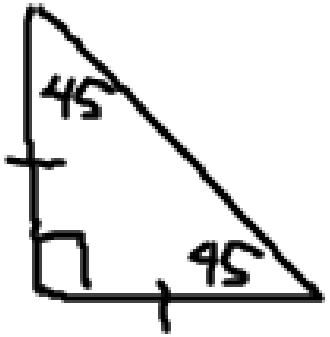
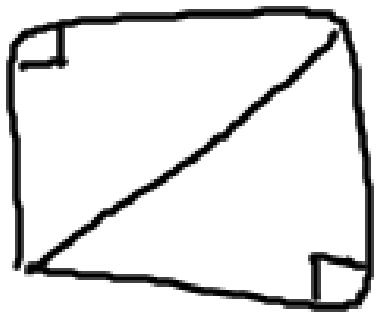
7 - 3
Special Right Triangles

45° - 45° - 90° Triangles

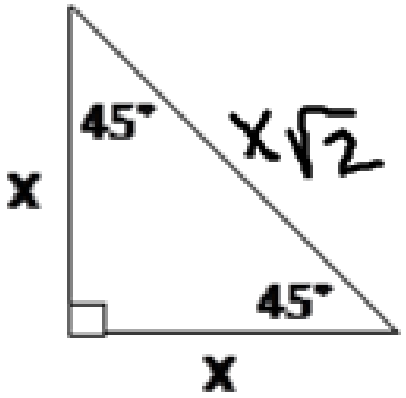
What does this triangle look like?

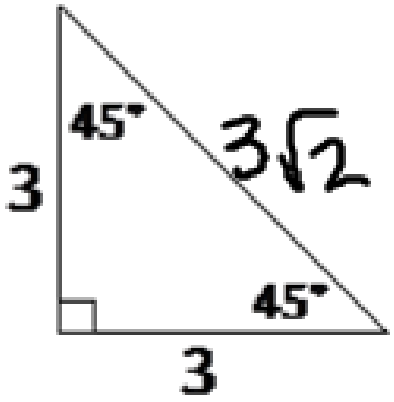


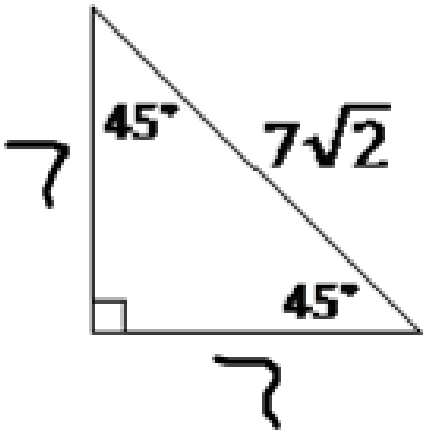


Theorem 7.6:

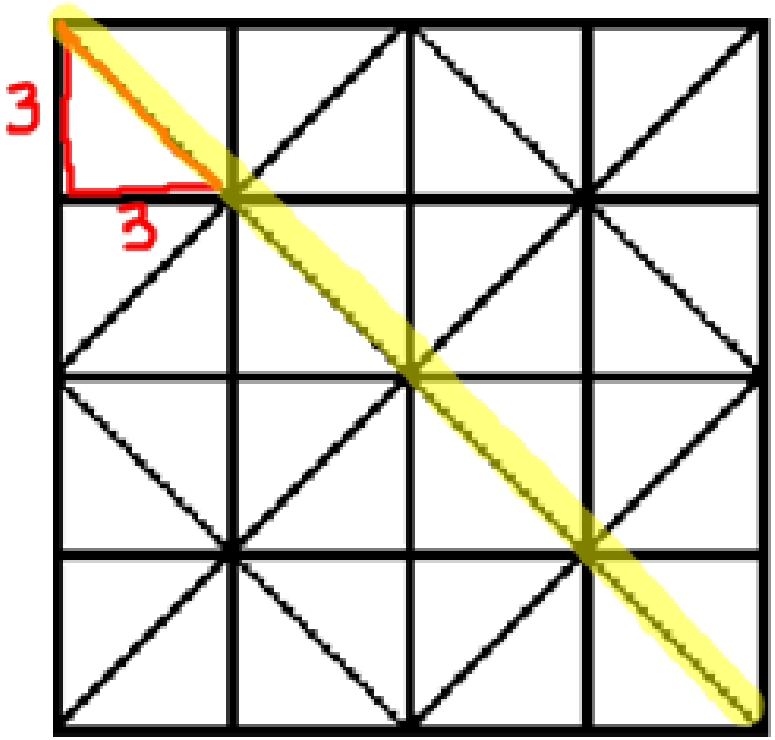
In a 45° - 45° - 90° triangle, the length of the hypotenuse is $\sqrt{2}$ times the length of a leg.

