

11-1 Study Guide and Intervention *(continued)****Simplifying Radical Expressions***

Quotient Property of Square Roots A fraction containing radicals is in simplest form if no radicals are left in the denominator. The **Quotient Property of Square Roots** and **rationalizing the denominator** can be used to simplify radical expressions that involve division. When you rationalize the denominator, you multiply the numerator and denominator by a radical expression that gives a rational number in the denominator.

Quotient Property of Square RootsFor any numbers a and b , where $a \geq 0$ and $b \geq 0$, $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$.**Example****Simplify $\sqrt{\frac{56}{45}}$.**

$$\sqrt{\frac{56}{45}} = \sqrt{\frac{4 \cdot 14}{9 \cdot 5}}$$

$$= \frac{2 \cdot \sqrt{14}}{3 \cdot \sqrt{5}}$$

Simplify the numerator and denominator.

$$= \frac{2\sqrt{14}}{3\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}}$$

Multiply by $\frac{\sqrt{5}}{\sqrt{5}}$ to rationalize the denominator.

$$= \frac{2\sqrt{70}}{15}$$

Product Property of Square Roots

Exercises**Simplify.**

1. $\frac{\sqrt{9}}{\sqrt{18}}$

2. $\frac{\sqrt{8}}{\sqrt{24}}$

3. $\frac{\sqrt{100}}{\sqrt{121}}$

4. $\frac{\sqrt{75}}{\sqrt{3}}$

5. $\frac{8\sqrt{2}}{2\sqrt{8}}$

6. $\sqrt{\frac{2}{5}} \cdot \sqrt{\frac{6}{5}}$

7. $\sqrt{\frac{3}{4}} \cdot \sqrt{\frac{5}{2}}$

8. $\sqrt{\frac{5}{7}} \cdot \sqrt{\frac{2}{5}}$

9. $\sqrt{\frac{3a^2}{10b^6}}$

10. $\sqrt{\frac{x^6}{y^4}}$

11. $\sqrt{\frac{100a^4}{144b^8}}$

12. $\sqrt{\frac{75b^3c^6}{a^2}}$

13. $\frac{\sqrt{4}}{3 - \sqrt{5}}$

14. $\frac{\sqrt{8}}{2 + \sqrt{3}}$

15. $\frac{\sqrt{5}}{2 + \sqrt{5}}$

16. $\frac{\sqrt{8}}{2\sqrt{7} + 4\sqrt{10}}$