

## Multiplying Radicals

You multiply radicals the same way you multiply algebraic expressions. That is, use the Distributive Property. But remember to simplify the radicals after you have completed the multiplication.

You need to know,  $\sqrt{a} \cdot \sqrt{b} = \sqrt{ab}$

<b>Example</b>	$(3x + 2)(4x + 1)$	$(3\sqrt{x} + 2)(4\sqrt{x} + 1)$
	$12x^2 + 3x + 8x + 2$	$12\sqrt{x^2} + 3\sqrt{x} + 8\sqrt{x} + 2$
	$12x^2 + 11x + 2$	$12\sqrt{x^2} + 11\sqrt{x} + 2$

Please note everything is the same in these multiplications.

I do have to simplify the radical  $\sqrt{x^2} = x$

$$12x + 11\sqrt{x} + 2$$

*Compare the answers using just algebra to radicals, the coefficients are the same!*

**Perform the following multiplications and simplify.**

1.  $\sqrt{5}(\sqrt{2} - 3\sqrt{6})$

2.  $3\sqrt{2}(4\sqrt{2} - 1)$

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

4.  $3\sqrt{a}(\sqrt{a} + \sqrt{b})$

5.  $(5\sqrt{3} + 2)(2\sqrt{3} - 1)$

6.  $(2\sqrt{3} + 1)(5\sqrt{6} + 2)$