

### Classwork

#### Exercises 1–5

Simplify as much as possible.

1.  $\sqrt{17^2} =$

2.  $\sqrt{5^{10}} =$

3.  $\sqrt{4x^4} =$

4. Complete parts (a) through (c).

a. Compare the value of  $\sqrt{36}$  to the value of  $\sqrt{9} \times \sqrt{4}$ .

b. Make a conjecture about the validity of the following statement: For nonnegative real numbers  $a$  and  $b$ ,  $\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}$ . Explain.

c. Does your conjecture hold true for  $a = -4$  and  $b = -9$ ?

5. Complete parts (a) through (c).

a. Compare the value of  $\sqrt{\frac{100}{25}}$  to the value of  $\frac{\sqrt{100}}{\sqrt{25}}$ .

b. Make a conjecture about the validity of the following statement: For nonnegative real numbers  $a$  and  $b$ , when

$b \neq 0$ ,  $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$ . Explain.

c. Does your conjecture hold true for  $a = -100$  and  $b = -25$ ?

**Exercises 6–16**

Simplify each expression as much as possible, and rationalize denominators when applicable.

6.  $\sqrt{72} =$

7.  $\sqrt{\frac{17}{25}} =$

8.  $\sqrt{32x} =$

9.  $\sqrt{\frac{1}{3}} =$

10.  $\sqrt{54x^2} =$

11.  $\frac{\sqrt{36}}{\sqrt{18}} =$

$$12. \sqrt{\frac{4}{x^4}} =$$

$$13. \frac{4x}{\sqrt{64x^2}} =$$

$$14. \frac{5}{\sqrt{x^7}} =$$

$$15. \sqrt{\frac{x^5}{2}} =$$

$$16. \frac{\sqrt{18x}}{3\sqrt{x^5}} =$$

## Problem Set

Express each number in its simplest radical form.

1.  $\sqrt{6} \cdot \sqrt{60} =$

2.  $\sqrt{108} =$

3. Pablo found the length of the hypotenuse of a right triangle to be  $\sqrt{45}$ . Can the length be simplified? Explain.

4.  $\sqrt{12x^4} =$

5. Sarahi found the distance between two points on a coordinate plane to be  $\sqrt{74}$ . Can this answer be simplified? Explain.

6.  $\sqrt{16x^3} =$

7.  $\frac{\sqrt{27}}{\sqrt{3}} =$

8. Nazem and Joffrey are arguing about who got the right answer. Nazem says the answer is  $\frac{1}{\sqrt{3}}$ , and Joffrey says the answer is  $\frac{\sqrt{3}}{3}$ . Show and explain that their answers are equivalent.

9.  $\sqrt{\frac{5}{8}} =$

10. Determine the area of a square with side length  $2\sqrt{7}$  in.