

Multiplying Radicals

You can only multiply
outside with outside and
inside with inside.

$$\begin{aligned}\sqrt{12} \cdot 2\sqrt{6} \\ &= 2\sqrt{72} \\ &= 12\sqrt{2}\end{aligned}$$

**Multiply then
simplify if
possible.**

$$\sqrt{5} \cdot \sqrt{3} = \sqrt{15} \quad \text{Can we simplify 15?}$$

$$\begin{aligned}\sqrt{6} \cdot \sqrt{2} &= \sqrt{12} = \sqrt{2 \cdot 2 \cdot 3} \\ &\text{PRIME FACTOR} \\ &= 2\sqrt{3}\end{aligned}$$

$$6\sqrt{5} \cdot \sqrt{2} = 6\sqrt{10}$$

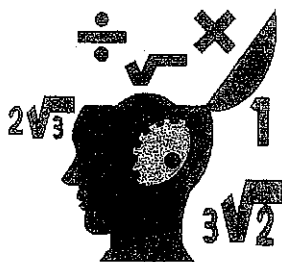
$$\sqrt{3} \cdot \sqrt{12} = \sqrt{36} = 6$$

$$\begin{aligned}\sqrt{5} \cdot \sqrt{10} &= \sqrt{50} = \sqrt{5 \cdot 5 \cdot 2} \\ &\text{Prime FACTOR} \\ &= 5\sqrt{2}\end{aligned}$$

$$\sqrt{5} \cdot \sqrt{3} = \sqrt{15}$$

$$\begin{aligned}\sqrt{6} \cdot \sqrt{2} &= \sqrt{12} = \sqrt{2 \cdot 2 \cdot 3} \\ &= 2\sqrt{3}\end{aligned}$$

How do you multiply and divide radical expressions?



When multiplying or dividing radical expression, factors under the radical are multiplied and divided while factors not under the radical are multiplied and divided separately.

Example 1:

Multiply numbers outside, and then those inside.

$$5\sqrt{6} \cdot 2\sqrt{30} =$$

$$10\sqrt{180} =$$

$$10\sqrt{36 \cdot 5} =$$

Reduce the radical and simplify.

$$60\sqrt{5}$$

$$7\sqrt{10} \cdot 4\sqrt{6} =$$

$$3\sqrt{8} \cdot 2\sqrt{3} =$$