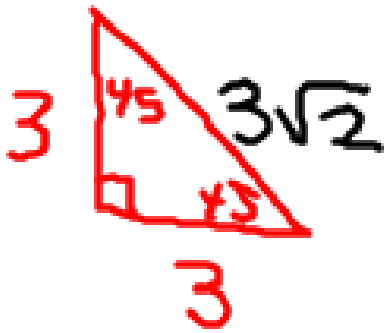






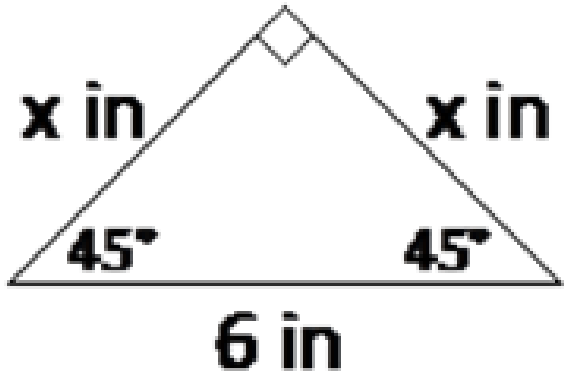
Ex: All of the triangles in the following picture are 45° - 45° - 90° triangles with legs of 3 in. Find the length of the diagonal of the entire square.





$3\sqrt{2} \cdot 4 = \boxed{12\sqrt{2}}$ in

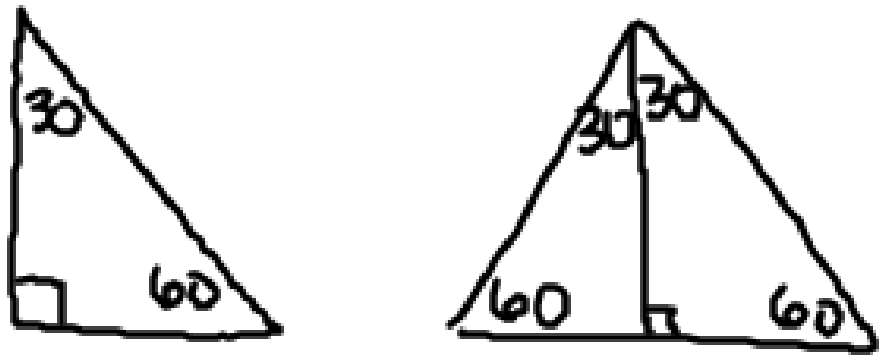
Ex: Solve for x.



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

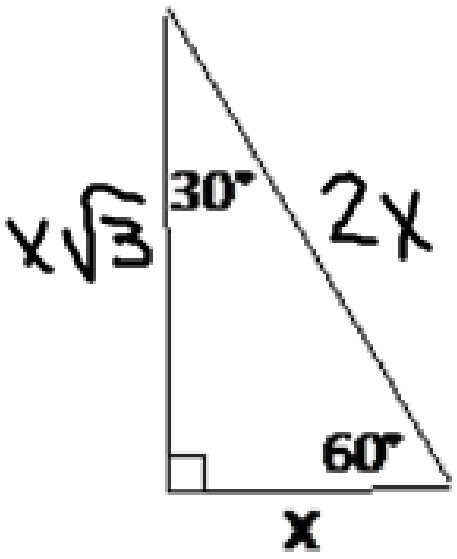
30° - 60° - 90° Triangles

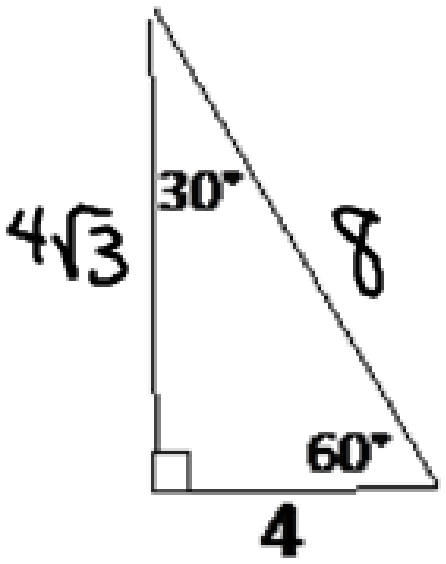
What does this triangle look like?

