

# 10-2 Practice

## Simplifying Radicals

Form K

Simplify each radical expression.

1.  $\sqrt{196}$  **14**

2.  $\sqrt{28}$   **$2\sqrt{7}$**

3.  $-\sqrt{275}$   **$-5\sqrt{11}$**

4.  $3\sqrt{12}$   **$6\sqrt{3}$**

5.  $-5\sqrt{128}$   **$-40\sqrt{2}$**

6.  $9a\sqrt{243}$   **$81a\sqrt{3}$**

7.  $\sqrt{324x^2}$   **$18x$**

8.  $3\sqrt{27m^4n}$   **$9m^2\sqrt{3n}$**

9.  $-2\sqrt{147a^2b^4}$   **$-14ab^2\sqrt{3}$**

Simplify each product.

10.  $\sqrt{12} \cdot \sqrt{20}$   **$4\sqrt{15}$**

11.  $2\sqrt{18} \cdot \sqrt{75}$   **$30\sqrt{6}$**

12.  $\frac{1}{2}\sqrt{72} \cdot 3\sqrt{48}$   **$36\sqrt{6}$**

13.  $10\sqrt{20} \cdot (-9\sqrt{27})$   
 **$-540\sqrt{15}$**

14.  $\sqrt{24a} \cdot \sqrt{32b}$   
 **$16\sqrt{3ab}$**

15.  $\sqrt{15x} \cdot \sqrt{20xy}$   
 **$10x\sqrt{3y}$**

16.  $3\sqrt{50f^2g^3} \cdot \sqrt{63fg}$   
 **$45fg^2\sqrt{14f}$**

17.  $\sqrt{xy^7z^2} \cdot \sqrt{x^2yz^3}$   
 **$xy^4z^2\sqrt{xz}$**

18.  $4\sqrt{15hk^2} \cdot (-8\sqrt{5hk})$   
 **$-160hk\sqrt{3k}$**

19. A carpenter is building rectangular walls for a room addition. The width of a section of wall is two times the height  $h$ . Each section has a brace that connects two opposite corners of the section. What is a simplified expression for the length of a brace?  **$h\sqrt{5}$**

20. A walking path is shaped like a rectangle with a width 7 times its length  $l$ . What is a simplified expression for the distance between opposite corners of the walking path?  **$5l\sqrt{2}$**

# 10-2 Practice (continued)

## Simplifying Radicals

Form K

Simplify each radical expression.

21.  $\sqrt{\frac{36}{25}}$   $\frac{6}{5}$

22.  $\frac{1}{\sqrt{7}}$   $\frac{\sqrt{7}}{7}$

23.  $-5\sqrt{\frac{121}{361}}$   $-\frac{55}{19}$

24.  $\frac{\sqrt{6}}{\sqrt{3y}}$   $\frac{\sqrt{2y}}{y}$

Explain why each radical expression is or is not in simplified form.

25.  $\frac{\sqrt{12n}}{n}$

No,  $\frac{\sqrt{12n}}{n}$  can be simplified to  $\frac{2\sqrt{3n}}{n}$ .

26.  $\frac{5}{\sqrt{5}}$

No, there is a radical in the denominator.  $\frac{5}{\sqrt{5}}$  simplifies to  $\sqrt{5}$ .

27.  $5\sqrt{2}$

Yes, there is not a radical in the denominator and the radicand is in lowest terms.

28.  $12\sqrt{24}$

No,  $12\sqrt{24}$  can be simplified to  $24\sqrt{6}$ .

Simplify each radical expression.

29.  $\frac{\sqrt{s^3}}{\sqrt{t^3}}$   $\frac{s\sqrt{st}}{t^2}$

30.  $\frac{\sqrt{120}}{\sqrt{6}}$   $2\sqrt{5}$

31.  $\frac{-5\sqrt{3}}{\sqrt{12}}$   $-\frac{5}{2}$

32.  $\sqrt{\frac{5x}{49x^2}}$   $\frac{\sqrt{5x}}{7x}$

33. **Writing** Describe when it is necessary to rationalize the denominator.

Explain how you do this. Provide an example to demonstrate.

You rationalize the denominator if there is a radical that cannot be simplified to a rational number in the denominator. You do this by multiplying both the numerator and the denominator by the same radical that is in the denominator. For example,  $\frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$ .