

**Mixed
&
Entire
Radicals !!**

Mixed Radical

$$2\sqrt{3}$$

A number is in front of the radical sign. “**Mixture**”

Entire Radical

$$\sqrt{54}$$

Everything is
entirely under the
radical sign.

Calculate $\sqrt{75}$

What do you notice?

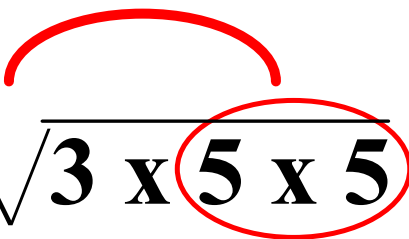
**Your answer is irrational,
therefore lets simplify!!!**

Simplify $\sqrt{75}$

Use Prime Factorization !!

Prime Factorization

Simplify $\sqrt{75}$

$$\sqrt{75} = \sqrt{3 \times 5 \times 5}$$


$$5\sqrt{3}$$

Simplify $\sqrt{63}$

$$\sqrt{3 \times 3 \times 7}$$

$$\sqrt{3 \times 3 \times 7}$$

$$3\sqrt{7}$$

Simplify $\sqrt[3]{1080}$

$$\sqrt[3]{2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 5}$$

$$\sqrt[3]{\color{red}{(2 \times 2 \times 2)} \times \color{red}{(3 \times 3 \times 3)} \times 5}$$

$$2 \times 3 \sqrt[3]{5}$$

$$6\sqrt[3]{5}$$

Simplify $\sqrt[3]{120}$

$$\sqrt[3]{2 \times 2 \times 2 \times 3 \times 5}$$

$$\sqrt[3]{\color{red}\textcircled{2 \times 2 \times 2} \times 3 \times 5}$$

$$2\sqrt[3]{3 \times 5}$$

$$2\sqrt[3]{15}$$

Try It Yourself!!!

Simplify:

a) $\sqrt{147}$

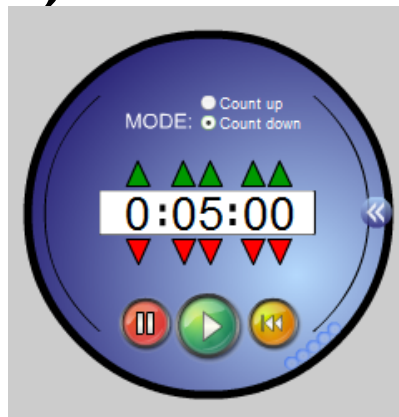
b) $\sqrt{80}$

c) $\sqrt{98}$

d) $\sqrt{81}$

e) $\sqrt{80}$

f) $\sqrt{432}$



$$\text{a) } \sqrt{147}$$

$$\text{b) } \sqrt{80}$$

$$\text{c) } \sqrt{98}$$

$$\text{a) } \sqrt{3 \times \underbrace{7 \times 7}_{7\sqrt{3}}}$$

$$\text{b) } \sqrt{\underbrace{2 \times 2}_{2 \times 2} \times \underbrace{2 \times 2 \times 5}_{4\sqrt{5}}}$$

$$\text{c) } \sqrt{2 \times \underbrace{7 \times 7}_{7\sqrt{2}}}$$

$$\text{d) } \sqrt[3]{81} \quad \text{e) } \sqrt[3]{80} \quad \text{f) } \sqrt[3]{432}$$

$$\text{d) } \sqrt[3]{\underbrace{3 \times 3 \times 3}_{\text{circled}} \times 3}$$

$$3 \sqrt[3]{3}$$

$$\text{e) } \sqrt[3]{\underbrace{2 \times 2 \times 2}_{\text{circled}} \times 2 \times 5}$$

$$2 \sqrt[3]{2 \times 5}$$

$$2 \sqrt[3]{10}$$

$$\text{f) } \sqrt[3]{\underbrace{2 \times 2 \times 2}_{\text{circled}} \times 2 \times \underbrace{3 \times 3 \times 3}_{\text{circled}}}$$

$$2 \times 3 \sqrt[3]{2}$$

$$6 \sqrt[3]{2}$$

Write $3\sqrt{12}$ as an entire radical

$$3\sqrt{12}$$

$$\sqrt{12 \times 3 \times 3}$$

$$\sqrt{108}$$

Write $2\sqrt[3]{6}$ as an entire radical

$$2\sqrt[3]{6}$$

$$\sqrt[3]{6 \times 2 \times 2 \times 2}$$

$$\sqrt[3]{48}$$

Write $4\sqrt[4]{3}$ as an entire radical

$$\frac{4\sqrt[4]{3}}{\sqrt[4]{3} \times 4 \times 4 \times 4 \times 4}$$

$$\sqrt[4]{768}$$



$$\frac{4\sqrt[4]{3}}{\sqrt[4]{3} \times 256}$$

$$\sqrt[4]{768}$$

Try It Yourself!!!

a) $6\sqrt{2}$

b) $4\sqrt[3]{7}$

c) $3\sqrt[4]{11}$

