

Pythagorean Theorem

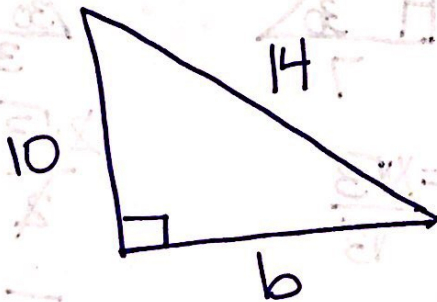
Only works in Right Triangles!

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

length of legs

length of hypotenuse

Ex:



$$10^2 + b^2 = 14^2$$

$$100 + b^2 = 196$$

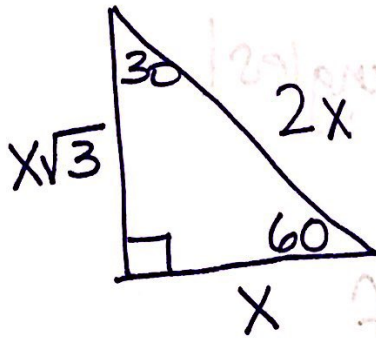
$$\sqrt{b^2} = \sqrt{96}$$

~~10~~ $3^2 \cdot 2^2 \cdot 2^2$
 $\sqrt{96} = \sqrt{3^2 \cdot 2^2 \cdot 2^2} = 3 \cdot 2 \cdot 2 = 12$
 $b = 12$

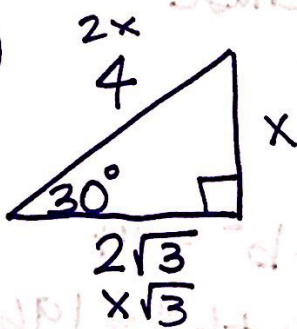
$$b = 4\sqrt{6}$$

30° - 60° - 90°

Pythagorean on Triangles

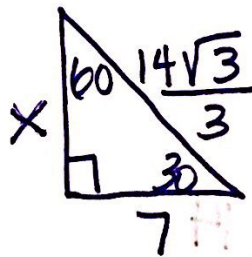


Ex: (1)



$$x = 2$$

(2)

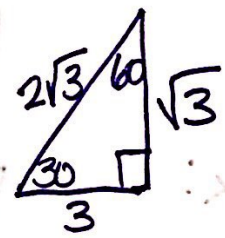


$$\frac{7}{\sqrt{3}} = \frac{x\sqrt{3}}{\sqrt{3}}$$

$$\frac{7 \cdot \sqrt{3}}{\sqrt{3} \cdot \sqrt{3}} = x$$

$$\boxed{\frac{7\sqrt{3}}{3} = x}$$

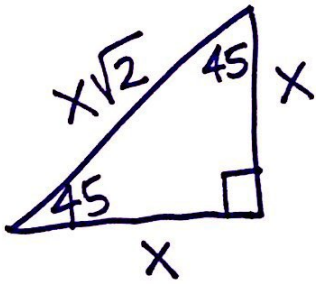
(3)



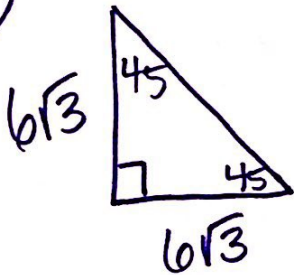
$$\left. \begin{aligned} \frac{2\sqrt{3}}{2} &= \frac{2x}{2} \\ \sqrt{3} &= x \end{aligned} \right\} 30^\circ$$

$$\left. \begin{aligned} \sqrt{3} \cdot \sqrt{3} \\ 3 \end{aligned} \right\} 60^\circ$$

$45^\circ - 45^\circ - 90^\circ$



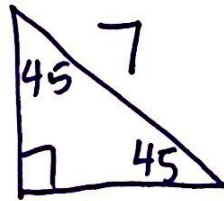
Ex: ①



$$6\sqrt{3} \cdot \sqrt{2}$$

$$\boxed{6\sqrt{6}}$$

②



$$\frac{7}{\sqrt{2}} = \frac{x\sqrt{2}}{\sqrt{2}}$$

$$\frac{7 \cdot \sqrt{2}}{\sqrt{2} \cdot \sqrt{2}} = x$$

$$\boxed{\frac{7\sqrt{2}}{2} = x}$$