Topic 6 / Section 2: Practice Problems

Find the simple interest as asked for below. Recall \( I = PRT \) where \( P \) is the principal, \( R \) is the interest rate, and \( T \) is time (in years).

1. \( P = 10,000, \ R = 0.075, \ T = 2 \text{ years} \) \( I = \) ________________

2. \( P = 10,000, \ R = 0.045, \ T = 2 \text{ years} \) \( I = \) ________________

3. \( P = 10,000, \ R = 4.5\%, \ T = 2 \text{ months} \) \( I = \) ________________

4. \( P = 10,000, \ R = 7.5\%, \ T = 36 \text{ months} \) \( I = \) ________________

5. \( P = 10,000, \ R = 6.55\%, \ T = 12 \text{ years} \) \( I = \) ________________

Find the \( APR \) and \( A \) below. The first is provided as an example to help you with order of operations.

1. \( APR = \left(1 + \frac{0.055}{2}\right)^2 - 1 \approx 0.05575625 \)  
   \( A = 10,000(1 + APR)^4 \approx 12423.80 \)

2. \( APR = \left(1 + \frac{0.045}{3}\right)^3 - 1 \) ________________  
   \( A = 12,000(1 + APR)^5 \) ________________

3. \( APR = \left(1 + \frac{3.5\%}{1}\right)^1 - 1 \) ________________  
   \( A = 8,000(1 + APR)^5 \) ________________

4. \( APR = \left(1 + \frac{12\%}{12}\right)^{12} - 1 \) ________________  
   \( A = 5,000(1 + APR)^5 \) ________________

5. \( APR = \left(1 + \frac{3.375\%}{9}\right)^9 - 1 \) ________________  
   \( A = 1,000(1 + APR)^3 \) ________________
Compounded Interest Word Problems:

1. You deposit $200 into an account earning 5% compounded monthly. What is the APR? How much money will you have after 1 year? How much did you earn?

\[ r = \quad \quad \quad \quad \quad n = \quad \quad \quad \quad \quad \]

\[ APR = \left( 1 + \frac{r}{n} \right)^n - 1 = \quad \quad \quad \quad \quad \]

\[ P = \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \]

\[ t = \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \]

\[ A = P (1 + APR)^t = \quad \quad \quad \quad \quad \]

\[ \text{Earnings} = \quad \quad \quad \quad \quad \quad \]

2. You deposit $2,000 into an account earning 5% compounded annually. What is the APR? How much money will you have after 10 years? How much did you earn?

\[ r = \quad \quad \quad \quad \quad n = \quad \quad \quad \quad \quad \]

\[ APR = \left( 1 + \frac{r}{n} \right)^n - 1 = \quad \quad \quad \quad \quad \]

\[ P = \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \]

\[ t = \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \]

\[ A = P (1 + APR)^t = \quad \quad \quad \quad \quad \]

\[ \text{Earnings} = \quad \quad \quad \quad \quad \quad \]

How Much to Invest Word Problems:

1. How much money should be deposited in an account today that earns 7% compounded yearly so it will be $100,000 in 10 years?

\[ r = \quad \quad \quad \quad \quad n = \quad \quad \quad \quad \quad \]

\[ APR = \left( 1 + \frac{r}{n} \right)^n - 1 = \quad \quad \quad \quad \quad \]

\[ A = \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \]

\[ t = \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \]

\[ P = A \div (1 + APR)^t = \quad \quad \quad \quad \quad \]

2. How much money should be deposited in an account today that earns 7% compounded yearly so it will be $100,000 in 20 years?

\[ r = \quad \quad \quad \quad \quad n = \quad \quad \quad \quad \quad \]

\[ APR = \left( 1 + \frac{r}{n} \right)^n - 1 = \quad \quad \quad \quad \quad \]

\[ A = \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \]

\[ t = \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \]

\[ P = A \div (1 + APR)^t = \quad \quad \quad \quad \quad \]