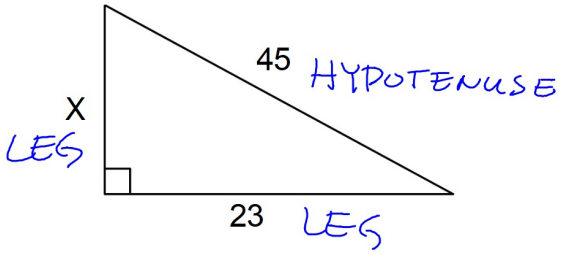
Find the value of x to the nearest hundredth.



Pythagorean Theorem:

Hypotenuse^2 = Leg^2 + Leg^2

$45^2 = 23^2 + X^2$

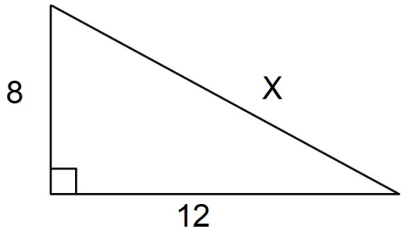
$-23^2 \quad -23^2$

$X^2 = 45^2 - 23^2$

$X = \sqrt{45^2 - 23^2}$

$X = 38.68$

Find the EXACT value of x. Give answer in simplified radical form.



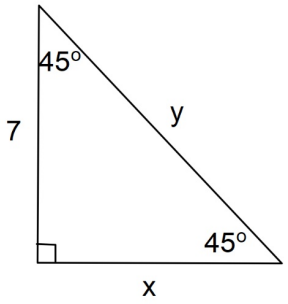
$X^2 = 8^2 + 12^2$

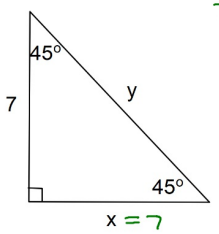
$\sqrt{X^2} = \sqrt{208}$

$\sqrt{16 \cdot 13}$

$X = 4\sqrt{13}$

Find the value of each missing side. Leave non-integer answers in simplified radical form.





THIS is an isosceles Δ so the legs are ≅

$X = 7$

To find y:

$y^2 = 7^2 + 7^2$

$y^2 = 49 + 49$

$y^2 = 49.2$

$y = \sqrt{49.2}$

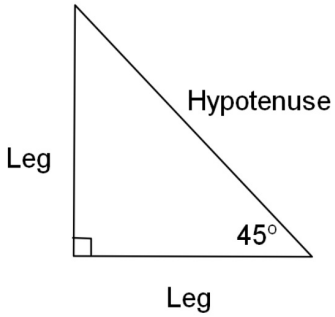
$y = 7\sqrt{2}$

Special Right Triangles.

45° - 45° - 90° Triangle:

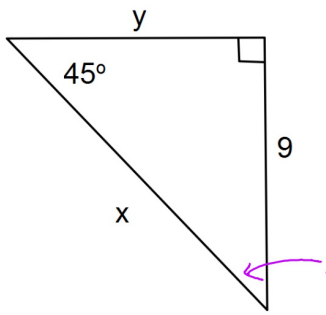
also known as an isosceles right triangle.

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



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

1.



THIS IS a 45-45-90 Δ
Legs are ≅

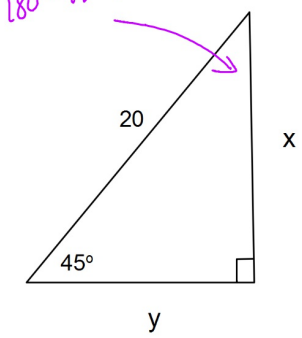
$y = 9$

hypot = Leg • $\sqrt{2}$

$x = 9\sqrt{2}$

180 - 45 - 90 = 45

2.



THIS IS a 45-45-90 Δ
legs are ≅

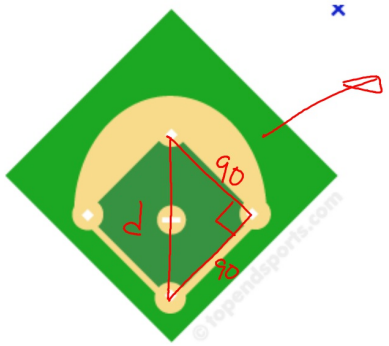
$x = y =$ hypot $\div \sqrt{2}$

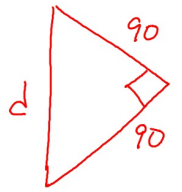
$x = y = \frac{20}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

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

$x = y = 10\sqrt{2}$

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?



