

LESSON
11-3
Practice A
Exponential Growth and Decay
CW/HW Due Monday

Write an exponential growth function to model each situation.

Then find the value of the function after the given amount of time.

1. Annual sales for a clothing store are \$270,000 and are increasing at a rate of 7% per year; 3 years

$$y = \boxed{}(1 + \boxed{})^{\boxed{}}$$

$$y = \underline{\hspace{2cm}}$$

2. The population of a school is 2200 and is increasing at a rate of 2%; 6 years

$$y = \boxed{}(1 + \boxed{})^{\boxed{}}$$

$$y \approx \underline{\hspace{2cm}}$$

3. The value of an antique vase is \$200 and is increasing at a rate of 8%; 12 years

$$y = \underline{\hspace{2cm}}$$

$$y \approx \underline{\hspace{2cm}}$$

Write a compound interest function to model each situation.

Then find the balance after the given number of years.

4. \$20,000 invested at a rate of 3% compounded annually; 8 years.

$$A = \boxed{}\left(1 + \frac{\boxed{}}{\boxed{}}\right)^{\boxed{}\boxed{}}$$

$$A \approx \underline{\hspace{2cm}}$$

5. \$35,000 invested at a rate of 6% compounded monthly; 10 years

$$A = \boxed{}\left(1 + \frac{\boxed{}}{\boxed{}}\right)^{\boxed{}\boxed{}}$$

$$A \approx \underline{\hspace{2cm}}$$

6. \$35,000 invested at a rate of 8% compounded quarterly; 5 years

$$A = \underline{\hspace{2cm}}$$

$$A \approx \underline{\hspace{2cm}}$$

Write an exponential decay function to model each situation. Then find the value of the function after the given amount of time.

7. The population of a school is 800 and is decreasing at a rate of 2% per year; 4 years

$$y = \boxed{}(1 - \boxed{})^{\boxed{}}$$

$$y \approx \underline{\hspace{2cm}}$$

8. The bird population in a forest is about 2300 and decreasing at a rate of 4% per year; 10 years

$$y = \boxed{}(1 - \boxed{})^{\boxed{}}$$

$$y \approx \underline{\hspace{2cm}}$$

9. The half-life of strontium-90 is approximately 28 years. Find the amount of strontium-90 left from a 10 gram sample after 56 years.

$$A = \boxed{}(0.5)^{\boxed{}}$$

$$A \approx \underline{\hspace{2cm}}$$

**Practice B****Exponential Growth and Decay**

Write an exponential growth function to model each situation. Then find the value of the function after the given amount of time.

1. Annual sales for a fast food restaurant are \$650,000 and are increasing at a rate of 4% per year; 5 years

2. The population of a school is 800 students and is increasing at a rate of 2% per year; 6 years

3. During a certain period of time, about 70 northern sea otters had an annual growth rate of 18%; 4 years

Write a compound interest function to model each situation. Then find the balance after the given number of years.

4. \$50,000 invested at a rate of 3% compounded monthly; 6 years

5. \$43,000 invested at a rate of 5% compounded annually; 3 years

6. \$65,000 invested at a rate of 6% compounded quarterly; 12 years

Write an exponential decay function to model each situation. Then find the value of the function after the given amount of time.

7. The population of a town is 2500 and is decreasing at a rate of 3% per year; 5 years

8. The value of a company's equipment is \$25,000 and decreases at a rate of 15% per year; 8 years

9. The half-life of Iodine-131 is approximately 8 days. Find the amount of Iodine-131 left from a 35 gram sample after 32 days.
