

Lesson 5.5- SWBAT add and subtract radicals.

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Simplify each of the following:

1) $\sqrt{48x^2y^3} \rightarrow \sqrt{4x^2} \sqrt{3y^3}$
 $\sqrt{16} \cdot \sqrt{3}$
 $4x \sqrt{3y}$

2) $\sqrt{36x^4}$
 $6x^2$

3) $\sqrt{80}$
 $\sqrt{16} \sqrt{5}$
 $4\sqrt{5}$

4) $\sqrt{175}$
 $\sqrt{25} \sqrt{7}$
 $5\sqrt{7}$

Perfect Squares: 4, 9, 16, 25, 36, 49, 64, 81, 100

You can **only** add and subtract LIKE radicals.
 Like Radicals: have the same radicand. (number under the radical)

To Add or Subtract Radicals:

- 1) Simplify the radical
- 2) Combine like radicals (only change the coefficients)

Examples:

1) $3\sqrt{2} - 2\sqrt{2}$
 $\sqrt{2}$

2) $5\sqrt{4} + \sqrt{4}$
 $6\sqrt{4}$
 $6 \cdot 2 = 12$

3) $\sqrt{48} + \sqrt{12} - \sqrt{3}$
 $\sqrt{16} \cdot \sqrt{3} + \sqrt{4} \sqrt{3} - \sqrt{3}$
 $4\sqrt{3} + 2\sqrt{3} - \sqrt{3}$
 $5\sqrt{3}$

5) $-8\sqrt{6} + \sqrt{10} \sqrt{8} + \sqrt{216}$
 $\sqrt{36} \cdot \sqrt{6}$
 $-8\sqrt{6} + 20\sqrt{2} + 6\sqrt{6}$
 $-2\sqrt{6} + 20\sqrt{2}$
 4, 9, 16, 25, 36, 49, 64, 81, 100

4) $\sqrt{125} + \sqrt{12} - \sqrt{45} + \sqrt{75}$
 $\sqrt{25} \cdot \sqrt{5} + \sqrt{4} \sqrt{3} - \sqrt{9} \sqrt{5} + \sqrt{25} \sqrt{3}$
 $5\sqrt{5} + 2\sqrt{3} - 3\sqrt{5} + 5\sqrt{3}$
 $2\sqrt{5} + 7\sqrt{3}$

6) $\sqrt{50x^4} + \sqrt{200x^4}$
 $\sqrt{25} \cdot \sqrt{2} \cdot \sqrt{100} \cdot \sqrt{2}$
 $5x^2\sqrt{2} + 10x^2\sqrt{2}$
 $15x^2\sqrt{2}$

7) $9\sqrt{x^3} - \sqrt{9x^3}$
 $9x\sqrt{x} - 3x\sqrt{x}$
 $6x\sqrt{x}$

9) $\sqrt{8mn^2} - 2n\sqrt{18m}$
 $\sqrt{4n^2} \sqrt{2m} - 2n \cdot 3\sqrt{2m}$
 $2n\sqrt{2m} - 6n\sqrt{2m}$
 $-4n\sqrt{2m}$

8) $-2\sqrt{5x} + 3\sqrt{20x}$
 $-2\sqrt{5x} + 6\sqrt{5x}$
 $4\sqrt{5x}$

10) $3\sqrt{18} - 2\sqrt{2}$
 $3 \cdot 3\sqrt{2} - 2\sqrt{2}$
 $9\sqrt{2} - 2\sqrt{2}$
 $7\sqrt{2}$

1) $-2\sqrt{20} + 2\sqrt{18} - 2\sqrt{5}$

2) $2\sqrt{24m} - 2\sqrt{54m}$

3) $-\sqrt{5wz} + 2\sqrt{5wz}$

14) $\sqrt{5y^2} + y\sqrt{45}$

15) $-\sqrt{27} - 3\sqrt{45} - \sqrt{20} + 2\sqrt{45}$

16) $-3\sqrt{3} - \sqrt{8} - 3\sqrt{3}$