

**EXAMPLE 2** Multiply radicals

$$\begin{aligned} \text{a. } \sqrt{6} \cdot \sqrt{6} &= \sqrt{6 \cdot 6} \\ &= \sqrt{36} \\ &= 6 \end{aligned}$$

Product property of radicals

Multiply.

Simplify.

$$\begin{aligned} \text{b. } \sqrt{3x} \cdot 4\sqrt{x} &= 4\sqrt{3x \cdot x} \\ &= 4\sqrt{3x^2} \\ &= 4 \cdot \sqrt{3} \cdot \sqrt{x^2} \\ &= 4x\sqrt{3} \end{aligned}$$

Product property of radicals

Multiply.

Product property of radicals

Simplify.

$$\begin{aligned} \text{c. } \sqrt{7xy^2} \cdot 3\sqrt{x} &= 3\sqrt{7xy^2 \cdot x} \\ &= 3\sqrt{7x^2y^2} \\ &= 3 \cdot \sqrt{7} \cdot \sqrt{x^2} \cdot \sqrt{y^2} \\ &= 3xy\sqrt{7} \end{aligned}$$

Product property of radicals

Multiply.

Product property of radicals

Simplify.

**WRITE RADICALS**

When writing a product involving a radical, write the radical last to avoid confusion. For instance, if you write the product of  $x$  and  $\sqrt{2}$  as  $\sqrt{2}x$ , it might be read as  $\sqrt{2x}$ .

**KEY CONCEPT***For Your Notebook***Quotient Property of Radicals**

**Words** The square root of a quotient equals the quotient of the square roots of the numerator and denominator.

**Algebra**  $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$  where  $a \geq 0$  and  $b > 0$

**Example**  $\sqrt{\frac{16}{25}} = \frac{\sqrt{16}}{\sqrt{25}} = \frac{4}{5}$

**EXAMPLE 3** Use the quotient property of radicals

$$\begin{aligned} \text{a. } \sqrt{\frac{13}{100}} &= \frac{\sqrt{13}}{\sqrt{100}} \\ &= \frac{\sqrt{13}}{10} \end{aligned}$$

Quotient property of radicals

Simplify.

$$\begin{aligned} \text{b. } \sqrt{\frac{7}{x^2}} &= \frac{\sqrt{7}}{\sqrt{x^2}} \\ &= \frac{\sqrt{7}}{x} \end{aligned}$$

Quotient property of radicals

Simplify.

**GUIDED PRACTICE** for Examples 2 and 3

2. Simplify (a)  $\sqrt{2x^3} \cdot \sqrt{x}$  and (b)  $\sqrt{\frac{1}{y^2}}$ .