

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

## 5-1 Skills Practice

### Monomials

Simplify. Assume that no variable equals 0.

- $b^4 \cdot b^3$   **$b^7$**
- $c^5 \cdot c^2 \cdot c^2$   **$c^9$**
- $a^{-4} \cdot a^{-3}$   **$\frac{1}{a^7}$**
- $x^5 \cdot x^{-4} \cdot x$   **$x^2$**
- $(g^4)^2$   **$g^8$**
- $(3u)^3$   **$27u^3$**
- $(-x)^4$   **$x^4$**
- $-5(2z)^3$   **$-40z^3$**
- $-(-3d)^4$   **$-81d^4$**
- $(-r^7)^3$   **$-r^{21}$**
- $\frac{f^9}{k^{10}}$   **$\frac{1}{k}$**
- $(2x)^2(4y)^2$   **$64x^2y^2$**
- $10x^{-2}y^3(10xy^8)$   **$100x^{-3}y^{11}$**
- $\frac{-6a^4b^8}{36a^7b^2c}$   **$-\frac{c^2}{6a^3b}$**

Express each number in scientific notation.

- 53,000  **$5.3 \times 10^4$**
- 410,100,000  **$4.101 \times 10^8$**

Evaluate. Express the result in scientific notation.

- $(4 \times 10^3)(1.6 \times 10^{-6})$   **$6.4 \times 10^{-3}$**
- $(4.5 \times 10^{-7})(1.6 \times 10^{-6})$   **$7.2 \times 10^{-13}$**

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

## 5-1 Practice (Average)

### Monomials

Simplify. Assume that no variable equals 0.

- $n^5 \cdot n^2$   **$n^7$**
- $t^9 \cdot t^{-8}$   **$t$**
- $(2f^4)^6$   **$64f^{24}$**
- $(4d^2f^5v^{-4})(-5dt^{-3}v^{-1})$   **$-\frac{20d^3t^2}{v^5}$**
- $\frac{12m^5y^6}{-9my^4} - \frac{4m^7y^2}{3}$   **$-\frac{4m^7y^2}{3} - \frac{4m^7y^2}{9}$**
- $\frac{-27x^3(-x^7)}{16x^4} - \frac{27x^6}{16}$   **$\frac{27x^6}{16} - \frac{27x^6}{16}$**
- $-(4u^{-3}z^{-5})(8w)^2 - \frac{256}{wz^5}$   **$-\frac{256}{wz^5} - \frac{256}{wz^5}$**
- $(\frac{3}{2}d^{2f+4})^4(\frac{4}{3}d^{5f+3} - 12d^{23}f^{19})$   **$\frac{81}{16}d^{8f+16}(\frac{4}{3}d^{5f+3} - 12d^{23}f^{19})$**
- $\frac{(3x^{-2}y^3)(5xy^{-6})}{(x^{-3}y^{-2})^2} - \frac{15x^{11}}{y^3}$   **$\frac{15x^9y^3}{y^3} - \frac{15x^{11}}{y^3}$**

Express each number in scientific notation.

- 896,000  **$8.96 \times 10^5$**
- 0.000056  **$5.6 \times 10^{-5}$**
- 433.7  $\times 10^8$   **$4.337 \times 10^{10}$**

Evaluate. Express the result in scientific notation.

- $(4.8 \times 10^2)(6.9 \times 10^4)$   **$3.312 \times 10^7$**
- $(3.7 \times 10^9)(8.7 \times 10^2)$   **$3.219 \times 10^{12}$**

25. **COMPUTING** The term *bit*, short for *binary digit*, was first used in 1946 by John Tukey. A single bit holds a zero or a one. Some computers use 32-bit numbers, or strings of 32 consecutive bits, to identify each address in their memories. Each 32-bit number corresponds to a number in our base-ten system. The largest 32-bit number is nearly 4,295,000,000. Write this number in scientific notation.  **$4.295 \times 10^9$**

26. **LIGHT** When light passes through water, its velocity is reduced by 25%. If the speed of light in a vacuum is  $1.86 \times 10^8$  miles per second, at what velocity does it travel through water? Write your answer in scientific notation.  **$1.395 \times 10^8$  m/s**

