

## **Lesson 3 Multiplying Radicals**

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When multiplying radicals, the coefficients and radicals are multiplied separately. **Radicals should always be simplified.**

### **Examples**

#### **Multiply**

1.  $(3\sqrt{2})(4\sqrt{5})$

2.  $(3\sqrt{10})(\sqrt{2} + 2\sqrt{5})$

3.  $(2\sqrt{5} + 4\sqrt{2})(3\sqrt{2} - \sqrt{5})$

4.  $(\sqrt{5} - \sqrt{2})^2$

Identify the values of the variables for which each expression is defined, then expand and simplify.

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

6.  $(3\sqrt{x} + \sqrt{y})(3\sqrt{x} - \sqrt{y}) - (\sqrt{x} + 5\sqrt{y})^2$

**Examples****Multiply, using exponential form.**

7.  $\sqrt[4]{x^3} \cdot \sqrt{x}$

8.  $\sqrt[5]{x^4} \cdot \sqrt[3]{x}$

9.  $\sqrt{x^7} \cdot \sqrt[3]{x^5}$