

(1) [4] \$2000 is borrowed; the amount owed after 7 months is \$2100. Determine the rate of simple interest. (State your final answer as a percentage rounded to one decimal place.)

$$A = P(1 + rt)$$

$$2100 = 2000 \left(1 + r \cdot \frac{7}{12}\right)$$

$$\therefore r = \left(\frac{2100}{2000} - 1\right) \left(\frac{12}{7}\right)$$

$$r \approx 8.6\%$$

(2) [3] What is the effective rate of interest equivalent to 5% compounded quarterly? (State your final answer as a percentage rounded to one decimal place.)

$$P(1 + R) = P\left(1 + \frac{r}{n}\right)^{nt} \quad \text{where } t=1, n=4, r=0.05$$

$$1 + R = \left(1 + \frac{0.05}{4}\right)^4$$

$$R = \left(1 + \frac{0.05}{4}\right)^4 - 1$$

$$R \approx 5.1\%$$

(3) [4] How much must be invested now at 4% compounded quarterly to accumulate \$800 after 2 years? (Round your final answer to two decimal places.)

$$A = P \left( 1 + \frac{r}{n} \right)^{nt}$$

$$800 = P \left( 1 + \frac{0.04}{4} \right)^{(4)(2)}$$

$$\therefore P = \frac{800}{\left( 1 + \frac{0.04}{4} \right)^8}$$

$$P \approx \$738.79$$

(4) [4] What rate of interest compounded annually will triple an investment in 11 years? (State your final answer as a percentage rounded to one decimal place.)

$$3P = P \left( 1 + \frac{r}{n} \right)^{nt} \quad \text{where } n=1, t=11$$

$$3P = P \left( 1 + \frac{r}{1} \right)^{(1)(11)}$$

$$\therefore r = 3^{\frac{1}{11}} - 1$$

$$r \approx 10.5\%$$