27. **TREES** Deciduous and coniferous trees are hard to distinguish in a black-and-white photo. But because deciduous trees reflect infrared energy better than coniferous trees, the two types of trees are more distinguishable in an infrared photo. If an infrared wavelength measures about  $8 \times 10^{-7}$  meters and a blue wavelength measures about  $4.5 \times 10^{-7}$  meters, about how many times longer is the infrared wavelength than the blue wavelength? **about 1.8 times**

Lesson 5-1

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

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NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

## 5-1 Practice (Average)

### Monomials

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- $\frac{-27x^3(-x^7)}{16x^4} - \frac{27x^6}{16}$   **$\frac{27x^6}{16} - \frac{27x^6}{16}$**
- $-(4u^{-3}z^{-5})(8w)^2 - \frac{256}{wz^5}$   **$-\frac{256}{wz^5} - \frac{256}{wz^5}$**
- $(\frac{3}{2}d^{2f+4})^4(\frac{4}{3}d^{5f+3} - 12d^{23}f^{19})$   **$\frac{81}{16}d^{8f+16}(\frac{4}{3}d^{5f+3} - 12d^{23}f^{19})$**
- $\frac{(3x^{-2}y^3)(5xy^{-6})}{(x^{-3}y^{-2})^2} - \frac{15x^{11}}{y^3}$   **$\frac{15x^9y^3}{y^3} - \frac{15x^{11}}{y^3}$**

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## More Properties of Exponents

