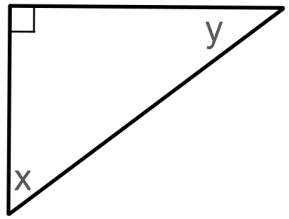
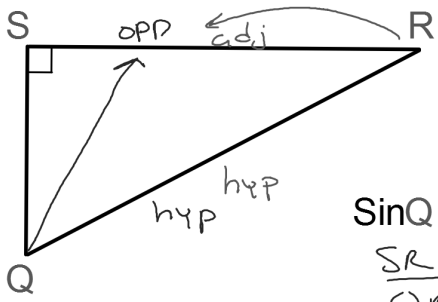


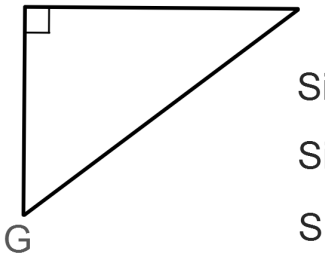
What is true about angles x and y of EVERY right triangle?

- x and y are acute
- x and y are complementary



SinQ = Cos R

$\frac{SR}{QR}$ $\frac{SR}{QR}$



Sine G = Cos?

Sine G = Cos(90-G)

Sine G = Cos(complement to G)

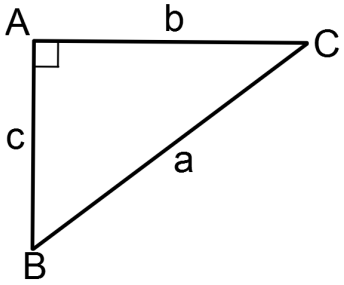
Sin 38° = Cos 52° 90-38

Sin 92° = Cos −2° 90-92

Sin -87° = Cos 177° 90--87

Sin 162° = Cos -72° 90-162

In right triangle trigonmetry explain why the following trigonometric ratios are undefined.



Sin A
there is no opposite leg

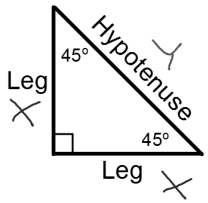
Cos A
both legs are adjacent.

Tan A

Same reasons as above.

Special Right Triangles:

45° - 45° - 90° Triangle. <u>Also known as an</u>
Isosceles Right Triangle



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

Leg = $\frac{Hyp}{\sqrt{2}}$

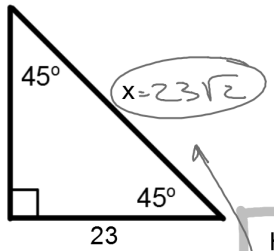
$Y^2 = X^2 + X^2$

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

$Y = X\sqrt{2}$

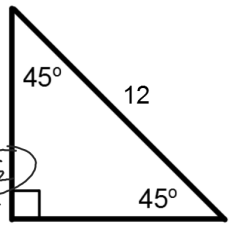
Find the exact value of x in each.

a.



$x = 23\sqrt{2}$

b.



$\frac{12}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} x$

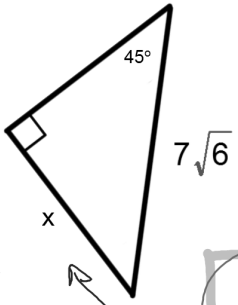
$\frac{12\sqrt{2}}{2} = 6\sqrt{2}$

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

Leg = $\frac{Hyp}{\sqrt{2}}$

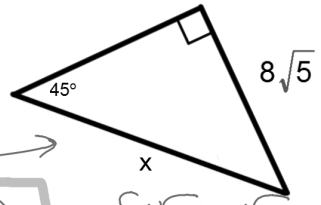
Find the exact value of x in each.

c.



$\frac{7\sqrt{6}}{\sqrt{2}} = 7\sqrt{3}$

d.

