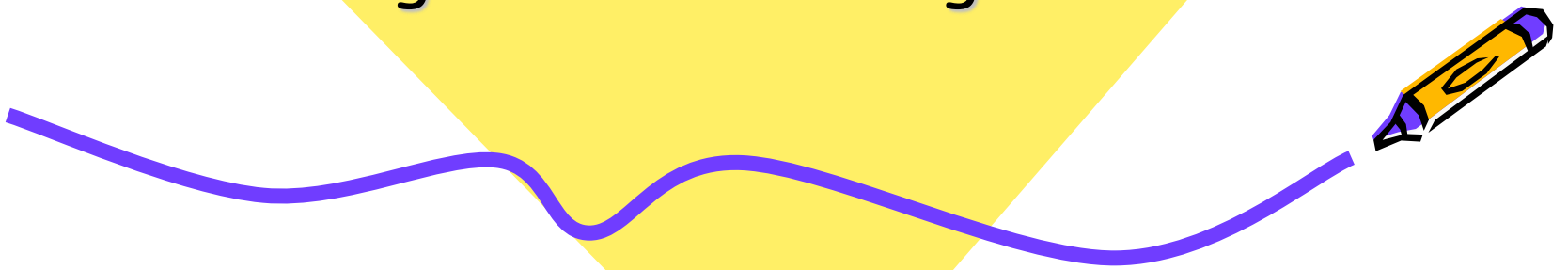# Geometry

Adding and Subtracting Radicals

Adding and Subtracting Radicals

To add and subtract radical expressions, the radical portion must be identical, then simply add and subtract the coefficients.
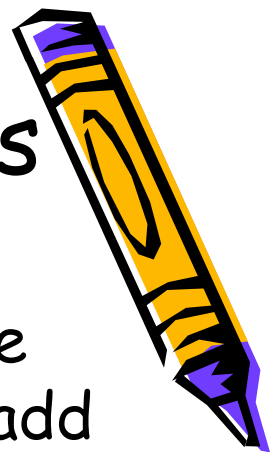
Think of this like combining like terms for variables

$$\sqrt{2} + \sqrt{2} = 2\sqrt{2}$$

$$4\sqrt{3} + 2\sqrt{3} = 6\sqrt{3}$$

$$\sqrt{2} + \sqrt{3}$$ cannot be done since the radical portions are different

Simplifying Radicals

Simplify each radical:

1) $\sqrt{2} + 5\sqrt{2}$

2) $-5\sqrt{7} + 2\sqrt{7}$

3) $3\sqrt{5} + 6\sqrt{2} - 6\sqrt{5}$

4) $-4\sqrt{3x} + 6\sqrt{7y} - 3\sqrt{3x}$
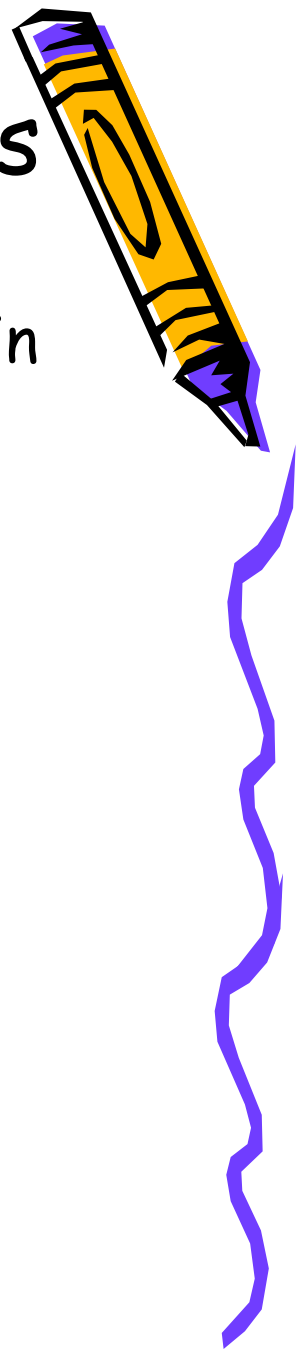
Adding and Subtracting Radicals

In many cases the radicals will not be given in simplest form:

$$\sqrt{2} + \sqrt{8}$$

We need to simplify the terms first.
Then add if possible.

$$\sqrt{2} + 2\sqrt{2}$$

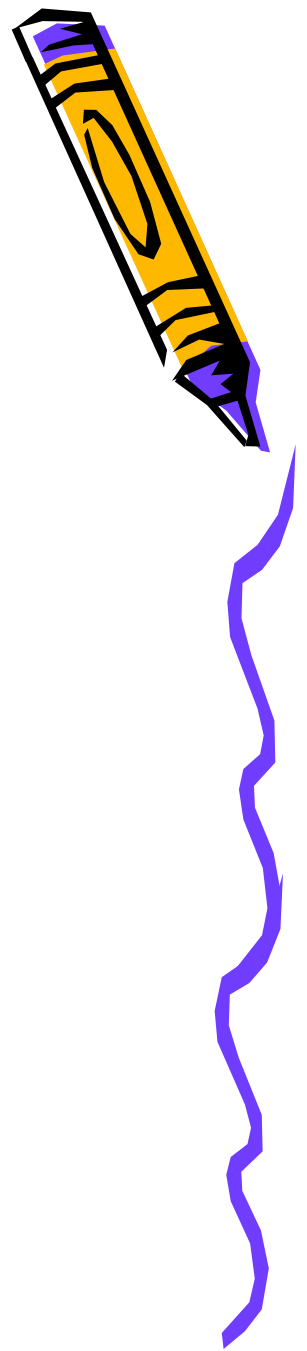$$3\sqrt{2}$$

Simplifying Radicals

Simplify each radical:

1) $3\sqrt{3} - \sqrt{27}$

2) $5\sqrt{5} + \sqrt{45}$

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

4) $\sqrt{50} + 6\sqrt{32}$

Simplifying Radicals

Simplify each radical:

5) $\sqrt{x} - 4\sqrt{x}$

6) $\sqrt{9x} + \sqrt{x}$

7) $x\sqrt{54} + 4x\sqrt{24}$

8) $3\sqrt{18} + 2\sqrt{12} - 2\sqrt{72}$