

# Multiplying Radicals

Calculate:

$$\begin{aligned} & 2\sqrt{4} \times 3\sqrt{25} \\ & = 2(2) \times 3(5) \\ & = 4 \times 15 \\ & = 60 \end{aligned}$$

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Notice This!!

$$\begin{aligned} & \textcircled{2}\sqrt{\textcircled{4}} \times \textcircled{3}\sqrt{\textcircled{25}} \\ & = 6\sqrt{100} \\ & = 6(10) \\ & = 60 \end{aligned}$$

**\*\* Therefore, when multiplying Radicals, you multiply the radicands together and you multiply the numbers out front together!!**

#1

$$3\sqrt{6} \times 2\sqrt{15}$$

$$= (3 \times 2)\sqrt{6 \times 15}$$

$$= 6\sqrt{90}$$

$$= 6\sqrt{9 \times 10}$$

$$= 18\sqrt{10}$$

#2

$$3\sqrt{54} \times 4\sqrt{96} \rightarrow \text{Before multiplying, simplify your radicals!!}$$

$$= 3\sqrt{9 \times 6} \times 4\sqrt{16 \times 6}$$

$$= 9\sqrt{6} \times 16\sqrt{6} \rightarrow \text{Once you have simplified your answers, then multiply your radicals!!}$$

$$= 144\sqrt{36}$$

$$= 144(6)$$

$$= 864$$

$$= 72$$

#3

$$2\sqrt{3}(8\sqrt{2} - 6\sqrt{3})$$

$$3(x-2)$$

$$= 16\sqrt{6} - 12\sqrt{9}$$

$$= 16\sqrt{6} - 12(3)$$

$$= 16\sqrt{6} - 36$$

Try These:

#1

$$\begin{aligned} & 2\sqrt{75} \times 3\sqrt{27} \\ & \overset{.5}{2}\sqrt{25 \cdot 3} \cdot \overset{.3}{3} \cdot 3\sqrt{9 \cdot 3} \\ & 10\sqrt{3} \times 9\sqrt{3} \\ & 90\sqrt{9} \leftarrow \\ & 90(3) \\ & = 270 \end{aligned}$$

#2

$$\begin{aligned} & \overset{\curvearrowright}{3\sqrt{2}(2\sqrt{12} + 3\sqrt{27})} \\ & 6\sqrt{24} + 9\sqrt{54} \\ & \overset{.2}{6}\sqrt{4 \cdot 6} + \overset{.3}{9}\sqrt{9 \cdot 6} \\ & 12\sqrt{6} + 27\sqrt{6} \\ & 39\sqrt{6} \end{aligned}$$