Name ______________________________ Class ____________ Date ____________

# Review

Chapter 7

## Lessons 7-1 to 7-5

**Simplify each expression. Use only positive exponents.**

**1.** $(2t)^{-6}$ **2.** $5m^5m^{-8}$ **3.** $(4.5)^4(4.5)^{-2}$

**4.** $(m^7t^{-5})^2$ **5.** $(x^2n^4)(n^{-8})$ **6.** $(w^{-2}j^{-4})^{-3}(j^7j^3)$

**7.** $(t^6)^3(m)^2$ **8.** $(3n^4)^2$ **9.** $\dfrac{r^5}{g^{-3}}$

**10.** $\dfrac{1}{a^{-4}}$ **11.** $\dfrac{w^7}{w^{-6}}$ **12.** $\dfrac{6}{t^{-4}}$

**13.** $\dfrac{a^2b^{-7}c^4}{a^5b^3c^{-2}}$ **14.** $\dfrac{(2t^5)^3}{4t^8t^{-1}}$ **15.** $\left(\dfrac{a^6}{a^7}\right)^{-3}$

**16.** $\left(\dfrac{c^5c^{-3}}{c^{-4}}\right)^{-2}$ **17.** $\left(\dfrac{4x^3}{8x^{-2}}\right)^0$ **18.** $\left(\dfrac{y^{-3}}{y^3}\right)^2$

**Evaluate each expression for $m = 2$, $t = -3$, $w = 4$, and $z = 0$.**

**19.** $t^m$ **20.** $t^{-m}$ **21.** $(w \cdot t)^m$

**22.** $w^m \cdot t^m$ **23.** $w^{-t}t^t$ **24.** $w^mw^z$

**Write each number in scientific notation.**

**25.** 34,000,000 **26.** 0.00063 **27.** 1500

**28.** 0.0002 **29.** 360,000 **30.** 6,200,000,000

**31.** 0.05 **32.** 0.000000000891 **33.** 75,000,000,000

**Write each number in standard notation.**

**34.** $8.05 \times 10^6$ **35.** $3.2 \times 10^{-7}$ **36.** $9.0 \times 10^8$

**37.** $4.25 \times 10^{-4}$ **38.** $2.35 \times 10^2$ **39.** $6.3 \times 10^4$

**40.** $2.001 \times 10^{-5}$ **41.** $5.2956 \times 10^3$ **42.** $8.345 \times 10^{-3}$

**Write each number in scientific notation.**

**43.** A bacteria culture has a population of approximately 7,500,000,000.

**44.** The diameter of a blood cell is about 0.0000082 m.

**Write each answer in scientific notation.**

**45.** $(2 \times 10^3) \times (3 \times 10^2)$

**46.** $(6.24 \times 10^{23}) - (3.3 \times 10^{22})$

**47.** $(3 \times 10^{-5}) \times (3 \times 10^8)$

**48.** $(4.4 \times 10^6) + (6.6 \times 10^6)$

## Lesson 7-6

**Evaluate each function over the domain {–1, 0, 1, 2}. As the values of the domain increase, do the values of the function *increase* or *decrease*?**

**49.** $y = 3^x$

**50.** $y = \left(\frac{3}{4}\right)^x$

**51.** $y = 1.5^x$

**52.** $y = \left(\frac{1}{2}\right) \cdot 3^x$

**53.** $y = -3 \cdot 7^x$

**54.** $y = -(4)^x$

**55.** $y = 3 \cdot \left(\frac{1}{5}\right)^x$

**56.** $y = 2^x$

**57.** $y = 2 \cdot 3^x$

**58.** $y = (0.8)^x$

**59.** $y = 2.5^x$

**60.** $y = -4 \cdot (0.2)^x$

**Write and solve an exponential equation to answer each question.**

**61.** Suppose an investment of $5,000 doubles every 12 years. How much is the investment worth after 36 years? After 48 years?

**62.** Suppose 15 animals are taken to an island, and then their population triples every 8 months. How many animals will there be in 4 years?

**63.** The population of a city this year is 34,500. The population is expected to grow by 3% each year. What will be the population of the city in 12 years?

## Lesson 7-7

**Identify each function as *exponential growth* or *exponential decay*. Then identify the growth factor or decay factor.**

**64.** $y = 8^x$

**65.** $y = \frac{3}{4} \cdot 2^x$

**66.** $y = 9 \cdot \left(\frac{1}{2}\right)^x$

**67.** $y = 4 \cdot 9^x$

**68.** $y = 0.65^x$

**69.** $y = 3 \cdot 1.5^x$

**70.** $y = \frac{2}{5} \cdot \left(\frac{1}{4}\right)^x$

**71.** $y = 0.1 \cdot 0.9^x$

**72.** $y = 0.7 \cdot 3.3^x$

**Write an exponential function to model each situation. Find each amount after the specified time.**

**73.** $200 principal, 4% compounded annually for 5 years

**74.** $1000 principal, 3.6% compounded monthly for 10 years

**75.** $3000 investment, 8% loss each year for 3 years

**Find the balance in each account.**

**76.** You deposit $2500 in a savings account with 3% interest compounded annually. What is the balance in the account after 6 years?

**77.** You deposit $750 in an account with 7% interest compounded semiannually. What is the balance in the account after 4 years?

**78.** You deposit $520 in an account with 4% interest compounded monthly. What is the balance in the account after 5 years?