

- multiply/divide first  
- reduce last

Name Schlansky  
Mr. Schlansky

Date \_\_\_\_\_  
Pre-Calculus

## Multiplying and Dividing Radicals

Perform the given operation and express in simplest form

1.  $\sqrt{10x^2y^5} \cdot \sqrt{5xy^4}$

$$\begin{aligned} &\sqrt{50x^3y^9} \\ &\sqrt{25x^2y^8} \sqrt{2xy} \\ &5xy^4 \sqrt{2xy} \end{aligned}$$

2.  $\sqrt[3]{16x^3y^6} \cdot \sqrt[3]{8xy^3}$

$$\begin{aligned} &\sqrt[3]{128x^4y^9} \\ &\sqrt[3]{64x^3y^9} \sqrt[3]{2x} \\ &4xy^3 \sqrt[3]{2x} \end{aligned}$$

3.  $5\sqrt{12y} \cdot 2\sqrt{3x^3y}$

$$\begin{aligned} &10\sqrt{36x^3y^2} \\ &10\sqrt{36x^2y^2} \sqrt{x} \\ &10(6xy) \sqrt{x} \\ &60xy \sqrt{x} \end{aligned}$$

4.  $6x^2\sqrt[3]{9x^4y^5} \cdot 2x^2y\sqrt[3]{6x^2y^2}$

$$\begin{aligned} &12x^3y \sqrt[3]{54x^6y^7} \\ &12x^3y \sqrt[3]{27x^6y^6} \sqrt[3]{2y} \\ &12x^3y (3x^2y^2)^3 \sqrt[3]{2y} \\ &36x^5y^3 \sqrt[3]{2y} \end{aligned}$$

5.  $-2\sqrt{5xy^3} \cdot 4\sqrt{6x^4y^2}$

$$\begin{aligned} &-8\sqrt{30x^5y^5} \\ &-8\sqrt{x^4y^4} \sqrt{30xy} \\ &-8x^2y^2 \sqrt{30xy} \end{aligned}$$

6.  $2y^2\sqrt[3]{25y^6} \cdot xy\sqrt[3]{10x^5y^3}$

$$\begin{aligned} &2xy^3 \sqrt[3]{250x^5y^9} \\ &2xy^3 \sqrt[3]{125x^3y^9} \sqrt[3]{2x^2} \\ &2xy^3 (5xy^3)^3 \sqrt[3]{2x^2} \\ &10x^2y^6 \sqrt[3]{2x^2} \end{aligned}$$

5  
4  
9  
6  
25  
125  
16  
19  
24  
81  
100

PC

8

27

64

125

$$7. \frac{8x^3 \sqrt{40x^5 y^2}}{2x \sqrt{10xy}}$$

$$4x^2 \sqrt{4x^4 y}$$

$$4x^2 \sqrt{4x^4} \sqrt{y}$$

$$4x^2 (2x^2) \sqrt{y}$$

$$8x^4 \sqrt{y}$$

$$9. \frac{10 \sqrt{250x^4 y^5 z^2}}{2 \sqrt{5xyz}}$$

$$5 \sqrt{50x^3 y^4 z}$$

$$5 \sqrt{25x^2 y^4} \sqrt{2xz}$$

$$5(5xy^2) \sqrt{2xz}$$

$$25xy^2 \sqrt{2xz}$$

$$11. \frac{32x^8 \sqrt{96x^5 y^9}}{8x^6 \sqrt{3xy^2}}$$

$$4x^2 \sqrt{32x^4 y^7}$$

$$4x^2 \sqrt{16x^4 y^6} \sqrt{2y}$$

$$4x^2 (4x^2 y^3) \sqrt{2y}$$

$$16x^4 y^3 \sqrt{2y}$$

$$8. \frac{42x^2 y^5 \sqrt[3]{160x^9 y^{10}}}{6xy^2 \sqrt[3]{4x^2 y^4}}$$

$$7xy^3 \sqrt[3]{40x^7 y^6}$$

$$7xy^3 \sqrt[3]{8x^6 y^6} \sqrt[3]{5x}$$

$$7xy^3 (2x^2 y^2) \sqrt[3]{5x}$$

$$14x^3 y^5 \sqrt[3]{5x}$$

$$14x^3 y^5 \sqrt[3]{5x}$$

$$10. \frac{20xy^4 \sqrt[3]{48x^8 y^{12}}}{4x^3 \sqrt[3]{3x^2 y^3}}$$

$$5y^4 \sqrt[3]{16x^6 y^9}$$

$$5y^4 \sqrt[3]{8x^3 y^9} \sqrt[3]{2}$$

$$5y^4 (2x^2 y^3) \sqrt[3]{2}$$

$$10x^2 y^7 \sqrt[3]{2}$$

$$12. \frac{15y^4 \sqrt[3]{96x^{20} y^{15}}}{3y^3 \sqrt[3]{4x^4 y^8}}$$

$$5y^3 \sqrt[3]{24x^{16} y^7}$$

$$5y^3 \sqrt[3]{8x^{15} y^6} \sqrt[3]{3xy}$$

$$5y^3 (2x^5 y^2) \sqrt[3]{3xy}$$

$$10x^5 y^5 \sqrt[3]{3xy}$$