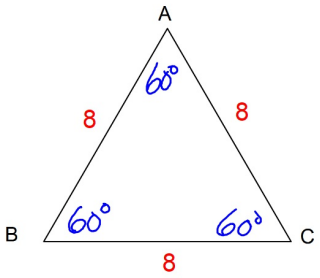


this is a 45-45-90 Δ

hypot = Leg • $\sqrt{2}$

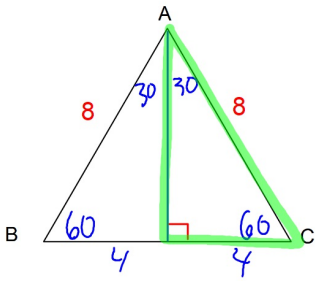
$d = 90\sqrt{2}$

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



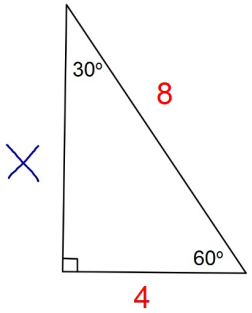
Draw an altitude from pt. A.

What does this altitude do to the triangle?



The altitude bisects $\angle A$ and $\overline{BC}$

Find the length of the third side in simplified radical form.



$8^2 = 4^2 + x^2$

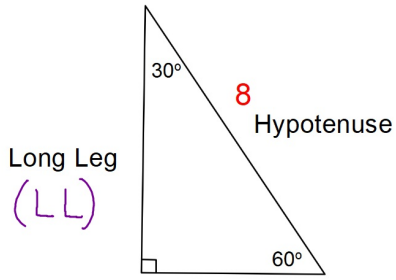
$64 = 16 + x^2$

$\sqrt{48} = \sqrt{x^2}$

$\sqrt{16 \cdot 3} = x$

$x = 4\sqrt{3}$

30° - 60° - 90° Right Triangle:



- the Hypotenuse is always opposite the right angle.
- the Long Leg is always opposite the 60° angle.
- the Short Leg is always opposite the 30° angle.

Short Leg ⟷ Hypotenuse

SL = Hypot ÷ 2

Hypot = SL x 2

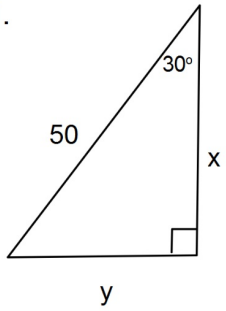
Short Leg ⟷ Long Leg

SL = LL ÷ $\sqrt{3}$

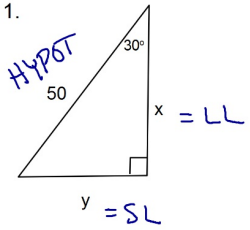
LL = SL x $\sqrt{3}$

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

1.



1.



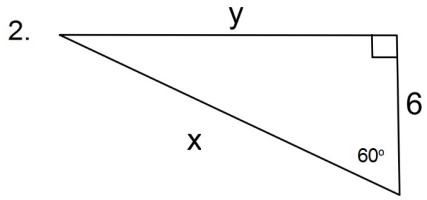
SL = HYPOT ÷ 2

$y = 50 \div 2 = 25$

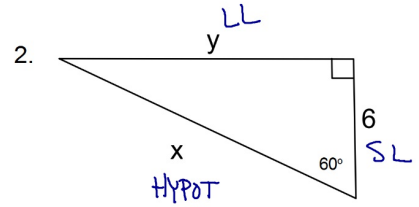
LL = SL · √3

$x = 25 \cdot \sqrt{3}$

2.



2.



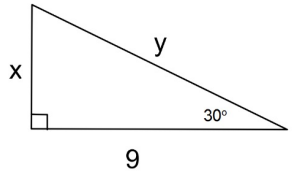
LL = SL · √3

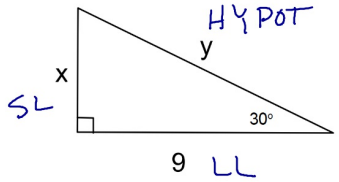
$y = 6\sqrt{3}$

HYPOT = SL · 2

$x = 6 \cdot 2 = 12$

3.





$SL = LL \div \sqrt{3}$

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

$x = 3\sqrt{3}$

HYPOT = SL · 2

$y = 3\sqrt{3} \cdot 2$

$y = 6\sqrt{3}$

Hwk #13

Practice Sheet: Special Right Triangles.

Find the EXACT value of each variable. Give answers in simplified radical form.