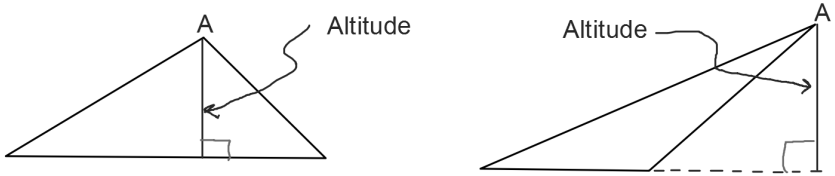


$8\sqrt{5} \cdot \sqrt{2} = 8\sqrt{10}$

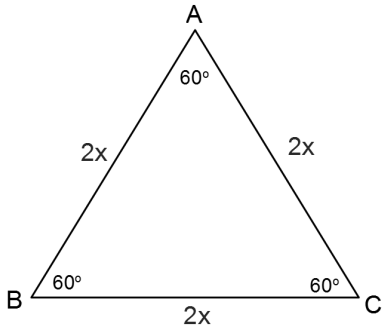
Hypotenuse = $Leg \cdot \sqrt{2}$

Leg = $\frac{Hyp}{\sqrt{2}}$

Altitude of a triangle: A segment drawn from a vertex that is perpendicular to the opposite side.



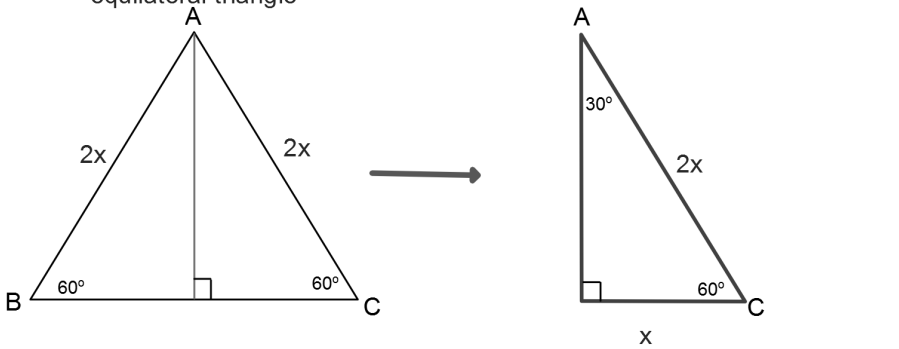
Given the Equilateral Triangle shown below,

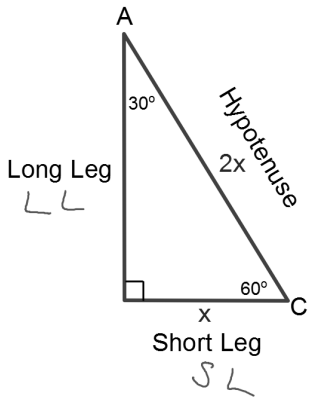


What do you do to the triangle if you draw an altitude from A?

- You bisect angle A
- You bisect side BC
- You create two 30° - 60° - 90° triangles.

When you bisect an equilateral triangle • • • You create a 30° - 60° - 90° triangle





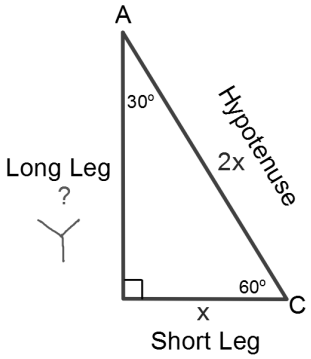
The Hypotenuse is always located opposite the right angle.

The Short Leg is always located opposite the 30° angle.

The Long Leg is always located opposite the 60° angle.

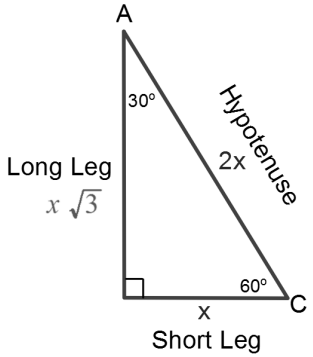
In any triangle, Opposite the biggest angle is the longest side.

In any triangle, Opposite the smallest angle is the shortest side.



