Name _____ Class _____ Date _____

Reteaching 7-2

Multiplying and Dividing Radical Expressions

OBJECTIVE: Rationalizing the denominator and simplifying

MATERIALS: None

- If $\sqrt[n]{a}$ and $\sqrt[n]{b}$ are real numbers and $b \neq 0$, then $\frac{\sqrt[n]{a}}{\sqrt[n]{b}} = \sqrt[n]{\frac{a}{b}}$.
- Rationalizing the denominator means that you are rewriting the expression so that no radicals appear in the denominator and there are no fractions inside the radical.

Example

Rationalize the denominator and simplify. Assume that all variables are positive.

$$\frac{\sqrt{9y}}{\sqrt{2x}} = \sqrt{\frac{9y}{2x}}$$ ← **Rewrite as a square root of a fraction.**

$$= \sqrt{\frac{9y \cdot 2x}{2x \cdot 2x}}$$ ← **Make the denominator a perfect square.**

$$= \sqrt{\frac{18xy}{4x^2}}$$ ← **Simplify.**

$$= \frac{\sqrt{18xy}}{\sqrt{2^2 \cdot x^2}}$$

$$= \frac{\sqrt{18xy}}{2x}$$

$$= \frac{\sqrt{3^2 \cdot 2 \cdot x \cdot y}}{2x}$$ ← **Simplify the numerator.**

$$= \frac{3\sqrt{2xy}}{2x}$$

Exercises

Rationalize the denominator of each expression. Assume that all variables are positive.

1. $\frac{\sqrt{5}}{\sqrt{x}}$

2. $\frac{\sqrt[3]{6ab^2}}{\sqrt[3]{2a^4b}}$

3. $\frac{\sqrt[4]{9y}}{\sqrt[4]{x}}$

4. $\frac{\sqrt{10xy^3}}{\sqrt{12y^2}}$

5. $\frac{4\sqrt[3]{k^9}}{16\sqrt[3]{k^5}}$

6. $\sqrt{\frac{3x^5}{5y}}$

7. $\frac{\sqrt[4]{10}}{\sqrt[4]{z^2}}$

8. $\sqrt[3]{\frac{19a^2b}{abc^4}}$