

Day 6 - Multiplying Radicals - Notes

The Product Property of Radicals states the square root of a product equals the product of the square roots of the factors.

$$\sqrt{ab} = \sqrt{a} \cdot \sqrt{b} \text{ where } a \geq 0 \text{ and } b \geq 0$$

When multiplying radicals, follow the following rules:

Multiplying Radicals - RULE

1. Multiply the coefficients ^(outside #s) together.
2. Multiply the radicands ^(inside #s) together.
3. Simplify the radical.

Practice: Multiply the following radicals. Make sure they are in simplest form.

$$\begin{aligned} \text{a. } \sqrt{2} \cdot \sqrt{18} &= \sqrt{36} \\ &= \boxed{6} \end{aligned}$$

$$\begin{aligned} \text{b. } \sqrt{5} \cdot \sqrt{10} &= \sqrt{50} \\ &= \sqrt{2(5 \cdot 5)} \\ &= \boxed{5\sqrt{2}} \end{aligned}$$

$$\begin{aligned} \text{c. } \sqrt{8} \cdot \sqrt{32} &= \sqrt{256} \\ &= \boxed{16} \end{aligned}$$

$$\begin{aligned} \text{d. } 4\sqrt{6} \cdot 4\sqrt{6} &= 4\sqrt{36} \\ &= 4 \cdot 6 \\ &= \boxed{24} \end{aligned}$$

$$\begin{aligned} \text{e. } -\sqrt{6} \cdot 3\sqrt{8} &= -3\sqrt{48} \\ &= -3\sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 3} \\ &= -3 \cdot 2 \cdot 2 \sqrt{3} \\ &= \boxed{-12\sqrt{3}} \end{aligned}$$

$$\begin{aligned} \text{f. } 6\sqrt{15} \cdot \sqrt{10} &= 6\sqrt{150} \\ &= 6\sqrt{2 \cdot 3 \cdot (5 \cdot 5)} \\ &= 6 \cdot 5 \sqrt{6} \\ &= \boxed{30\sqrt{6}} \end{aligned}$$