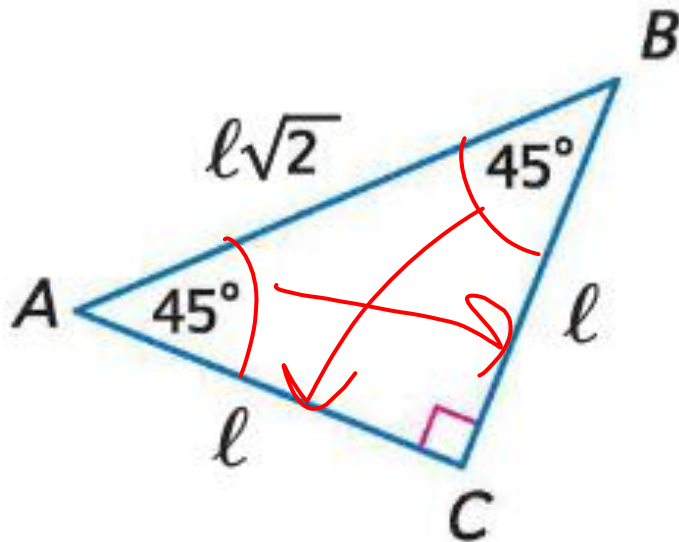




Special Right Triangles

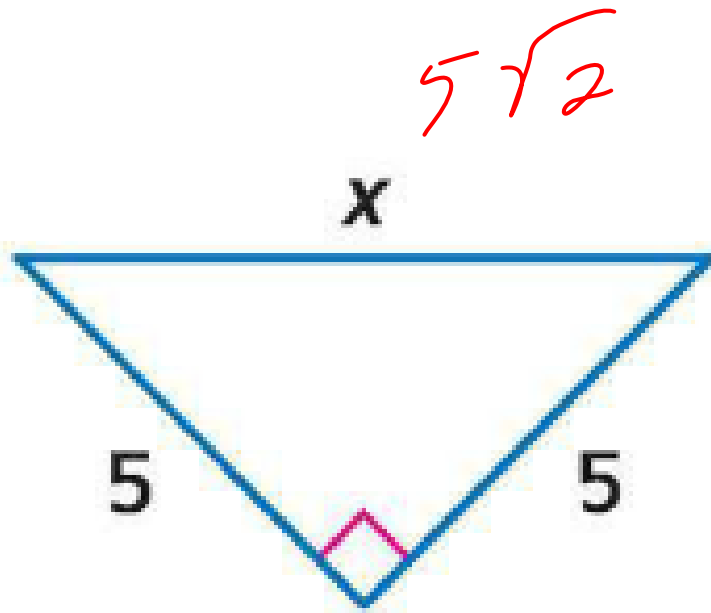
45-45-90 Triangle Theorem

- In a 45-45-90 triangle, the legs l are congruent and the length of the hypotenuse h is $\sqrt{2}$ times the length of a leg.



Examples

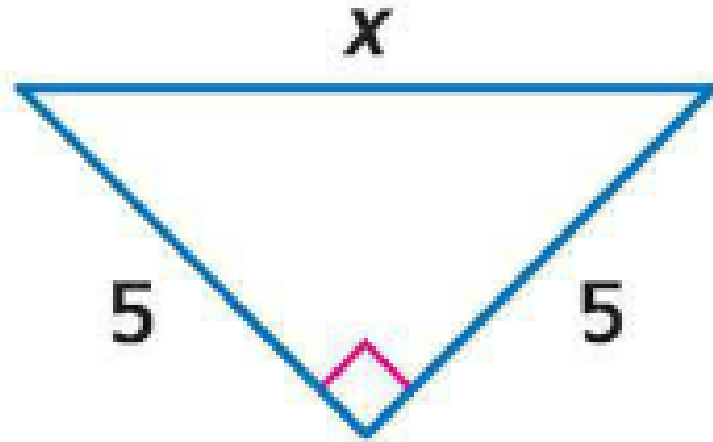
- Find x .



Examples

- Find x .