**Simplify. Your answer should contain only positive exponents.**

1)  $(x^{-2}x^{-3})^4$

$$\frac{1}{x^{20}}$$

2)  $(x^4)^{-3} \cdot 2x^4$

$$\frac{2}{x^8}$$

3)  $(n^3)^3 \cdot 2n^{-1}$

$$2n^8$$

4)  $(2v)^2 \cdot 2v^2$

$$8v^4$$

5)  $\frac{2x^2y^4 \cdot 4x^2y^4 \cdot 3x}{3x^{-3}y^2}$

$$8x^8y^6$$

6)  $\frac{2y^3 \cdot 3xy^3}{3x^2y^4}$

$$\frac{2y^2}{x}$$

7)  $\frac{x^3y^3 \cdot x^3}{4x^2}$

$$\frac{x^4y^3}{4}$$

8)  $\frac{3x^2y^2}{2x^{-1} \cdot 4yx^2}$

$$\frac{3xy}{8}$$

9)  $\frac{x}{(2x^0)^2}$

$$\frac{x}{4}$$

10)  $\frac{2m^{-4}}{(2m^{-4})^3}$

$$\frac{m^8}{4}$$

$$11) \frac{(2m^2)^{-1}}{m^2}$$

$$\frac{1}{2m^4}$$

$$12) \frac{2x^3}{(x^{-1})^3}$$

$$2x^6$$

$$13) (a^{-3}b^{-3})^0$$

$$1$$

$$14) x^4y^3 \cdot (2y^2)^0$$

$$x^4y^3$$

$$15) ba^4 \cdot (2ba^4)^{-3}$$

$$\frac{1}{8b^2a^8}$$

$$16) (2x^0y^2)^{-3} \cdot 2yx^3$$

$$\frac{x^3}{4y^5}$$

$$17) \frac{2k^3 \cdot k^2}{k^{-3}}$$

$$2k^8$$

$$18) \frac{(x^{-3})^4 x^4}{2x^{-3}}$$

$$\frac{1}{2x^5}$$

$$19) \frac{(2x)^{-4}}{x^{-1} \cdot x}$$

$$\frac{1}{16x^4}$$

$$20) \frac{(2x^3z^2)^3}{x^3y^4z^2 \cdot x^{-4}z^3}$$

$$\frac{8x^{10}z}{y^4}$$

$$21) \frac{(2pm^{-1}q^0)^{-4} \cdot 2m^{-1}p^3}{2pq^2}$$

$$\frac{m^3}{16p^2q^2}$$

$$22) \frac{(2hj^2k^{-2} \cdot h^4j^{-1}k^4)^0}{2h^{-3}j^{-4}k^{-2}}$$

$$\frac{h^3j^4k^2}{2}$$

	Lesson 5-6		Lesson 5-6
<div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">5-6</div> </div> <p style="text-align: center;"><b>Skills Practice</b> Radical Expressions</p> <p style="text-align: center;">Simplify.</p>	<div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">5-6</div> </div> <p style="text-align: center;"><b>Practice (Average)</b> Radical Expressions</p> <p style="text-align: center;">Simplify.</p>	<p>NAME _____ DATE _____ PERIOD _____</p>	<p>NAME _____ DATE _____ PERIOD _____</p>
<p>1. <math>\sqrt[3]{24} \mathbf{2\sqrt{6}}</math></p> <p>2. <math>\sqrt{75} \mathbf{5\sqrt{3}}</math></p> <p>3. <math>\sqrt[3]{16} \mathbf{2\sqrt[3]{2}}</math></p> <p>4. <math>-\sqrt{48} \mathbf{-2\sqrt{3}}</math></p> <p>5. <math>4\sqrt{50t^5} \mathbf{20x^2\sqrt{2x}}</math></p> <p>6. <math>\sqrt[4]{64a^4b^4} \mathbf{2 ab \sqrt[4]{4}}</math></p> <p>7. <math>\sqrt[3]{\frac{1}{8}d^{27}} \mathbf{-\frac{1}{2}f\sqrt[3]{d^2f^2}}</math></p> <p>8. <math>\sqrt{\frac{25}{36}s^2t} \mathbf{\frac{5}{6} s \sqrt{t}}</math></p> <p>9. <math>-\sqrt{\frac{3}{9}} \mathbf{-\frac{\sqrt{21}}{7}}</math></p> <p>10. <math>\sqrt{\frac{2g^2}{5z}} \mathbf{\frac{g\sqrt{10gz}}{5z}}</math></p> <p>11. <math>\sqrt[3]{12} - 2\sqrt{3} + \sqrt{108} \mathbf{6\sqrt{3}}</math></p> <p>12. <math>(4\sqrt{12})(3\sqrt{20}) \mathbf{48\sqrt{15}}</math></p> <p>13. <math>\sqrt{12} - 2\sqrt{3} + \sqrt{108} \mathbf{6\sqrt{3}}</math></p> <p>14. <math>\sqrt{2} + \sqrt{8} + \sqrt{50} \mathbf{8\sqrt{2}}</math></p> <p>15. <math>\sqrt{12} - 2\sqrt{3} + \sqrt{108} \mathbf{6\sqrt{3}}</math></p> <p>16. <math>8\sqrt{5} - \sqrt{45} - \sqrt{80} \mathbf{\sqrt{5}}</math></p> <p>17. <math>2\sqrt{48} - \sqrt{75} - \sqrt{12} \mathbf{\sqrt{3}}</math></p> <p>18. <math>(2 + \sqrt{3})(6 - \sqrt{2}) \mathbf{12 - 2\sqrt{2} + 6\sqrt{3} - \sqrt{6}}</math></p> <p>19. <math>(1 - \sqrt{5})(1 + \sqrt{5}) \mathbf{-4}</math></p> <p>20. <math>(3 - \sqrt{7})(5 + \sqrt{2}) \mathbf{15 + 3\sqrt{2} - 5\sqrt{7} - \sqrt{14}}</math></p> <p>21. <math>(\sqrt{2} - \sqrt{6})^2 \mathbf{8 - 4\sqrt{3}}</math></p> <p>22. <math>\frac{3}{7 - \sqrt{2}} \mathbf{\frac{21 + 3\sqrt{2}}{47}}</math></p> <p>23. <math>\frac{4}{3 + \sqrt{2}} \mathbf{\frac{12 - 4\sqrt{2}}{7}}</math></p> <p>24. <math>\frac{5}{8 - \sqrt{6}} \mathbf{\frac{40 + 5\sqrt{6}}{58}}</math></p>	<p>1. <math>\sqrt[3]{540} \mathbf{6\sqrt[3]{15}}</math></p> <p>2. <math>\sqrt[3]{-432} \mathbf{-6\sqrt[3]{2}}</math></p> <p>3. <math>\sqrt[3]{128} \mathbf{4\sqrt[3]{2}}</math></p> <p>4. <math>-\sqrt[4]{405} \mathbf{-3\sqrt[4]{5}}</math></p> <p>5. <math>\sqrt[3]{-5000} \mathbf{-10\sqrt[3]{5}}</math></p> <p>6. <math>\sqrt{-1215} \mathbf{-3\sqrt[3]{5}}</math></p> <p>7. <math>\sqrt[3]{125t^6u^2} \mathbf{5t^2\sqrt[3]{w^2}}</math></p> <p>8. <math>\sqrt[4]{48t^8z^{13}} \mathbf{2\sqrt[4]{2z^3}\sqrt[4]{3z}}</math></p> <p>9. <math>\sqrt[3]{8g^3k^8} \mathbf{2gk^2\sqrt[3]{k^2}}</math></p> <p>10. <math>\sqrt[3]{45x^3y^8} \mathbf{3xy^4\sqrt[3]{5x}}</math></p> <p>11. <math>\sqrt{\frac{11}{9}} \mathbf{\frac{\sqrt{11}}{3}}</math></p> <p>12. <math>\sqrt{\frac{216}{24}} \mathbf{\sqrt[3]{9}}</math></p> <p>13. <math>\sqrt{\frac{1}{128}c^4d^7} \mathbf{\frac{1}{16}c^2d^3\sqrt[4]{2d}}</math></p> <p>14. <math>\sqrt{\frac{9a^5}{64b^4}} \mathbf{\frac{3a^2\sqrt{a}}{8b^2}}</math></p> <p>15. <math>\sqrt[4]{\frac{8}{9c^3}} \mathbf{\frac{\sqrt[4]{72a}}{3a}}</math></p> <p>16. <math>(3\sqrt{15})(-4\sqrt{45}) \mathbf{-180\sqrt{3}}</math></p> <p>17. <math>(2\sqrt{24})(7\sqrt{18}) \mathbf{168\sqrt{3}}</math></p> <p>18. <math>\sqrt{810} + \sqrt{240} - \sqrt{250} \mathbf{4\sqrt{10} + 4\sqrt{15}}</math></p> <p>19. <math>6\sqrt{20} + 8\sqrt{5} - 5\sqrt{45} \mathbf{5\sqrt{5}}</math></p> <p>20. <math>8\sqrt{48} - 6\sqrt{75} + 7\sqrt{80} \mathbf{2\sqrt{3} + 28\sqrt{5}}</math></p> <p>21. <math>(3\sqrt{2} + 2\sqrt{3})^2 \mathbf{30 + 12\sqrt{6}}</math></p> <p>22. <math>(3 - \sqrt{7})^2 \mathbf{16 - 6\sqrt{7}}</math></p> <p>23. <math>(\sqrt{5} - \sqrt{6})(\sqrt{5} + \sqrt{2}) \mathbf{5 + \sqrt{10} - \sqrt{30} - 2\sqrt{3} - 8}</math></p> <p>24. <math>(\sqrt{2} + \sqrt{10})(\sqrt{2} - \sqrt{10}) \mathbf{-8}</math></p> <p>25. <math>(1 + \sqrt{6})(5 - \sqrt{7}) \mathbf{5 - \sqrt{7} + 5\sqrt{6} - \sqrt{42}}</math></p> <p>26. <math>(\sqrt{3} + 4\sqrt{7})^2 \mathbf{115 + 8\sqrt{21}}</math></p> <p>27. <math>(\sqrt{108} - 6\sqrt{3})^2 \mathbf{0}</math></p> <p>28. <math>\sqrt[3]{5} - 2 \mathbf{\sqrt[3]{15} + 2\sqrt{3}}</math></p> <p>29. <math>\frac{6}{\sqrt{2} - 1} \mathbf{6\sqrt{2} + 6}</math></p> <p>30. <math>\frac{5 + \sqrt{3}}{4 + \sqrt{3}} \mathbf{\frac{17 - \sqrt{3}}{13}}</math></p> <p>31. <math>\frac{3 + \sqrt{2}}{2 - \sqrt{2}} \mathbf{\frac{8 + 5\sqrt{2}}{2}}</math></p> <p>32. <math>\frac{3 + \sqrt{6}}{5 - \sqrt{24}} \mathbf{27 + 11\sqrt{6}}</math></p> <p>33. <math>\frac{3 + \sqrt{x}}{2 - \sqrt{x}} \mathbf{\frac{6 + 5\sqrt{x} + x}{4 - x}}</math></p>	<p>34. <b>BRAKING</b> The formula <math>s = 2\sqrt{5\ell}</math> estimates the speed <math>s</math> in miles per hour of a car when it leaves skid marks <math>\ell</math> feet long. Use the formula to write a simplified expression for <math>s</math> if <math>\ell = 85</math>. Then evaluate <math>s</math> to the nearest mile per hour. <b><math>10\sqrt{17}</math>; 41 mi/h</b></p> <p>35. <b>PYTHAGOREAN THEOREM</b> The measures of the legs of a right triangle can be represented by the expressions <math>6x^2y</math> and <math>9x^2y</math>. Use the Pythagorean Theorem to find a simplified expression for the measure of the hypotenuse. <b><math>3x^2y\sqrt{13}</math></b></p>	<p>© Glencoe/McGraw-Hill</p> <p style="text-align: right;">271</p> <p style="text-align: right;">Glencoe Algebra 2</p>

