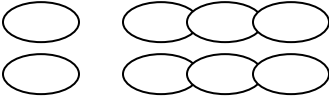<u>Operations with Radicals</u>

1. Radial expressions with more than one term are multiplied in much the same way that polynomials with more than one term are multiplied.

Example 1

$$\sqrt{5}(\sqrt{2}+\sqrt{5})$$
$$\sqrt{10}+\sqrt{25}$$
$$\sqrt{10}+5$$

Student Practice:

$$(\sqrt{2}+7)(6\sqrt{2}+3)$$

Example 2

$$(2+\sqrt{3})(4+5\sqrt{3})$$
$$2\cdot4+2(5\sqrt{3})+4\sqrt{3}+\sqrt{3}(5\sqrt{3})$$
$$8+10\sqrt{3}+4\sqrt{3}+15$$
$$23+14\sqrt{3}$$

Rationalizing the Denominator

The process of rewriting a radical expression as an equivalent expression in which the denominator no longer contains any radicals is called rationalizing the denominator.

1. If the denominator contains a square root of a natural number that is not a perfect square, multiply the numerator and the denominator by the radical.

Example 1

$$\frac{}{\sqrt{}}\cdot\frac{}{\sqrt{}}\frac{\sqrt{}}{\sqrt{}}$$
$$\frac{\sqrt{}}{}$$

$$\frac{}{\sqrt{}}$$

If the denominator contains two terms, rationalize the denominator by multiplying the numerator and the denominator by the conjugate of the denominator.