

**9.1 Simplifying Radical Expressions Cube Roots & Rationalizing DAY FIVE Worksheet****Quotient Property of Square Roots**

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

**Numbers**  $\sqrt{\frac{3}{4}} = \frac{\sqrt{3}}{\sqrt{4}} = \frac{\sqrt{3}}{2}$

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

**Extra Practice**

In Exercises 1–12, simplify the expression.

1.  $\sqrt{24}$

2.  $-\sqrt{48}$

3.  $\sqrt{162g^6}$

4.  $-\sqrt{512h^7}$

5.  $\sqrt{\frac{25}{64}}$

6.  $-\sqrt{\frac{6}{49}}$

7.  $-\sqrt{\frac{196}{r^4}}$

8.  $\sqrt{\frac{49x^3}{64y^2}}$

9.  $\sqrt[3]{-135}$

10.  $\sqrt[3]{729}$

11.  $-\sqrt[3]{-192x^5}$

12.  $\sqrt[3]{\frac{12a^6}{512b^4}}$

In Exercises 13–20, simplify the expression.

13.  $\frac{\sqrt{15}}{\sqrt{500}}$

14.  $\sqrt{\frac{8}{100}}$

15.  $\frac{\sqrt{3x^2y^3}}{\sqrt{80xy^3}}$

16.  $\frac{8}{\sqrt[3]{16}}$

17.  $\frac{5}{-3 - 3\sqrt{3}}$

18.  $\frac{3}{4 + 4\sqrt{5}}$

19.  $\frac{4}{\sqrt{2} - 5\sqrt{3}}$

20.  $\frac{\sqrt{5}}{\sqrt{3} + \sqrt{5}}$

21. The ratio of the length to the width of a *golden rectangle* is  $(1 + \sqrt{5}) : 2$ . The length of a golden rectangle is 62 meters. What is the width? Round your answer to the nearest meter.

In Exercises 22–27, simplify the expression.

22.  $3\sqrt{8} + 3\sqrt{2}$

23.  $2\sqrt{18} - 2\sqrt{20} - 2\sqrt{5}$

24.  $3\sqrt{12} + 3\sqrt{18} + 2\sqrt{27}$

25.  $2\sqrt{5}(\sqrt{6} + 2)$

26.  $(\sqrt{7} - \sqrt{3})(\sqrt{7} + \sqrt{3})$

27.  $\sqrt[3]{2}(\sqrt[3]{108} - \sqrt[3]{135})$