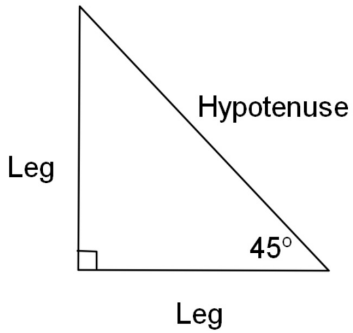
Sec 8-2: Special Right Triangles. NOTES

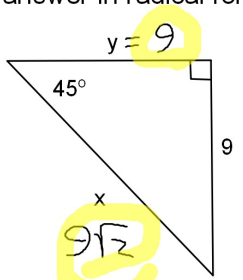
45° - 45° - 90° Triangle: also known as an isosceles right triangle.

- Legs are congruent
- Hypotneuse = Leg • $\sqrt{2}$
- Leg = $\frac{\text{Hypotenuse}}{\sqrt{2}}$

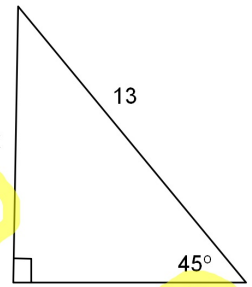


Find the value of each missing side.
Give answer in radical form.

1.



2.

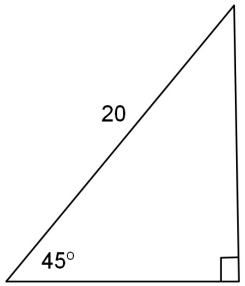


Rationalizing a denominator.

Since $\sqrt{2}$ is an irrational number we must do something to eliminate it from the denominator.

$$\frac{13}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{13\sqrt{2}}{2}$$

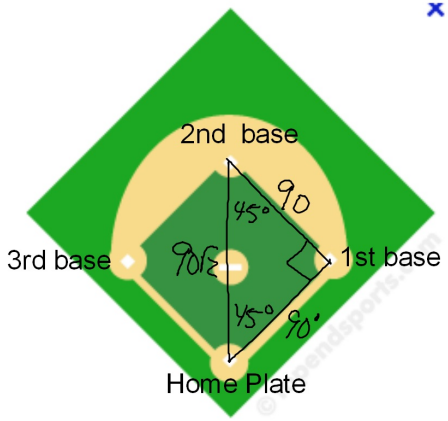
Find the length of the legs.
Make sure the denominator is rationalized.



$$x = \frac{20}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{20\sqrt{2}}{2} = 10\sqrt{2}$$

$$y = \frac{20}{\sqrt{2}} = 10\sqrt{2}$$

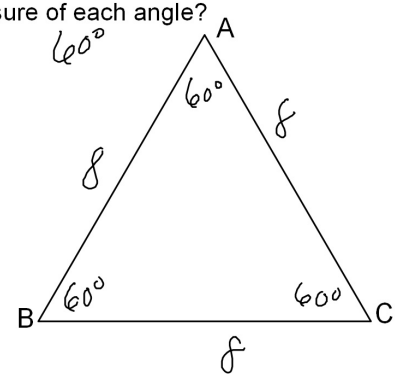
A baseball diamond is a square formed by the four bases. The bases are 90 feet apart. How far is it across the diamond from home plate to second base?



$90\sqrt{2}$

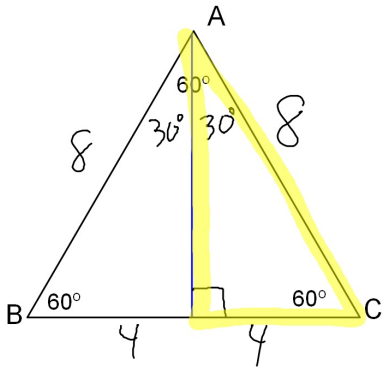
ABC is an equilateral triangle.
All sides have a length of 8.

What is the measure of each angle?

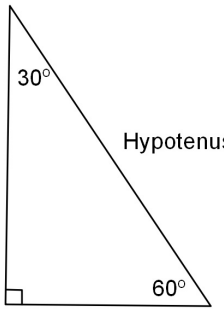


Draw the altitude from A.

What do you do to the triangle and its parts? Bisects angle A and bisects side BC.



30° - 60° - 90° Right Triangle:



Hypotenuse

Long Leg (opposite the 60° angle)

Short Leg (opposite the 30° angle)

Short Leg ⟷ Hypotenuse

SL = Hypot ÷ 2

Hypot = SL x 2

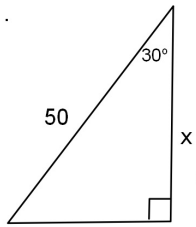
Short Leg ⟷ Long Leg

SL = LL ÷ $\sqrt{3}$

LL = SL x $\sqrt{3}$

Find the value of x and y in each triangle. Give answers in simplified radical form.

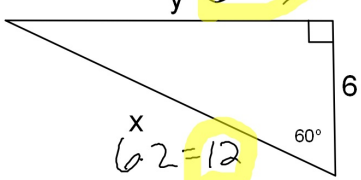
1.



$LL = 25\sqrt{3}$

$SL = 25$

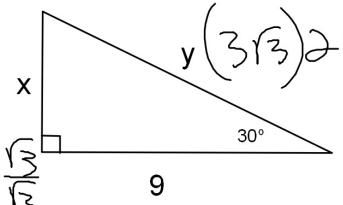
2.



$y = 6\cdot\sqrt{3}$

$6 \cdot 2 = 12$

3.



$y = (3\sqrt{3})2 = 6\sqrt{3}$

$\frac{9}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$= \frac{9\sqrt{3}}{3}$

$= 3\sqrt{3}$