

Simple Interest and Compound Interest

Solution

- Answer: (B)**
Let the original sum = P
Then, $\frac{p \times 12 \times 5}{100} - \frac{p \times 8 \times 5}{100} = 800$
 $P = \frac{800 \times 100}{20}$
 $P = 4000$ Rs.
- Answer: (A)**
Role of interest = $\frac{5940 \times 100}{3 \times 16500}$
 $r = 12\%$
Required compound interest
 $= 16500 \left[\left(1 + \frac{12}{100} \right)^3 \right] - 1$
 $= 6681.31$ Rs.
- Answer: (B)**
 $620 = \frac{p \times 10^2(300 + 10)}{10^3}$
Or, $P =$ Rs. 20,000
- Answer: (B)**
Let the principal be Rs. x
 \therefore S.I. = Rs. 600, Time = 10 years
Rate = $\left(\frac{100 \times 60}{x \times 10} \right) \%$
 $= \left(\frac{6000}{x} \right) \%$
S.I. of the first 5 years.
 $= \left(\frac{x \times 5 \times 6000}{x \times 100} \right)$
S.I. of the last 5 years.
 $= \left(3x \times 5 \times \frac{6000}{x \times 100} \right) =$ Rs. 900
- Answer: (B)**
Sum = $\frac{1950 \times 100}{2 \times 15} =$ Rs. 6500
CI in 2 years at 10% per annum = $10 + 10 + \frac{10 \times 10}{100} = 21\%$
ATQ
 $(6500 + x) \times \frac{21}{100} = 1680$
 $\Rightarrow (6500 + x) = 8000$
 $x =$ Rs. 1500
- Answer: (A):**
The correct answer is Option 1 i.e. Rs. 8320
Given:
For simple interest:
 $T = 4, R = 10\%$
 $SI =$ Rs. 20000
So,
 $20000 = (P \times 10 \times 4)/100$
 $P =$ Rs. 50000
For compound interest:
 $P =$ Rs. 50000
 $R = 8\%, T = 2$
For;
 $A = 50000 \times (1 + 8/100)^2$
 $A = 50000 \times 1.1664$
 $A = 58320$
Hence,
 $CI = 58320 - 50000$
 $=$ Rs. 8320
- Answer: (D)**
Required difference
 $= \frac{5000 \times 10 \times 2}{100} - \frac{4000 \times 12 \times 3}{100}$
 $= 1000 - 1440 =$ Rs. 440
(B received more interest than A)
- Answer: (D)**
Let amount invested is Rs P and rate of interest is R%
 $P = \frac{P \times R \times 3}{100}$
 $R = \frac{100}{3} \%$
Required interest = $5000 \left(1 + \frac{100}{3 \times 100} \right)^2 - 5000$
 $=$ Rs. 3889 (approx.)
- Answer: (C)**
Let the sum of Rs. 15000 is divided into two parts that are Rs. P and Rs. (15000 - P)
 \Rightarrow Rs. P is invested at 8% per annum for 2 years and Rs. (15000 - P) at 12% per annum for 2 years.
Interest generated in both cases is same.
We know, Simple Interest

