



Exercise 11C

Q1.

Answer :

Principal, $P = \text{Rs. } 8000$

Time, $n = 1 \text{ year} = 2 \text{ half years}$

Rate of interest per annum $= 10\%$

Rate of interest for half year, $R = \frac{10\%}{2} = 5\%$

The amount with the compound interest is given by

$$\text{Amount} = \text{Rs. } P \times \left(1 + \frac{R}{100}\right)^2$$

$$= \text{Rs. } 8000 \times \left(1 + \frac{5}{100}\right)^2$$

$$= \text{Rs. } 8000 \times \left(\frac{105}{100}\right)^2$$

$$= \text{Rs. } 8000 \times \left(\frac{21}{20}\right)^2$$

$$= \text{Rs. } 8000 \times \left(\frac{21}{20}\right) \times \left(\frac{21}{20}\right)$$

$$= \text{Rs. } (20 \times 21 \times 21)$$

$$= \text{Rs. } 8820$$

$$\therefore \text{Compound interest} = \text{amount} - \text{principal} = \text{Rs. } (8820 - 8000) = \text{Rs. } 820$$

Q3.

Principal, $P = \text{Rs. } 12800$

Annual rate of interest, $R = \frac{15}{2} \%$

Rate of interest for a half year $= \frac{1}{2} \left(\frac{15}{2}\right)\% = \frac{15}{4} \%$

Time, $n = 1 \text{ year} = 2 \text{ half years}$

Then the amount with the compound interest is given by

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

$$= 12800 \times \left(1 + \frac{\frac{15}{4}}{100}\right)^2$$

$$= 12800 \times \left(1 + \frac{15}{100 \times 4}\right)^2$$

$$= 12800 \times \left(\frac{400+15}{400}\right)^2$$

$$= 12800 \times \left(\frac{415}{400}\right)^2$$

$$= 12800 \times \left(\frac{83}{80}\right) \times \left(\frac{83}{80}\right)$$

$$= (2 \times 83 \times 83)$$

$$= \text{Rs } 13778$$

$$\text{Therefore, compound interest} = \text{amount} - \text{principal} = \text{Rs } \left(13778 - 12800\right) = \text{Rs } 978$$

Q4.

Answer :

Principal, $P = \text{Rs. } 160000$

Annual rate of interest, $R = 10\%$

Rate of interest for a half year $= \frac{10}{2} \% = 5\%$

Time, $n = 2 \text{ years} = 4 \text{ half years}$

Then the amount with the compound interest is given by

$$\begin{aligned} A &= P \times \left(1 + \frac{R}{100}\right)^n \\ &= 160000 \times \left(1 + \frac{5}{100}\right)^4 \\ &= 160000 \times \left(\frac{100+5}{100}\right)^4 \\ &= 160000 \times \left(\frac{105}{100}\right)^4 \\ &= 160000 \times \left(\frac{21}{20}\right) \times \left(\frac{21}{20}\right) \times \left(\frac{21}{20}\right) \times \left(\frac{21}{20}\right) \\ &= (21 \times 21 \times 21 \times 21) \\ &= \text{Rs } 194481 \end{aligned}$$

Therefore, compound interest = amount - principal = Rs $\left(194481 - 160000\right) =$
Rs 34481

Q5.

Principal, $P = \text{Rs. } 40960$

Annual rate of interest, $R = \frac{25}{2} \%$

Rate of interest for half year $= \frac{25}{4} \%$

Time, $n = 1 \frac{1}{2} \text{ years} = 3 \text{ half years}$

Then the amount with the compound interest is given by

$$\begin{aligned} A &= P \times \left(1 + \frac{R}{100}\right)^n \\ &= 40960 \times \left(1 + \frac{25}{100 \times 4}\right)^3 \\ &= 40960 \times \left(\frac{400+25}{400}\right)^3 \\ &= 40960 \times \left(\frac{425}{400}\right)^3 \\ &= 40960 \times \left(\frac{17}{16}\right) \times \left(\frac{17}{16}\right) \times \left(\frac{17}{16}\right) \\ &= (10 \times 17 \times 17 \times 17) \\ &= \text{Rs } 49130 \end{aligned}$$

Therefore, compound interest = amount - principal = Rs $\left(49130 - 40960\right) =$ Rs

8170

Therefore, Swati has to pay Rs. 49130, which includes an interest of Rs. 8170, to the bank after $1\frac{1}{2}$ years.

Q6.

Answer :

Let the principal amount be $P = \text{Rs. } 125000$.

Annual rate of interest, $R = 12\%$

Rate of interest for a half year $= 6\%$

Time, $n = 1\frac{1}{2}$ years $= 3$ half years

Then the amount with the compound interest is given by

$$\begin{aligned} A &= P \times \left(1 + \frac{R}{100}\right)^n \\ &= \text{Rs. } 125000 \times \left(1 + \frac{6}{100}\right)^3 \\ &= \text{Rs. } 125000 \times \left(\frac{100+6}{100}\right)^3 \\ &= \text{Rs. } 125000 \times \left(\frac{106}{100}\right)^3 \\ &= \text{Rs. } 125000 \times \left(\frac{53}{50}\right) \times \left(\frac{53}{50}\right) \times \left(\frac{53}{50}\right) \\ &= \text{Rs. } (53 \times 53 \times 53) \\ &= \text{Rs. } 148877 \end{aligned}$$

$$\text{Now, } CI = A - P = \text{Rs. } (148877 - 125000) = \text{Rs. } 23877$$

Therefore, Aslam has to pay an interest of Rs. 23877 to the bank after $1\frac{1}{2}$ years.

Q7.

Answer :

Let the principal amount be $P = \text{Rs. } 20000$.

Annual rate of interest, $R = 6\%$

Rate of interest for half year $= 3\%$

Time, $n = 1$ year $= 2$ half years

Then the amount with the compound interest is given by

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