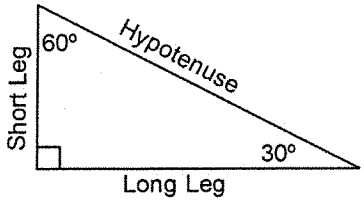
Alg 2 Classwork Special Right Triangles Name:

In Mathematics there are two triangles referred to as Special Right Triangles:

$30° - 60° - 90°$ Triangle



The Long Leg is always across from the $60°$
The Short Leg is always across from the $30°$

Relationships amongst sides:

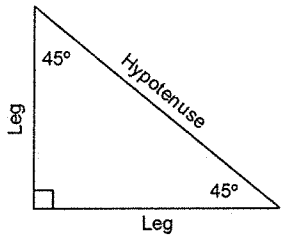
$$\text{Short Leg} = \frac{\text{Hypotenuse}}{2}$$

$$\text{Hypotenuse} = 2 \cdot \text{Short Leg}$$

$$\text{Long Leg} = \text{Short Leg} \cdot \sqrt{3}$$

$$\text{Short Leg} = \frac{\text{Long Leg}}{\sqrt{3}}$$

$45° - 45° - 90°$ Triangle



This is an Isosceles Triangle so the two legs are equal

Relationships amongst sides:

Legs are equal

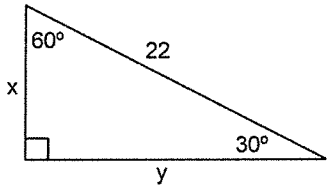
$$\text{Hypotenuse} = \text{Leg} \cdot \sqrt{2}$$

$$\text{Leg} = \frac{\text{Hypotenuse}}{\sqrt{2}}$$

Rationalize denominators when necessary

Example Problems:

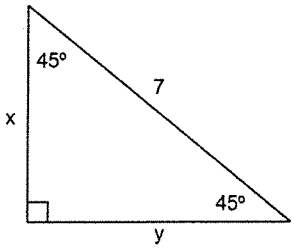
Ex 1: Find the exact value of x and y



x is the Short Leg: $x = \frac{22}{2} = 11$

y is the long leg: $y = 11 \cdot \sqrt{3} = 11\sqrt{3}$

Ex 2: Find the exact value of x and y



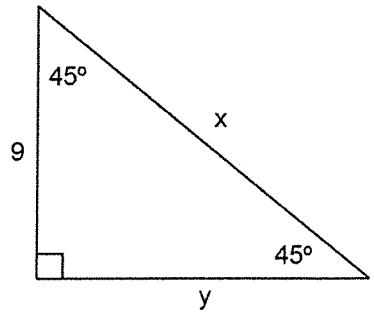
x is a Leg: $x = \frac{7}{\sqrt{2}}$ Now rationalize: $\frac{7}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{7\sqrt{2}}{2}$

The two legs are equal which means y is also $\frac{7\sqrt{2}}{2}$

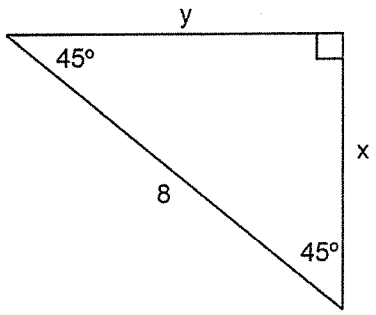
Do the problems on the back.

Find the EXACT value of x and y. Reduce fractions. Rationalize denominators as necessary.

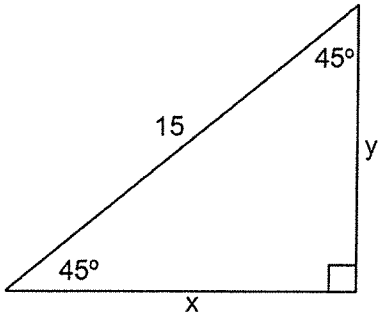
1. $x =$ $y =$



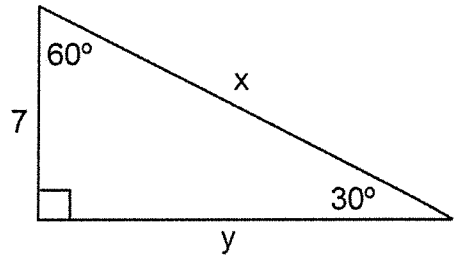
2. $x =$ $y =$



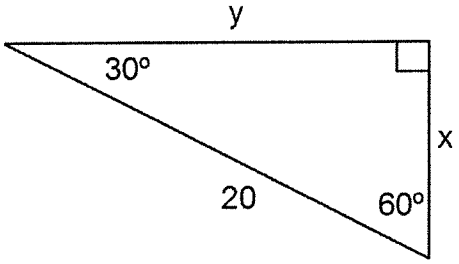
3. $x =$ $y =$



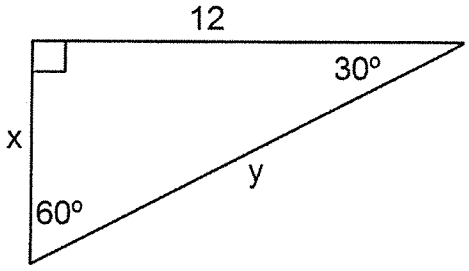
4. $x =$ $y =$



5. $x =$ $y =$



6. $x =$ $y =$



7. $x =$ $y =$