

Compound Interest Ex 14.3 Q12

Answer:

Let the rate of interest be R\%. Then,

$$\begin{split} \mathbf{A} &= \mathbf{P} \bigg(1 + \frac{\mathbf{R}}{100} \bigg)^{\mathbf{n}} \\ 774.40 &= 640 \bigg(1 + \frac{\mathbf{R}}{100} \bigg)^2 \\ \bigg(1 + \frac{\mathbf{R}}{100} \bigg)^2 &= \frac{774.40}{640} \\ \bigg(1 + \frac{\mathbf{R}}{100} \bigg)^2 &= 1.21 \\ \bigg(1 + \frac{\mathbf{R}}{100} \bigg)^2 &= (1.1)^2 \\ \bigg(1 + \frac{\mathbf{R}}{100} \bigg) &= 1.1 \\ \frac{\mathbf{R}}{100} &= 0.1 \end{split}$$

$$R = 10$$

Thus, the required rate of interest is 10% per annum.

Compound Interest Ex 14.3 Q13

Answer:

Let the rate of interest be R%.

Then,

Hell,
$$\begin{aligned} \mathbf{A} &= \mathbf{P} \Big(1 + \frac{\mathbf{R}}{100} \Big)^{\mathbf{n}} \\ 2,662 &= 2,000 \Big(1 + \frac{\mathbf{R}}{100} \Big)^{3} \\ \Big(1 + \frac{\mathbf{R}}{100} \Big)^{3} &= \frac{2,662}{2,000} \\ \Big(1 + \frac{\mathbf{R}}{100} \Big)^{3} &= 1.331 \\ \Big(1 + \frac{\mathbf{R}}{100} \Big)^{3} &= (1.1)^{3} \\ \Big(1 + \frac{\mathbf{R}}{100} \Big) &= 1.1 \\ \frac{\mathbf{R}}{100} &= 0.1 \end{aligned}$$

Because the interest rate is being compounded half—yearly, it is 20% per annum.

Compound Interest Ex 14.3 Q14

Answer:

Let the sum be Rs P and the rate of interest be R%. We know that Kamla paid Rs 200 as simple interest.

$$\begin{array}{ll} \therefore \ 200 \ = \ \frac{PR(2)}{100} \\ PR = 10,000 \quad \dots \\ \left(1\right) \end{array}$$

Also, Kamla received Rs $210\ \mathrm{as}\ \mathrm{compound}$ interest.

$$\label{eq:posterior} \begin{split} & \therefore \ 210 = P \bigg(1 + \frac{R}{100} \bigg)^2 - 1 \\ & 210 \bigg(10,000 \bigg) \, = \, P \bigg(R^2 + 200 R \bigg) \\ & 210 R \, = \, \, R^2 + 200 R \qquad \bigg[\text{from } \bigg(1 \bigg) \bigg] \end{split}$$

R = 10% p.a.

Putting the equation in (1), we get:

$$P = 1,000$$

Thus, the required sum is Rs 1,000 and the rate of interest is 10%

