

Warm Up:

$$3\sqrt[3]{64a^3b^7c^2}$$

$$12ab^2 \sqrt{bc^2}$$

$$\left. \begin{array}{l} 3\sqrt[3]{64a^3b^7c^2} \\ 12ab^2 \sqrt{bc^2} \end{array} \right\} \begin{array}{l} \frac{\sqrt{5} \cdot \sqrt{10}}{\sqrt{2} \cdot \sqrt{8}} = \frac{\sqrt{50}}{\sqrt{16}} = \frac{\sqrt{50}}{4} \\ \frac{\sqrt{800}}{16} \\ \frac{20\sqrt{2}}{16} \\ \frac{5\sqrt{2}}{4} \end{array}$$

To simplify an expression as much as possible that involves radicands, we can combine like terms when the radicands are the same.

$$2x + 3x = 5x \quad \longrightarrow \quad 2\sqrt{5} + 3\sqrt{5} = 5\sqrt{5}$$

Treat similar radicals the same as similar variables!

$$2\sqrt{3} + 4\sqrt{5}$$

$$2\sqrt{3} + 6\sqrt{3} = 8\sqrt{3}$$

For example:

$$1\sqrt{2} + 3\sqrt{2} = 4\sqrt{2}$$

$$1\sqrt{2x} - 4\sqrt{2x} = -3\sqrt{2x}$$

$$6\sqrt{6} + 4\sqrt{6} =$$

$$10\sqrt{6}$$

$$4\sqrt{7} - 3\sqrt{7} =$$

$$\sqrt{7}$$

Sometimes the radicals are not completely simplified!
 Make sure you simplify them first!

$$2\sqrt{3} - 4\sqrt{2} + \sqrt{18} =$$

92
3√2

$2\sqrt{3} - \sqrt{2}$

$$2\sqrt{2} + \sqrt{8} - 3\sqrt{5} + 3\sqrt{2} =$$

2√2

$7\sqrt{2} - 3\sqrt{5}$

$$3\sqrt{8} + 3\sqrt{2} - 4 =$$

6√2

$9\sqrt{2} - 4$



Practice:

1. $2\sqrt{2} + \sqrt{5} - 6\sqrt{2}$

$$-4\sqrt{2} + \sqrt{5}$$

2. $4\sqrt{3} - \sqrt{27}$

$$\sqrt{3}$$

3. $3\sqrt{7} - 5\sqrt{7} + 2\sqrt{7}$

$$0$$

4. $8\sqrt{5} + \sqrt{125}$

$$13\sqrt{5}$$

5. $3\sqrt{11} + \sqrt{176} + \sqrt{11}$

$$8\sqrt{11}$$

6. $2\sqrt{18} - 3\sqrt{8}$

$$6\sqrt{2} - 6\sqrt{2}$$
$$0$$

Simplifying radical expressions using the distributive property

$$\sqrt{2}(3\sqrt{6} + 4\sqrt{24})$$

$$3\sqrt{12} + 4\sqrt{48}$$

$$6\sqrt{3}$$

x

$$\begin{matrix} 2 & 24 \\ \sqrt{2} & \sqrt{2} \\ \hline 2 & 24 \end{matrix}$$

$$16\sqrt{3}$$

$$22\sqrt{3}$$

$$3\sqrt{6} + 8\sqrt{6}$$

$$52 \cdot 11\sqrt{6}$$

$$3\sqrt{3}(3\sqrt{3} + 4\sqrt{6}) + 7$$

$$9\sqrt{9} \cdot 27 + 12\sqrt{18} + 7$$

$$34 + 36\sqrt{2}$$

$$4\sqrt{2}(-3\sqrt{8} + 5\sqrt{9} - 8) + 6\sqrt{2}$$

$$\begin{matrix} 15 \\ \sqrt{2} \\ 7 \end{matrix}$$

$$-12\sqrt{16} + 28\sqrt{2} + 6\sqrt{2}$$

$$-12 + 4$$

$$-48 + 34\sqrt{2}$$

$$\sqrt{3}(5\sqrt{27} - 2\sqrt{3})$$

$$4\sqrt{2}(3\sqrt{8} + 7\sqrt{24}) - 2\sqrt{2}$$

$$4 + \sqrt{5}(3\sqrt{10} + 4\sqrt{20}) - 6\sqrt{2}$$

$$5\sqrt{5} - \sqrt{25}$$

$$3\sqrt{2x^3} + 4\sqrt{8x^3}$$

$$\sqrt{\frac{72}{9}} + \sqrt{50}$$

$$4x\sqrt{16x^3} - 2\sqrt{x^5}$$

$$\sqrt{2} + \sqrt{6} + \sqrt{2} - \sqrt{6} - 2\sqrt{2}$$

$$5\sqrt{5} - \sqrt{25}$$

$$3\sqrt{2x^3} + 4\sqrt{8x^3}$$

$$\sqrt{\frac{72}{9}} + \sqrt{50}$$

$$4x\sqrt{16x^3} - 2\sqrt{x^5}$$

$$\sqrt{2} + \sqrt{6} + \sqrt{2} - \sqrt{6} - 2\sqrt{2}$$

January 13, 2020