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**5-7 Skills Practice**  
**Rational Exponents**

Write each expression in radical form.

1.  $3^6 \cdot \sqrt[3]{3}$       2.  $8^5 \cdot \sqrt[5]{8}$

3.  $12^{\frac{2}{3}} \cdot \sqrt[3]{12^2}$  or  $(\sqrt[3]{12})^2$       4.  $(s^3)^{\frac{3}{5}} \cdot s^{\sqrt[5]{5^4}}$

Write each radical using rational exponents.

5.  $\sqrt[3]{51} \cdot 51^{\frac{1}{2}}$       6.  $\sqrt[3]{37} \cdot 37^{\frac{1}{3}}$

7.  $\sqrt[3]{15^3} \cdot 15^4$       8.  $\sqrt[3]{6xy^2} \cdot 6^{\frac{1}{3}} x^{\frac{1}{3}} y^{\frac{2}{3}}$

Evaluate each expression.

9.  $32^{\frac{1}{2}} \cdot 2$       10.  $81^{\frac{1}{4}} \cdot 3$

11.  $27^{-\frac{1}{3}} \cdot \frac{1}{3}$       12.  $4^{-\frac{1}{2}} \cdot \frac{1}{2}$

13.  $16^{\frac{3}{4}} \cdot 64$       14.  $(-243)^{\frac{5}{3}} \cdot 81$

15.  $27^{\frac{1}{3}} \cdot 27^{\frac{2}{3}} \cdot 729$       16.  $(\frac{4}{9})^{\frac{3}{2}} \cdot \frac{8}{27}$

Simplify each expression.

17.  $c^{\frac{10}{5}} \cdot c^{\frac{3}{5}} \cdot c^3$       18.  $m^{\frac{2}{5}} \cdot m^{\frac{16}{5}} \cdot m^2$

19.  $(q^2)^{\frac{13}{2}} \cdot q^2$       20.  $p^{-\frac{1}{5}} \cdot \frac{p^5}{p}$

21.  $x^{-\frac{6}{11}} \cdot x^{\frac{11}{x}}$       22.  $\frac{x^3}{x^4} \cdot x^{\frac{5}{12}}$

23.  $\frac{y^{-\frac{1}{2}}}{y^4} \cdot y^{\frac{1}{y}}$       24.  $\frac{n^{\frac{3}{6}} \cdot n^{\frac{1}{3}}}{n^{\frac{1}{6}} \cdot n^{\frac{2}{3}}}$

25.  $\sqrt[12]{64} \cdot \sqrt{2}$       26.  $\sqrt[3]{49a^8b^2} \cdot |a|^{\frac{1}{4}} \sqrt[7]{b}$

Lesson 5-7

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**5-7 Practice (Average)**  
**Rational Exponents**

Write each expression in radical form.

1.  $5^{\frac{1}{3}}$       2.  $6^{\frac{2}{5}}$       3.  $m^{\frac{4}{7}}$       4.  $(n^3)^{\frac{2}{5}}$

$\sqrt[3]{5}$        $\sqrt[5]{6^2}$  or  $(\sqrt[5]{6})^2$        $\sqrt[4]{m^4}$  or  $(\sqrt[4]{m})^4$        $n^{\sqrt[5]{n}}$

Write each radical using rational exponents.

5.  $\sqrt[4]{79}$       6.  $\sqrt[3]{153}$       7.  $\sqrt[3]{27m^6n^4}$       8.  $5\sqrt[2]{2a^{10}b}$

$79^{\frac{1}{4}}$        $153^{\frac{1}{3}}$        $3m^2n^{\frac{4}{3}}$        $5 \cdot 2^{\frac{1}{2}} |a^5| b^{\frac{1}{2}}$

Evaluate each expression.

