# 7.1 Simplifying a Radical Expression

## • Example 1

Simplify each radical expression. Assume all variables are positive.

(*a*) $\sqrt{32} = \sqrt{2^5} = \sqrt{2^2 \cdot 2^2 \cdot 2} = \sqrt{2^2} \cdot \sqrt{2^2} \cdot \sqrt{2} = 2 \cdot 2 \cdot \sqrt{2} = 4\sqrt{2}$

(*b*) $\sqrt{75a^3b} = \sqrt{25a^2 \cdot 3ab} = \sqrt{5^2a^2 \cdot 3ab} = 5a\sqrt{3ab}$

(*c*) $\sqrt[3]{8x^3y \cdot 2xy^2} = \sqrt[3]{8x^3y^3 \cdot 2x} = \sqrt[3]{2^3x^3y^3} \cdot \sqrt[3]{2x} = 2xy\sqrt[3]{2x}$

### CHECK YOURSELF 1

Write in simplest radical form.

**a.** $\sqrt{50}$ **b.** $\sqrt{32a^3}$ **c.** $\sqrt[3]{-16x^4y^5}$

### CHECK YOURSELF ANSWER

**1. (a)** $5\sqrt{2}$; **(b)** $4a\sqrt{2a}$; **(c)** $-2xy\sqrt[3]{2xy^2}$.

# 7.1 Exercises

Name

Section Date

ANSWERS

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.

Write in simplest radical form.

**1.** $\sqrt{63x^4}$

**2.** $\sqrt{54w^4}$

**3.** $\sqrt{75a^5}$

**4.** $\sqrt{98m^3}$

**5.** $\sqrt{80x^2y^3}$

**6.** $\sqrt{108p^5q^2}$

**7.** $\sqrt[3]{-54a^8b^6}$

**8.** $\sqrt[3]{108x^4y^5}$

**9.** $\sqrt[5]{-64a^5b^8}$

**10.** $\sqrt[5]{81n^{15}}$

**11.** $\sqrt[3]{56p^6q^{10}}$

**12.** $\sqrt[3]{-64x^{10}y^5}$