

Class 8: Chapter 15-Compound interest- Exercise 15B

Q.1. Find the amount and the compound interest on Rs. 5000 for 2 years at 8% per annum, compounded annually.

Answer:

Principal for the first year = Rs. 5000

Interest for the first year = Rs. $\left(\frac{8}{100}\right) \times 5000 = 400$

Principal for the second year = Rs. 5400

Amount at the end of second year = Rs. $\left(1 + \frac{8}{100}\right) \times 5400$
= Rs. 5832

Interest for the second year = $\frac{8}{100} \times 5400 = 432$ Rs.

Compound interest = $400 + 432 = 832$ Rs.

Q.2. Find the amount and the compound interest on Rs. 8000 for 2 years at 6% per annum, compounded annually.

Answer:

Principal for the first year = Rs. 8000

Interest for the first year = $\frac{6}{100} \times 8000 = 480$ Rs.

Principal for second year = $8000 + 480 = 8480$ Rs.

Interest for second year = $\frac{6}{100} \times 8480 = 508.80$ Rs.

Principal at the end of second year = $8480 + 508.80 = 8988.80$ Rs.

Total compound interest = $480 + 508.80 = 988.80$ Rs.

Q.3. Find the amount and the compound interest on Rs. 2500 for 2 years, compounded annually, the rate of interest being 6% during the first year and 8% during second year.

Answer:

Principal for the first year = Rs. 2500

Interest earned by end of first year = $\frac{6}{100} \times 2500 = 150$ Rs.

Principal for the second year = $2500 + 150 = 2650$ Rs.

Interest earned for second year = $\frac{8}{100} \times 2650 = 212$ Rs.

Total interest = $150 + 212 = 362$ Rs.

Amount at the end of the second year = $2650 + 212 = 2862$ Rs.

Q.4. Find the amount and the compound interest on Rs. 2500 for 3 years at 6% per annum, compounded annually.

Answer:

$$\begin{aligned}\text{Principal for the first year} &= \text{Rs. } 25000 \\ \text{Interest for first year} &= \frac{6}{100} \times 25000 = 1500 \text{ Rs.} \\ \text{Principal for 2}^{\text{nd}} \text{ year} &= \text{Rs. } 25000 + 1500 = 26500 \text{ Rs.} \\ \text{Interest for 2}^{\text{nd}} \text{ year} &= \frac{6}{100} \times 26500 = 1590 \text{ Rs.} \\ \text{Principal for 3}^{\text{rd}} \text{ year} &= 26500 + 1590 = 28090 \text{ Rs.} \\ \text{Interest for 3}^{\text{rd}} \text{ year} &= \frac{6}{100} \times 28090 = 1685.40 \\ \text{Amount at the end of the 3}^{\text{rd}} \text{ year} &= 28090 + 1685.4 \\ &= 29775.4 \text{ Rs.}\end{aligned}$$

Q.5. Find the amount and the compound interest on Rs. 10000 for 3 years at 10 % per annum, compounded annually.

Answer:

$$\begin{aligned}\text{Principal for the 1}^{\text{st}} \text{ year} &= \text{Rs. } 10000 \\ \text{Interest for 1}^{\text{st}} \text{ year} &= \frac{10}{100} \times 10000 = 1000 \text{ Rs.} \\ \text{Principal for 2}^{\text{nd}} \text{ year} &= 10000 + 1000 = 11000 \text{ Rs.} \\ \text{Interest for 2}^{\text{nd}} \text{ year} &= \frac{10}{100} \times 11000 = 1100 \text{ Rs.} \\ \text{Principal for 3}^{\text{rd}} \text{ year} &= 11000 + 1100 = 12100 \text{ Rs.} \\ \text{Interest for 3}^{\text{rd}} \text{ year} &= \frac{10}{100} \times 12100 = 1210 \text{ Rs.} \\ \text{Amount at the end of the 3}^{\text{rd}} \text{ year} &= 12100 + 1210 = 13310 \text{ Rs.} \\ \text{Total compounded interest} &= 1000 + 1100 + 1210 = 3210 \text{ Rs.}\end{aligned}$$

Q.6. 'A' took a loan of Rs. 25000 from corporate bank at 12% per annum, compounded annually. How much amount he will have to pay at the end of 3 years?

