Assignment 1

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2 (c) Jaya borrowed ₹50,000 for 2 years. The rates of interest for two successive years are 12% and 15% respectively. She repays ₹33,000 at the end of the first year. Find the amount she must pay at the end of the second year to clear her debt.

Solution:

For the 1^{st} year,
Principal amount: $P =$ ₹50,000
Rate of interest: $R = 12\%$ p.a
Amount due at the end of 1^{st} year

$$\begin{aligned} &= P\left(1 + \frac{R}{100}\right) \\ &= 50000\left(1 + \frac{12}{100}\right) \\ &= 50000 \times \frac{112}{100} \\ &= ₹56{,}000 \end{aligned}$$

Amount paid at the end of 1^{st} year = ₹33,000
$\implies$ Principal for the 2^{nd} year

$$\begin{aligned} &= ₹56{,}000 - ₹33{,}000 \\ &= ₹23{,}000 \end{aligned}$$

For the 2^{nd} year,
Principal amount: $P =$ ₹23,000
Rate of interest: $R = 15\%$ p.a
Amount to be paid at the end of 2^{nd} year

$$\begin{aligned} &= P\left(1 + \frac{R}{100}\right) \\ &= 23000\left(1 + \frac{15}{100}\right) \\ &= 23000 \times \frac{115}{100} \\ &= ₹26{,}450 \end{aligned}$$

Hence, Jaya must pay ₹26,450 at the end of second year to clear her debt.