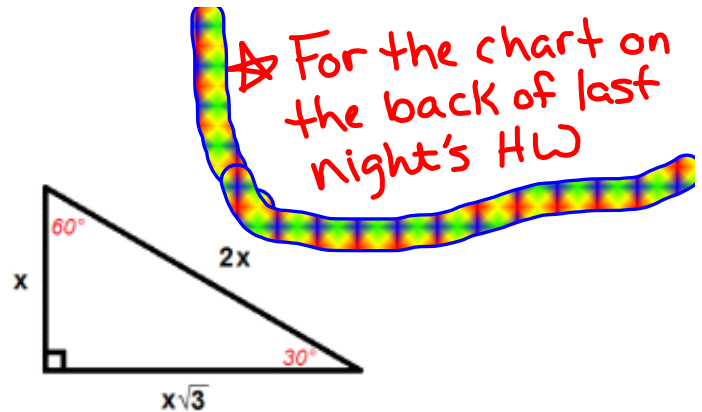
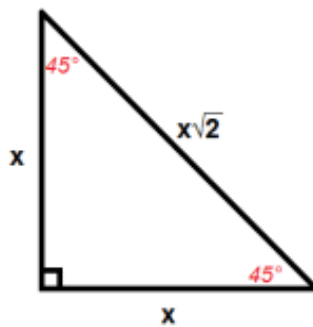
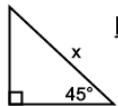


# Special Right Triangles



## The 45° – 45° – 90° Theorem

In a 45° - 45° - 90° triangle the hypotenuse is  $\sqrt{2}$  times as long as either leg.



**Example:** Find the value of  $x$  in the triangle.

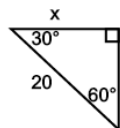
$$\text{hyp} = \sqrt{2} \cdot \text{leg}$$

$$\text{hyp} = \sqrt{2} \cdot 5$$

$$\text{Therefore, } x = 5\sqrt{2}$$

## The 30° – 60° – 90° Theorem

In a 30° - 60° - 90° triangle the hypotenuse is 2 times as long as the shorter leg. The longer leg is  $\sqrt{3}$  times as long as the shorter leg.



**Example:** Find the value of  $x$  and  $y$  in the triangle.

$$\text{hyp} = 2 \cdot \text{shorter leg}$$

$$20 = 2 \cdot y$$

$$10 = y$$

$$\text{longer leg} = \sqrt{3} \cdot \text{shorter leg}$$

$$x = \sqrt{3} \cdot 10$$

$$x = 10\sqrt{3}$$