$$= \frac{\text{Principal} \times \text{Rate} \times \text{Time}}{100}$$

$$\frac{P \times 8 \times 2}{100} = \frac{(15000 - P) \times 12 \times 2}{100}$$

$$\Rightarrow 8P = 1,80,000 - 12P$$

$$\Rightarrow 20P = 1,80,000$$

$$\Rightarrow P = 9000$$

$$\Rightarrow 15000 - P = 6000$$

\therefore Two parts in which money was divided are Rs. 6000 and Rs. 9000

10. **Answer: (C)**

Let the rate of interest be R% per annum

Simple interest = (Principal \times Rate \times Time)/100

Difference = SI after 5 years – SI after 2 years

$$\Rightarrow \text{Difference} = \text{SI for 3 years}$$

$$\Rightarrow 1560 = (6500 \times R \times 3)/100$$

$$\Rightarrow R = 1560/(65 \times 3) = 8\%$$

\therefore The rate of interest is 8%

11. **Answer: (B)**

A person gets 60% more amount after 8 years

Let Principal Amount be P

$$\Rightarrow \text{Amount} = (160/100)P$$

Simple Interest = Amount – Principal

$$\Rightarrow \text{Simple Interest} = (160/100)P - P$$

$$= 60P/100$$

$$\text{Simple Interest} = (P \times R \times T)/100$$

P \rightarrow Principal

R \rightarrow Rate

T \rightarrow Time

$$\Rightarrow (60P/100) = (P \times R \times 8)/100$$

$$\Rightarrow R = 60/8 = 15/2 = 7.5$$

He invests Rs.9600

\therefore Simple Interest after 4 years

$$\Rightarrow \text{SI} = (9600 \times 7.5 \times 4)/100$$

$$\Rightarrow \text{SI} = 2880$$

\therefore Simple Interest received by the man is Rs.2880

12. **Answer: (B)**

Let the rate of interest be r.

$$\text{Therefore, } (40000 \times r \times 3)/100 = 33600$$

solving we get r = 28%.

$$\begin{aligned} \text{So, the compound interest} &= 40000 \\ &((1+28/100) (1+28/100) (1+28/100)) - \\ &40000 \\ &= ₹43886.08. \end{aligned}$$

13. **Answer: (B)**

$$\text{S.I. for } 1 \frac{1}{2} \text{ years} = ₹(1164 - 1008) = ₹156.$$

$$\text{S.I. for 2 years} = ₹(156 \times 2/3 \times 2) = ₹208.$$

$$\text{Principal} = ₹(1008 - 208) = ₹800.$$

Now, P = 800, T = 2 and S.I. = 208.

$$\text{Rate} = (100 \times \text{S.I.}) / (P \times T) = [(100 \times 208) / (800 \times 2)]\% = 13\%.$$

14. **Answer: (C)**

$$\text{S.I. of 20 years} = 6000 \times 10\% \times 20 = 12,000$$

$$\text{Principal after 20 years becomes} = 6000 + 12000 = 18,000$$

$$\text{S.I. on it} = 28000 - 18000 = 10,000$$

$$\text{Time involved} = 10000 / (10\% \times 18000)$$

$$= 5.55 \text{ years}$$

$$\text{Total time} = 20 + 5.55 \text{ years} = 25.55 \text{ years.}$$

15. **Answer: (D)**

Let the principal amount be ₹Y

$$(Y \times 4 \times 5)/100 = 2000,$$

$$\text{So, } Y = 10000$$

$$\begin{aligned} \text{Required solution} &= 10000 (1.04)^2 - 10000 \\ &= 816 \end{aligned}$$

16. **Answer: (D)**

Let the amount lent at 5% be x and at 7% be (6000 - x),

$$\text{So, } (x \times 5 \times 4)/100 + ((6000 - x) \times 7 \times 4)/100 = ₹1600.$$

Solving, we get x = 1000

17. **Answer: (A)**

In the first year the compound interest and the simple interest would be the same. Now, the additional interest in the second year in the case of amount being compounded would be on the account of interest on first year's interest

$$\text{Therefore, } 6400R \times R/100 = 14400$$

$$64R^2 = 14400$$

$$R^2 = 225$$

$$R = 15\%$$

$$\begin{aligned} \text{So, simple interest in 1st year} &= 640000 \times \\ 0.15 &= ₹96,000 \end{aligned}$$

18. **Answer: (C)**
Let each sum be ₹x.
Then, $(x \times 11 \times 9) / (100 \times 2) - (x \times 11 \times 7) / (100 \times 2) = 412.50$
 $99x - 77x = 82500$
 $x = 3750$
19. **Answer: (D)**
Simple interest earn in 2 year = 300
so simple interest earn in one year = 150
also compound interest earn on first will be same as simple interest i.e. = 150.
CI for second year = $315 - 150 = 165$
20. **Answer: (B)**
In 8 years, the interest earned = 200%
Thus, per year interest rate = $200/8 = 25\%$
To become 7 times we need a 600% interest earned
Therefore, required time = $600/25$
= 24 years.
Hence, it will be take 24 years to become 7 times itself at the same rate of interest.