
Show all work to receive full credit. No Work = No Credit.

1. How long does it take for \$8500 invested at 11% annual simple interest to be worth \$13,000?

$$\begin{aligned}13,000 &= 8500(1 + .11t) \\ \frac{13,000}{8500} &= 1 + .11t \\ \frac{13,000}{8500} - 1 &= .11t \\ \frac{1}{.11} \left(\frac{13000}{8500} - 1 \right) &= t \\ t &\approx 4.8 \text{ years}\end{aligned}$$

2. To help their son buy a car on his 16th birthday, a boy's parents invest \$1500 on his 10th birthday. If the investment pays 9% compounded monthly, how much is available on his 16th birthday?

$$\begin{aligned}A &= 1500 \left(1 + \frac{.09}{12} \right)^{6 \cdot 12} \\ &= \$2568.83\end{aligned}$$

3. The Weidmans want to save \$20,000 in 2 years for a down payment on a house. If they make monthly deposits into an account paying 12% compounded monthly, what size payments are required to meet their goal?

$$\begin{aligned}S &= R \left(\frac{(1+i)^n - 1}{i} \right) \\ 20,000 &= R \left(\frac{\left(1 + \frac{.12}{12}\right)^{24} - 1}{\frac{.12}{12}} \right) \\ R &\approx \$741.47\end{aligned}$$

4. An insurance settlement of \$750,000 must replace Trixie Eden's income for the next 40 years. What income will this settlement provide at the end of each month if it is invested in an annuity that earns 8.4%, compounded monthly?

$$\begin{aligned}750,000 &= R \left(\frac{1 - \left(1 + \frac{.084}{12}\right)^{-12 \cdot 40}}{\frac{.084}{12}} \right) \\ R &\approx \$5441.23\end{aligned}$$