Name _____ Class _____ Date _____

# Practice 8-1

## Exploring Exponential Models

**Without graphing, determine whether each equation represents exponential growth or exponential decay.**

1. $y = 72(1.6)^x$
2. $y = 24(0.8)^x$
3. $y = 3\left(\frac{6}{5}\right)^x$
4. $y = 7\left(\frac{2}{3}\right)^x$

**Sketch the graph of each function. Identify the horizontal asymptote.**

5. $y = (0.3)^x$
6. $y = 3^x$
7. $y = 2\left(\frac{1}{5}\right)^x$
8. $y = \frac{1}{2}(3)^x$

9. A new car that sells for \$18,000 depreciates 25% each year. Write a function that models the value of the car. Find the value of the car after 4 yr.
10. A new truck that sells for \$29,000 depreciates 12% each year. Write a function that models the value of the truck. Find the value of the truck after 7 yr.
11. The bear population increases at a rate of 2% per year. There are 1573 bears this year. Write a function that models the bear population. How many bears will there be in 10 yr?
12. An investment of \$75,000 increases at a rate of 12.5% per year. Find the value of the investment after 30 yr.
13. The population of an endangered bird is decreasing at a rate of 0.75% per year. There are currently about 200,000 of these birds. Write a function that models the bird population. How many birds will there be in 100 yr?

**Write an exponential function $y = ab^x$ for a graph that includes the given points.**

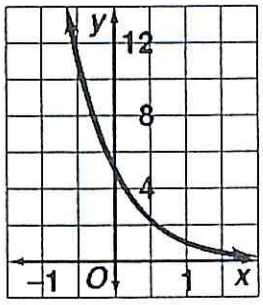
14. (1,10), (2, 25)

**For each annual rate of change, find the corresponding growth or decay factor.**

15. +45%
16. −10%
17. −40%
18. +200%

**Determine if the graph models an exponential growth or decay situation.**

19.

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