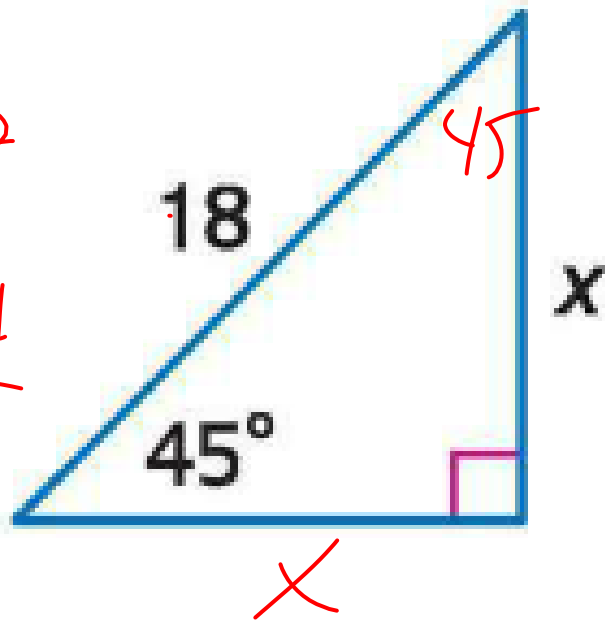
- $x = 5\sqrt{2}$



Examples

- Find x.

~~$$x^2 + x^2 = 18^2$$
$$\frac{2x^2}{2} = \frac{324}{2}$$
$$\sqrt{x^2} = \sqrt{162}$$
$$x = \sqrt{162}$$~~



~~$$\frac{x\sqrt{2}}{\sqrt{2}} = \frac{18}{\sqrt{2}}$$~~

$$x = \frac{18}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{18\sqrt{2}}{2}$$

$$= 9\sqrt{2}$$

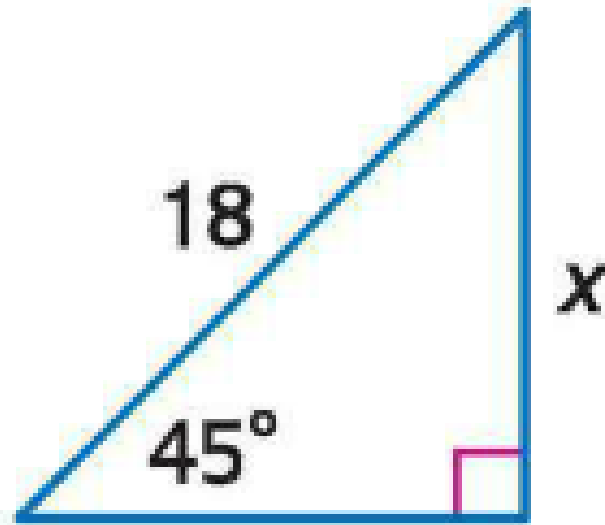
Examples

- Find x .

- $18 = x\sqrt{2}$

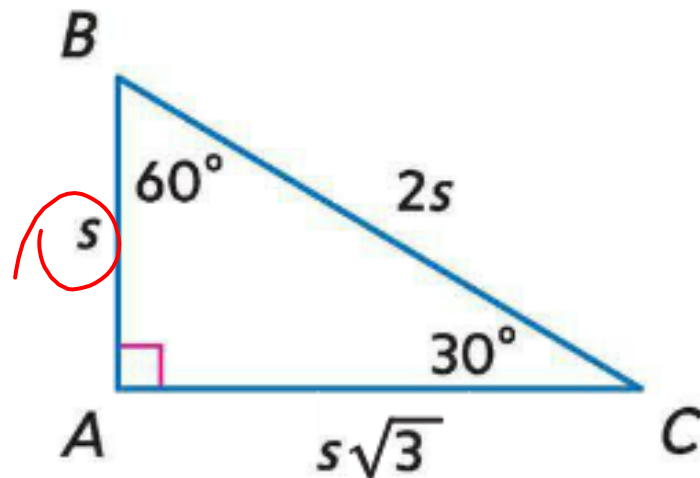
- $x = 18/\sqrt{2}$

- $x = 9\sqrt{2}$



30-60-90 Triangle Theorem

- In a 30-60-90 triangle, the length of the hypotenuse is 2 times the length of the shorter leg and the longer leg is $\sqrt{3}$ times the length of the shorter leg.