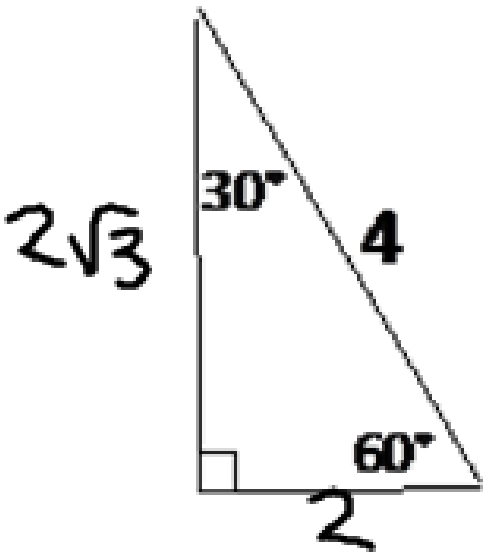


Theorem 7.6:

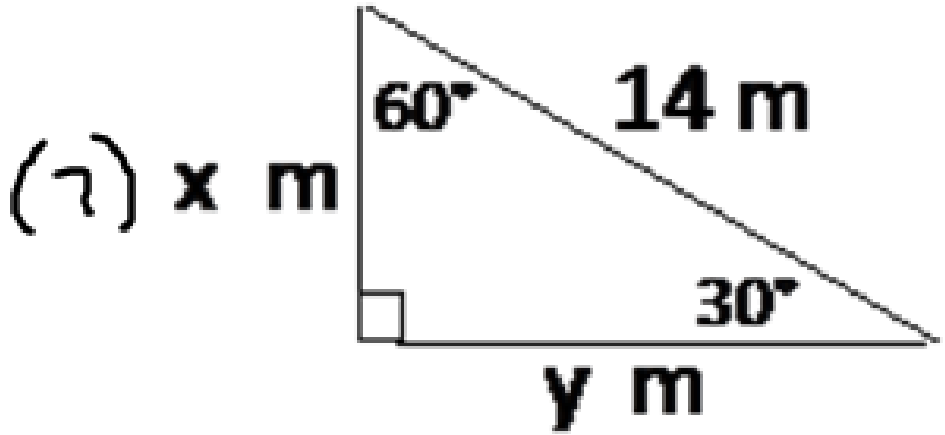
In a 30° - 60° - 90° triangle, the length of the hypotenuse is 2 times the length of the shorter leg, and the length of the longer leg is $\sqrt{3}$ times the length of the shorter leg.







Ex: Solve for x and y.



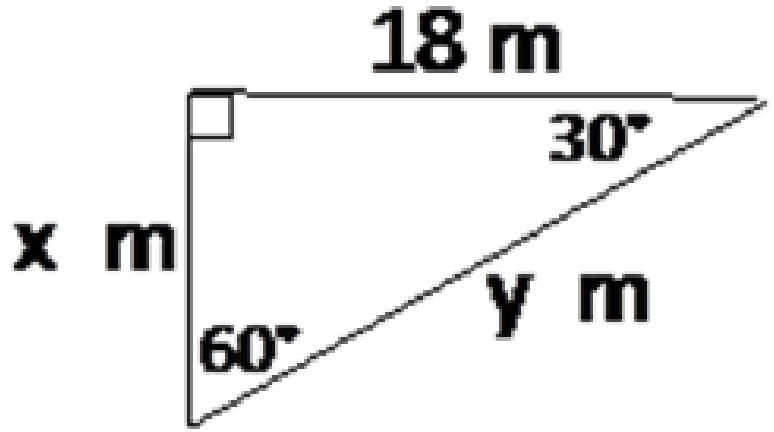
x = 7 m

y = 7√3 m

Ex: Solve for x and y.

$x = 6\sqrt{3}$

$y = 12\sqrt{3}$



$$\frac{18}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{18\sqrt{3}}{3} = 6\sqrt{3}$$

Homework:

7-3 WS