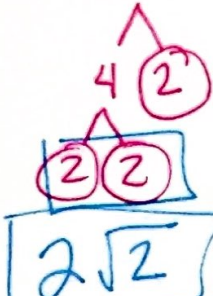


Rules for Simplifying Roots:


- ① Factor Tree
- ② List all prime factors
- ③ Find the pairs → one comes out
- ④ Multiply the outside
Multiply the inside

Simplify the expression.

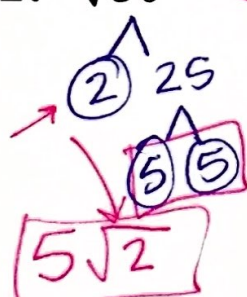
Ex. 1: $\sqrt{8} \rightarrow \sqrt{4 \cdot 2}$
 $\sqrt{4} \cdot \sqrt{2}$
 $2\sqrt{2}$




Ex. 5: $\sqrt{15} < \begin{matrix} 3 \\ 5 \end{matrix}$



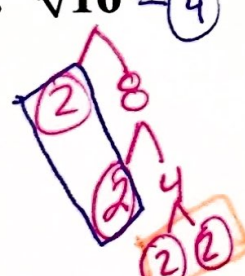
Ex. 2: $\sqrt{50}$




Ex. 6: $\sqrt{14} < \begin{matrix} 2 \\ 7 \end{matrix}$




Ex. 3: $\sqrt{16} = 4$
 $2 \cdot 2 = 4$




Ex. 7: $\sqrt{24} = 2\sqrt{6}$



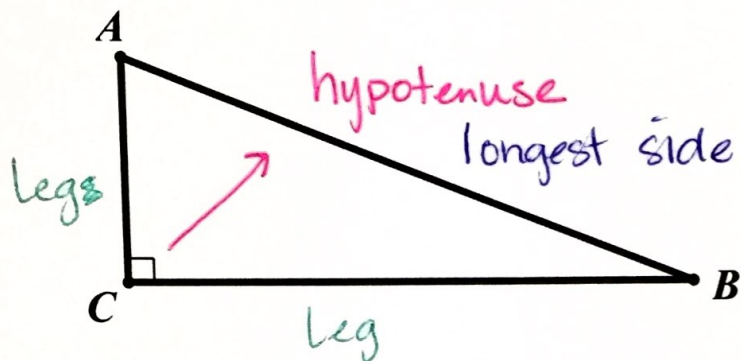
Ex. 4: $\sqrt{48} = 2 \cdot 2\sqrt{3} = 4\sqrt{3}$



Ex. 8: $\sqrt{96} = 2 \cdot 2\sqrt{2 \cdot 3} = 4\sqrt{6}$



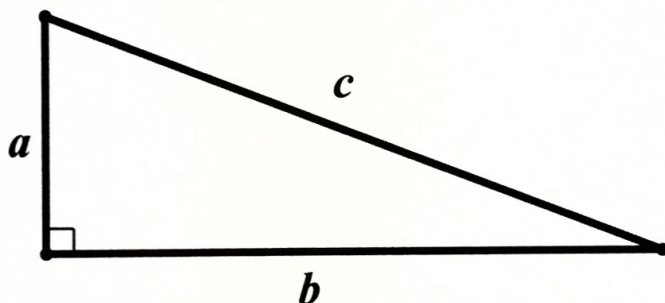
Label the sides of the right triangle as a leg or hypotenuse.



Pythagorean Theorem:

$$\text{leg}^2 + \text{leg}^2 = \text{hyp}^2$$

$$a^2 + b^2 = c^2$$



Ex. 1: Use the Pythagorean Theorem to verify that the following triangle is a right triangle.

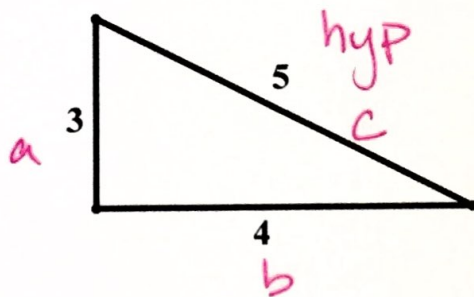
$$a^2 + b^2 = c^2$$

$$3^2 + 4^2 \stackrel{?}{=} 5^2$$

$$9 + 16 \stackrel{?}{=} 25$$

$$25 \checkmark = 25$$

Right Δ



units \rightarrow decimal

no units \rightarrow simplified root

Write an equation you could use to find the length of the missing side of each right triangle. Then find the missing length. Simplify the root AND round to the tenths place.

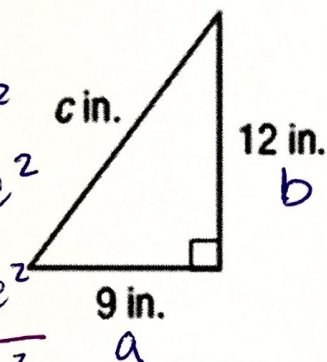
Ex. 2:

$$a^2 + b^2 = c^2$$

$$9^2 + 12^2 = c^2$$

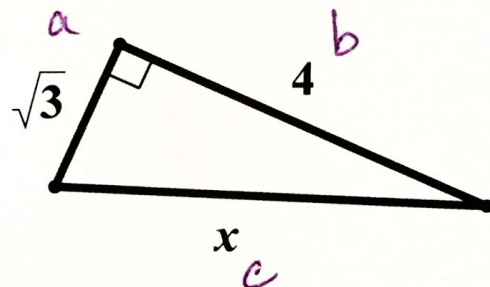
$$81 + 144 = c^2$$

$$\sqrt{225} = \sqrt{c^2}$$



$$c = 15 \text{ in.}$$

Ex. 4:



$$a^2 + b^2 = c^2$$

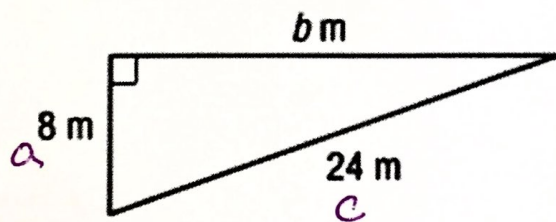
$$(\sqrt{3})^2 + 4^2 = x^2$$

$$3 + 16 = x^2$$

$$\sqrt{19} = \sqrt{x^2}$$

$$x = \sqrt{19}$$

Ex. 3:



$$a^2 + b^2 = c^2$$

$$8^2 + b^2 = 24^2$$

$$64 + b^2 = 576$$

$$\begin{array}{r} 64 + b^2 = 576 \\ -64 \\ \hline b^2 = 512 \end{array}$$

$$\sqrt{b^2} = \sqrt{512}$$

$$b = 22.6 \text{ m}$$

Determine whether each triangle with sides of given lengths is a right triangle. Justify your answer.

Ex. 5: 36 mi, 48 mi, 60 mi

$$36^2 + 48^2 \stackrel{?}{=} 60^2$$

$$1296 + 2304 \stackrel{?}{=} 3600$$

$$3600 = 3600$$

Right
 \triangle

Ex. 6: 4 ft, 7 ft, 5 ft

$$4^2 + 5^2 \stackrel{?}{=} 7^2$$

$$16 + 25 \stackrel{?}{=} 49$$

$$41 \neq 49$$

Not a
Right
 \triangle