9.  $81^{\frac{1}{4}} \cdot 3$       10.  $1024^{-\frac{1}{5}} \cdot \frac{1}{4}$       11.  $8^{-\frac{5}{8}} \cdot \frac{1}{32}$

12.  $-256^{-\frac{3}{4}} \cdot -\frac{1}{64}$       13.  $(-64)^{-\frac{2}{3}} \cdot \frac{1}{16}$       14.  $27^{\frac{1}{3}} \cdot 27^{\frac{4}{3}} \cdot 243$

15.  $(\frac{125}{216})^{\frac{2}{3}} \cdot \frac{25}{36}$       16.  $\frac{64^{\frac{3}{2}}}{343^{\frac{2}{3}}} \cdot \frac{16}{49}$       17.  $(25^{\frac{1}{2}})^{-\frac{1}{3}} \cdot (-64)^{\frac{1}{3}} \cdot -\frac{5}{4}$

Simplify each expression.

18.  $g^{\frac{4}{7}} \cdot g^{\frac{3}{7}} \cdot g$       19.  $s^{\frac{3}{4}} \cdot s^{-\frac{13}{4}} \cdot s^4$       20.  $(u^{-\frac{1}{5}})^{\frac{4}{5}} \cdot u^{\frac{4}{15}}$       21.  $y^{\frac{1}{3}} \cdot \frac{1}{y}$

22.  $b^{-\frac{2}{5}} \cdot \frac{b^5}{b}$       23.  $\frac{q^{\frac{5}{3}}}{q^{\frac{2}{3}}} \cdot \frac{1}{q^5}$       24.  $\frac{t^{\frac{2}{5}} \cdot t^{-\frac{3}{5}}}{5t^{\frac{2}{5}} \cdot t^{-\frac{3}{5}}} \cdot \frac{t^{12}}{5}$       25.  $\frac{2z^{\frac{2}{3}}}{z^{\frac{2}{3}} - 1} \cdot \frac{2z + 2z^2}{z - 1}$

26.  $\sqrt[10]{8^5} \cdot 2\sqrt{2}$       27.  $\sqrt[12]{12} \cdot \sqrt[5]{12^3}$       28.  $\sqrt[4]{6} \cdot 3\sqrt[3]{6}$       29.  $\frac{a}{\sqrt{3b}} \cdot \frac{a\sqrt{3b}}{3b}$

30. **ELECTRICITY** The amount of current in amperes  $I$  that an appliance uses can be calculated using the formula  $I = (\frac{P}{R})^{\frac{1}{2}}$ , where  $P$  is the power in watts and  $R$  is the resistance in ohms. How much current does an appliance use if  $P = 500$  watts and  $R = 10$  ohms? Round your answer to the nearest tenth. **7.1 amps**

31. **BUSINESS** A company that produces DVDs uses the formula  $C = 88n^{\frac{1}{3}} + 330$  to calculate the cost  $C$  in dollars of producing  $n$  DVDs per day. What is the company's cost to produce 150 DVDs per day? Round your answer to the nearest dollar. **\$798**