Answer:

$$\begin{aligned}\text{Principal for the 1}^{\text{st}} \text{ year} &= \text{Rs. } 25000 \\ \text{Interest for the 1}^{\text{st}} \text{ year} &= \frac{12}{100} \times 25000 = 3000 \text{ Rs.} \\ \text{Principal for 2}^{\text{nd}} \text{ year} &= \text{Rs. } 28000 \\ \text{Interest on 2}^{\text{nd}} \text{ the year} &= \frac{12}{100} \times 28000 = 3360 \text{ Rs.} \\ \text{Principal for the 3}^{\text{rd}} \text{ year} &= 31600 \text{ Rs.} \\ \text{Interest for the 3}^{\text{rd}} \text{ year} &= \frac{12}{100} \times 31600 = 3792 \text{ Rs.} \\ \text{Amount at the end of 3}^{\text{rd}} \text{ year} &= 35392 \text{ Rs.} \\ \text{Total compounded interest} &= \text{Rs. } 10152\end{aligned}$$

Q.7. 'A' deposited Rs. 15625 in a bank at 8% per annum, compounded annually. How much amount will he get after 3 years?

Answer:

Principal for 1st year = Rs. 15625

Interest for 1st year = $\frac{8}{100} \times 15625 = 1250$ Rs.

Principal for 2nd year = Rs. 16875

Interest for 2nd year = $\frac{8}{100} \times 16875 =$ Rs. 1350

Principal for the 3rd year = Rs. 18225

Interest for the 3rd year = $\frac{8}{100} \times 18225 = 1458$ Rs.

Amount at the end of the 3rd year = Rs. 19683

Q.8. A person lent out Rs. 16000 on simple interest and the same sum on compound interest for 2 years at 12.5% per annum. Find the ratio of the amounts received by him as interest after 2 years.

Answer:

Simple Interest

Principal for the 1st year = Rs. 16000

Interest for the 1st year = $\frac{12.5}{100} \times 16000 = 2000$ Rs.

Interest for 2nd year = Rs. 2000

Total interest = Rs. 4000

Compound Interest

Principal for 1st year = Rs. 16000

Interest at the end of the 1st year = $\frac{12.5}{100} \times 16000 = 2000$ Rs.

Principal for 2nd year = Rs. 18000

Interest at the end of the 2nd year = $\frac{12.5}{100} \times 18000 = 2250$ Rs.

Total compound interest = 2000 + 2250 = 4250 Rs.

Ratio of the interest = 4000: 4250 or 16: 17

Note: We could also solve by using the formula $A = P \left(1 + \frac{r}{100}\right)^n$

$$A_1: A = 5000 \left(1 + \frac{8r}{100}\right)^2 = 5832 \text{ Rs.}$$

$$A_2: A = 8000 \left(1 + \frac{6}{100}\right)^2 = 8988.80 \text{ Rs.}$$

$$A_3: A = 25000 \left(1 + \frac{6}{100}\right)^2 = 29775.4$$

$$A_4: A = 10000 \left(1 + \frac{10}{100}\right)^2 = 13310 \text{ Rs.}$$

$$A_5: A = 25000 \left(1 + \frac{12}{100}\right)^2 = 35123.2 \text{ Rs.}$$

$$A_6: A = 15625 \left(1 + \frac{8}{100}\right)^2 = 19683 \text{ Rs.}$$

$$A_7: A = 16000 \left(1 + \frac{12.5}{100}\right)^2 = 20250 \text{ Rs.}$$