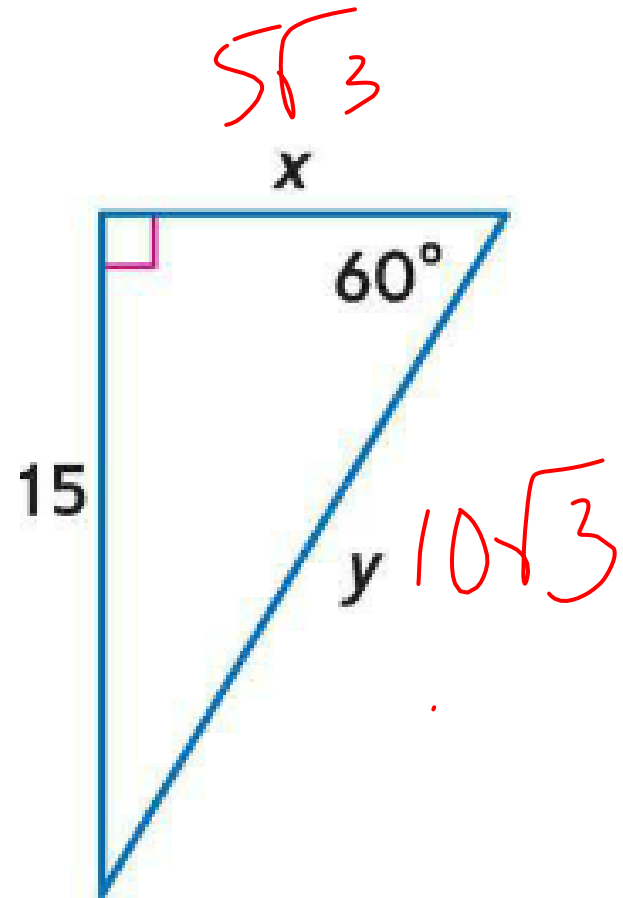
Examples

- Find x and y .

$$\underline{x\sqrt{3} = 15}$$

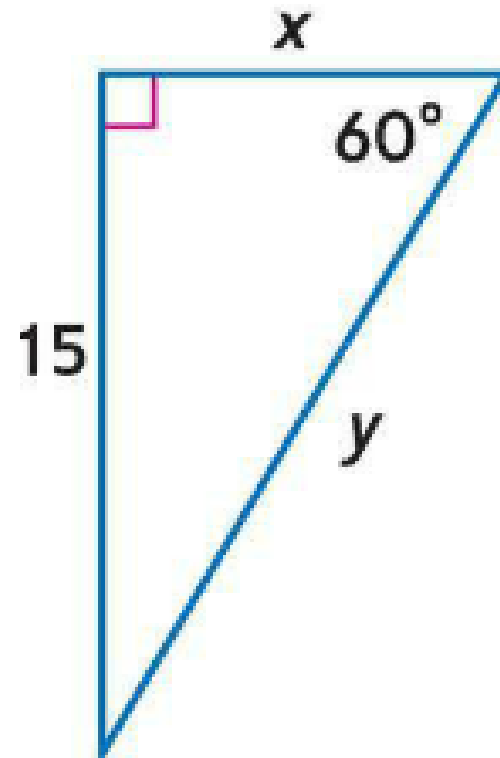
$$15 \div \sqrt{3} \leftarrow \text{Shortcut}$$
$$\frac{15}{\sqrt{3}}$$

$$5\sqrt{3}$$



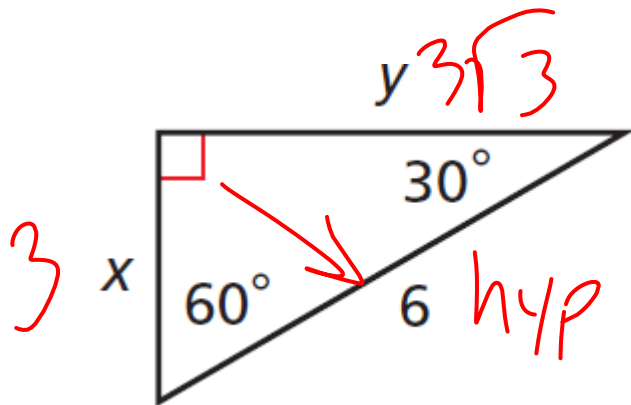
Examples

- Find x and y .
- $15 = x\sqrt{3}$
- $x = 15/\sqrt{3}$
- $x = 5\sqrt{3}$
- $y = 2x$
- $y = 2 * 5\sqrt{3} = 10\sqrt{3}$



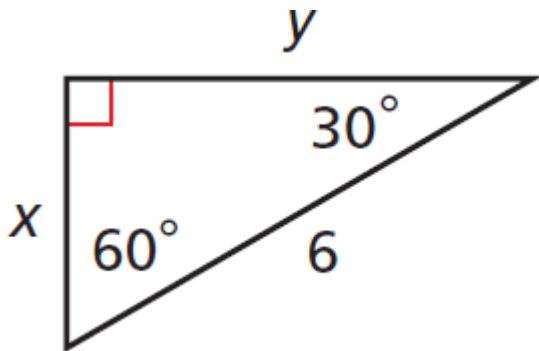
Examples

- Find the values of x and y . Give your answers in simplest radical form.



Examples

- Find the values of x and y . Give your answers in simplest radical form.



$$6 = 2x$$

$$x = 3$$

$$y = x\sqrt{3}$$

$$y = 3\sqrt{3}$$