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5-8 Skills Practice	5-8 Practice (Average)
<b>Radical Equations and Inequalities</b> Solve each equation or inequality.	<b>Radical Equations and Inequalities</b> Solve each equation or inequality.
1. $\sqrt{x} = 5$ <b>25</b> 2. $\sqrt{x} + 3 = 7$ <b>16</b> 3. $5\sqrt{y} = 1$ $\frac{1}{25}$ 4. $v^{\frac{1}{2}} + 1 = 0$ <b>no solution</b> 5. $18 - 3y^{\frac{1}{2}} = 25$ <b>no solution</b> 6. $\sqrt[3]{2w} = 4$ <b>32</b> 7. $\sqrt{b - 5} = 4$ <b>21</b> 8. $\sqrt{3n + 1} = 5$ <b>8</b> 9. $\sqrt[3]{3r - 6} = 3$ <b>11</b> 10. $2 + \sqrt{3p + 7} = 6$ <b>3</b> 11. $\sqrt{k - 4} - 1 = 5$ <b>40</b> 12. $(2d + 3)^{\frac{1}{3}} = 2$ $\frac{5}{2}$ 13. $(t - 3)^{\frac{1}{5}} = 2$ <b>11</b> 14. $4 - (1 - 7u)^{\frac{1}{3}} = 0$ <b>-9</b> 15. $\sqrt{3z - 2} = \sqrt{z - 4}$ <b>no solution</b> 16. $\sqrt{g + 1} = \sqrt{2g - 7}$ <b>8</b> 17. $\sqrt{x - 1} = 4\sqrt{x + 1}$ <b>no solution</b> 18. $5 + \sqrt{s - 3} \leq 6$ <b>3 ≤ s ≤ 4</b> 19. $-2 + \sqrt{3x + 3} < 7$ <b>-1 &lt; x &lt; 26</b> 20. $-\sqrt{2a + 4} \geq -6$ <b>-2 ≤ a ≤ 16</b> 21. $2\sqrt{4r - 3} > 10$ <b>r &gt; 7</b> 22. $4 - \sqrt{3v + 1} > 3$ <b><math>-\frac{1}{3} &lt; v &lt; 0</math></b> 23. $\sqrt{y + 4} - 3 \geq 3$ <b>y ≥ 32</b> 24. $-3\sqrt{11r + 3} \geq -15$ <b><math>-\frac{3}{11} \leq r \leq 2</math></b>	1. $\sqrt{x} = 8$ <b>64</b> 2. $4 - \sqrt{x} = 3$ <b>1</b> 3. $\sqrt{2p} + 3 = 10$ $\frac{49}{2}$ 4. $4\sqrt{3h} - 2 = 0$ $\frac{1}{12}$ 5. $c^{\frac{1}{2}} + 6 = 9$ <b>9</b> 6. $18 + 7h^{\frac{1}{2}} = 12$ <b>no solution</b> 7. $\sqrt[3]{d + 2} = 7$ <b>341</b> 8. $\sqrt[5]{w - 7} = 1$ <b>8</b> 9. $6 + \sqrt[3]{q - 4} = 9$ <b>31</b> 10. $\sqrt[4]{y - 9} + 4 = 0$ <b>no solution</b> 11. $\sqrt{2m - 6} - 16 = 0$ <b>131</b> 12. $\sqrt[3]{4m + 1} - 2 = 2$ $\frac{63}{4}$ 13. $\sqrt{8n - 5} - 1 = 2$ $\frac{7}{4}$ 14. $\sqrt{1 - 4t} - 8 = -6$ $-\frac{3}{4}$ 15. $\sqrt{2t - 5} - 3 = 3$ $\frac{41}{2}$ 16. $(7v - 2)^{\frac{1}{4}} + 12 = 7$ <b>no solution</b> 17. $(3g + 1)^{\frac{1}{2}} - 6 = 4$ <b>33</b> 18. $(6u - 5)^{\frac{1}{3}} + 2 = -3$ <b>-20</b> 19. $\sqrt{2d - 5} = \sqrt{d - 1}$ <b>4</b> 20. $\sqrt{4r - 6} = \sqrt{r - 2}$ 21. $\sqrt{6x - 4} = \sqrt{2x + 10}$ $\frac{7}{2}$ 22. $\sqrt{2x + 5} = \sqrt{2x + 1}$ <b>no solution</b> 23. $3\sqrt{a} \geq 12$ <b>a ≥ 16</b> 24. $\sqrt{z + 5} + 4 \leq 13$ <b>-5 ≤ z ≤ 76</b> 25. $8 + \sqrt{2q} \leq 5$ <b>no solution</b> 26. $\sqrt{2a - 3} < 5$ $\frac{3}{2} < a < 14$ 27. $9 - \sqrt{c + 4} \leq 6$ <b>c ≥ 5</b> 28. $\sqrt[3]{x - 1} < -2$ <b>x &lt; -7</b>
<b>5-8 Practice (Average)</b> Solve each equation or inequality.	29. <b>STATISTICS</b> Statisticians use the formula $\sigma = \sqrt{v}$ to calculate a standard deviation $\sigma$ , where $v$ is the variance of a data set. Find the variance when the standard deviation is 15. <b>225</b> 30. <b>GRAVITATION</b> Helena drops a ball from 25 feet above a lake. The formula $t = \frac{1}{4}\sqrt{25 - h}$ describes the time $t$ in seconds that the ball is $h$ feet above the water. How many feet above the water will the ball be after 1 second? <b>9 ft</b>