

LESSON
11-2**Simplifying Radical Expressions****Practice and Problem Solving: A/B****Simplify each expression. Assume all variables are positive.**

1. $-3\sqrt{12r}$

2. $4^{\frac{3}{2}} \cdot 4^{\frac{5}{2}}$

3. $\frac{27^{\frac{4}{3}}}{27^{\frac{2}{3}}}$

4. $\frac{(a^2)^2}{a^{\frac{3}{2}}b^{\frac{1}{2}} \cdot b}$

5. $(27 \cdot 64)^{\frac{2}{3}}$

6. $\left(\frac{1}{243}\right)^{\frac{1}{5}}$

7. $\frac{(25x)^{\frac{3}{2}}}{5x^{\frac{1}{2}}}$

8. $(4x)^{-\frac{1}{2}} \cdot (9x)^{\frac{1}{2}}$

9. $3\sqrt[3]{81x^4y^2}$

10. $-5\sqrt[3]{-500x^5y^3}$

Solve.

11. The frequency, f , in Hz, at which a simple pendulum rocks back and forth is given by $f = \frac{1}{2\pi} \sqrt{\frac{g}{l}}$, where g is the strength of the gravitational field at the location of the pendulum, and l is the length of the pendulum.

- a. Rewrite the formula so that it gives the length l of the pendulum in terms of g and f . Then simplify the formula using the fact that the gravitational field is approximately 32 ft/s^2 .

- b. Use the equation found in part a to find the length of a pendulum, to the nearest foot, that has a frequency of 0.52 Hz.

$$3. \left(\frac{2}{11}\right)^{\frac{4}{9}}$$

$$4. \sqrt{7}$$

$$5. \sqrt[3]{11}$$

$$6. \sqrt[4]{x^5}$$

$$7. \sqrt{15^3}$$

$$8. \sqrt[3]{x^7}$$

$$9. \sqrt[4]{\left(\frac{5}{7}\right)^5}$$

Success for English Learners

1. Yes, the expression would be equivalent. The order does not matter.
2. Possible answer: Sometimes it is easier to solve a problem as a radical and sometimes it is easier to solve it as a rational expression.

LESSON 11-2

Practice and Problem Solving: A/B

$$1. -6\sqrt{3r}$$

$$2. 256$$

$$3. 9$$

$$4. \frac{a^{\frac{5}{2}}b^{\frac{1}{2}}}{b^2} \text{ or } \frac{a^{\frac{5}{2}}}{b^{\frac{3}{2}}}$$

$$5. 144$$

$$6. \frac{1}{3}$$

$$7. 25x$$

$$8. \frac{3}{2}$$

$$9. 9x\sqrt[3]{3xy^2}$$

$$10. 25xy\sqrt[3]{4x^2}$$

$$11. \text{ a. } l = \frac{g}{4\pi f^2}; l = \frac{8}{(\pi f)^2}$$

b. about 3 feet long

Practice and Problem Solving: C

$$1. x^2y^3$$

$$2. r^{\frac{23}{8}}$$

$$3. \frac{x^6}{y^3}$$

$$4. \frac{x}{5}$$

$$5. 4x^{12}y^2$$

$$6. \frac{y^2x^{\frac{3}{4}}}{x^4}$$

$$7. 4x^6$$

$$8. 27x^3$$

$$9. \frac{n^3}{m^2}$$

$$10. -25uv\sqrt[3]{6u^2v^2}$$

$$11. \text{ a. } A = V^{\frac{2}{3}}$$

$$\text{ b. } A = V^{\frac{2}{3}} = 9261^{\frac{2}{3}} = \sqrt[3]{9261^2} =$$

$$\sqrt[3]{85766121} = 441; \text{ Since}$$

$441 < 462.25$, the bouncehouse will fit.

Practice and Problem Solving: Modified

$$1. 2x$$

$$2. \frac{3}{2}$$

$$3. 2^5 = 32$$

$$4. 9x^2$$

$$5. 5^4 = 625$$

$$6. \frac{2x}{3}$$

$$7. \frac{2}{x}$$

$$8. 1$$

$$9. 125x^3$$

$$10. 6m\sqrt[3]{2m}$$

$$11. \text{ a. } r = \left(\frac{3}{4\pi}\right)^{\frac{1}{3}} V^{\frac{1}{3}}; r = 0.62V^{\frac{1}{3}}$$

b. about 3 inches