



6-2 Additional Practice

Exponential Models

1. Darren invests \$4,500 into an account that earns 5% annual interest. How much will be in the account after 10 years if the interest rate is compounded annually, quarterly, monthly, or daily? Which compounded interest rate should Darren choose? Use the table below to find the value of the account after 10 years.

	Use the Compound Interest Formula	Amount after 10 years
Annually	$A = 4500\left(1 + \frac{0.05}{1}\right)^{1 \times 10}$	\$7,330.03
Quarterly	$A = 4500\left(1 + \frac{0.05}{4}\right)^{4 \times 10}$	\$7,396.29
Monthly	$A = 4500\left(1 + \frac{0.05}{12}\right)^{12 \times 10}$	\$7,411.54
Daily	$A = 4500\left(1 + \frac{0.05}{365}\right)^{365 \times 10}$	\$7,418.99

Sample answer: Choose interest compounded daily for the investment because the value increases more over time.

2. Ella invests \$2,000 in an account that pays 4% annual interest rate, compounded continuously. What is the value of her account after 5 years? Round your answer to the nearest dollar. Show your work.

$$A = P \times e^{rt} \qquad A = 2000 \times e^{0.04 \times 5} = 2000 \times e^{0.2} \approx \$2442$$

The data below shows the estimated population of a highly populated area of the United States during a period of 6 decades.

Decade	1950	1960	1970	1980	1990	2000	2010
Population (in millions)	10.6	13	16	19.7	24.2	29.8	36.7

3. Use a graphing calculator to find an exponential model that shows the relationship between the decades x since 1950 and the population y . Use 0 for 1950, 1 for 1960, **$y = 10.6(1.23)^x$**
4. How can you rewrite the exponential growth function in Exercise 3 to find the yearly growth rate? **$y = 12.2(1.021)^x$**
5. In 2015, Allie inherited land that was valued at \$200,000. In 2016, the value of the land increased to \$212,000. If this rate of increase continues, what exponential model can you use to describe the increase in value of the land over time?
 $y = 200,000(1.06)^x$