difference between the compound interest and simple interest of some amount of money for 2 years at 9 % per annum is Rs. 129.60. The sum of money is

A. Rs. 12000
B. Rs. 12500
C. Rs. 13500
D. Rs. 16000

16. A sum of money becomes 25 times of itself in 20 years at compound interest, compounded yearly. In how many years can the same sum become 5 times of itself?

A. 4 years
B. 10 years
C. 5 years
D. 15 years

17. In what time will a man receive Rs. 85 as compound interest on Rs. 320 at 12(1/2)% p.a. compounded yearly?

A. 4(1/2) yrs. B. 2(1/2) yrs. C.2 yrs. D.5 yrs.
E. 3(1/2) yrs.

18. A tree increases annually by 1/8 th of its height. By how much will it increase after 2(1/2) years, if it stand today 10 ft. high?

A. data insufficient B. less than 12 ft. C. more than 3 ft.
D. more than 2 ft. E. slightly more than 13 ft.

19. Seshank borrowed Rs. 20,000 from his friend at 18% per annum simple interest. He lent it to Tony at the same but rate compounded annually. Find his gain after two years.

A. Rs. 648 B. Rs. 836 C. Rs. 324 D. Rs. 704
E. Rs. 572

20. The present population of a village is 9,261. If the annual birth rate is 8(1/2)% and the annual death rate is 3.5%, then calculate the population 3 years ago.

A. 10,721 B. 11,363 C.11,391 D. 8,000
E. 10,561

21. What sum of money at compound interest will amount to 2249.52 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?

A. 2000 B. 4000 C. 3000 D. 5000
E. 7000

22. The simple interest on a certain sum of money for 4 years at 4 per cent per annum exceeds the compound interest on the same sum for 3 years at 5 per cent annum by 57. Find the sum.

A. 24000 B. 25000 C. 26000 D. 3000
E. 40000

23. The rates of simple interest in two banks Canara bank and Dena bank are in the ratio of 5 : 4 resp. Ragini wants to deposit her total savings in two banks in such a way that she receive equal half-yearly interest from both. She should deposit the savings in both banks in the ratio of

A. 4 : 5 B. 1 : 5 C. 5 : 9 D. 2 : 9 E. 4 : 7

24. The population of a town is 10 crore and it is the possibility that the population will become 13.31 crore in 3 yr. What will be the annual rate per cent on this growth?

A. 8% B. 12% C. 10% D. 15%
E. 18%

25. If the difference between the compound interest and the simple interest on a certain sum for 2 yr at 8% per annum is Rs. 64, then the sum is

A. Rs. 4000
B. Rs. 5900
C. Rs. 6600
D. Rs. 8500
E. Rs. 10000

The compound interest on a certain sum of money for 2 years is Rs. 208 and the simple interest for the same time at the same rate is Rs. 200. Find the rate %.

a) 5 %
b) 6 %
c) 7 %
d) 4 %
e) 8 %

The difference between compound interest and simple interest on a certain sum for 2 years at 10 % is Rs. 25. The sum is

a) Rs. 1200

b) Rs. 2500

c) Rs. 750

d) Rs. 1250

e) Rs. 2000

The simple interest on a certain sum for 3 years in Rs. 225 and the compound interest on the same sum for 2 years is Rs. 165. Find the rate percent per annum.

a) 20 %

b) 2.5 %

c) 5 %

d) 15 %

e) 7.5%

Mihir’s capital is 5/4 times more than Tulsi’s capital. Tulsi invested her capital at 50 % per annum for 3 years (compounded annually). At what rate % p.a. simple interest should Mihir invest his capital so that after 3 years, they both have the same amount of capital?

a) 20/3 %

b) 10 %

c) 50/3 %

d) 1.728 %

e) None of these

A sum of money is put out at compound interest for 2 years at 20%. It would fetch Rs.482 more if the interest were payable half-yearly, then it were pay able yearly. Find the sum.

A. Rs.4000

B. Rs.1000

C. Rs.1250

D. Rs.2000

A money lender lends Rs.2000 for six months at 20% p.a. rate. It the interest is reckoned quarterly than find the amount given after time limit.

A. Rs.2205

B. Rs.2200

C. Rs.2160

D. Rs.2040

A sum amount to Rs.1344 in two years at simple interest. What will be the compound interest on the same sum at the same rate of interest for the same period?

A. Rs.150

B. Rs.140

C. Rs.130

D. Data insufficient for the answer

The compound interest earned by Sunil on a certain amount at the end of two years at the rate of 8% p.a. was Rs.2828.80. Find the total amount that Sunil got back at the end of two years in the form of principal plus interest earned.

A. Rs.18,828.80

B. Rs.19,828.80

C. Rs.18,028.80

D. Rs.17,828.80

E. None of these

Ravi invested certain amount for two rates of simple interests at 6% p.a. and 7% p.a. What is the ratio of Ravi's investments if the interests from those investments are equal?

A. 4 : 3

B. 3 : 2

C. 6 : 5

D. 7 : 6

E. None of these

Thank you for listening..

Any questions?