Use the Pythagorean Theorem to find the exact length of the Long Leg.

$$Y^2 + x^2 = (2x)^2$$
$$Y^2 + x^2 = 4x^2$$
$$\sqrt{Y^2} = \sqrt{3x^2}$$
$$Y = x \cdot \sqrt{3}$$



Hypotenuse $= 2$(Short Leg)

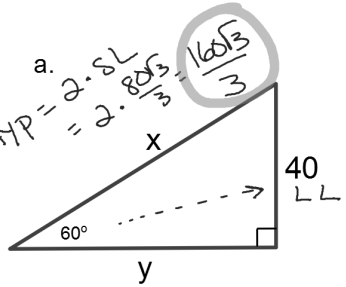
Short Leg $= \frac{1}{2}$(Hypotenuse)

Long Leg $= \sqrt{3}$(Short Leg)

Short Leg = (Long Leg) $\div \sqrt{3}$

Find the exact value of x and y in each triangle.

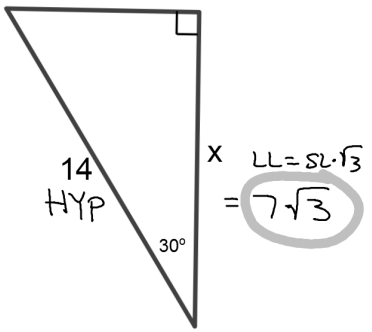
a.



$HYP = 2 \cdot SL = 2 \cdot \frac{80\sqrt{3}}{3} = \frac{160\sqrt{3}}{3}$

$SL = \frac{LL}{\sqrt{3}} = \frac{40}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{40\sqrt{3}}{3}$

b.



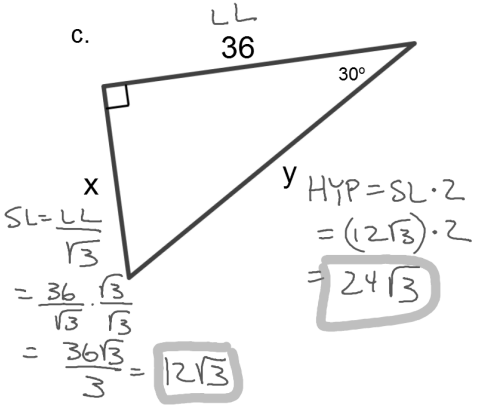
$SL = \frac{HYP}{2} = \frac{14}{2} = 7$

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

$= 7\sqrt{3}$

Find the exact value of x and y in each triangle.

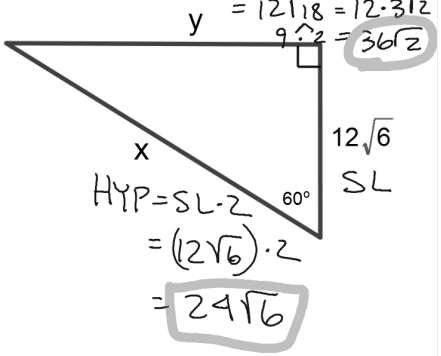
c.



$SL = \frac{LL}{\sqrt{3}} = \frac{36}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{36\sqrt{3}}{3} = 12\sqrt{3}$

$HYP = SL \cdot 2 = (12\sqrt{3}) \cdot 2 = 24\sqrt{3}$

d.



$LL = SL \cdot \sqrt{3} = 12\sqrt{6} \cdot \sqrt{3}$

$= 12\sqrt{18} = 12 \cdot 3\sqrt{2}$

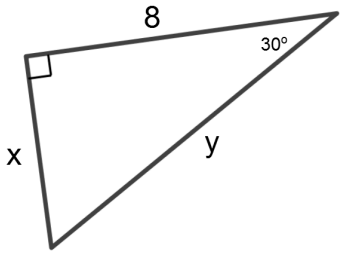
$9 \cdot 2 = 36\sqrt{2}$

$HYP = SL \cdot 2 = (12\sqrt{6}) \cdot 2 = 24\sqrt{6}$

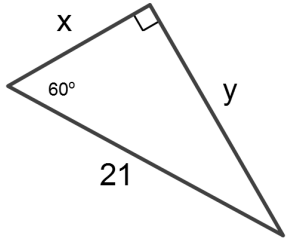
You can now finish Hwk #2:

Practice Sheet: Special Right Triangles

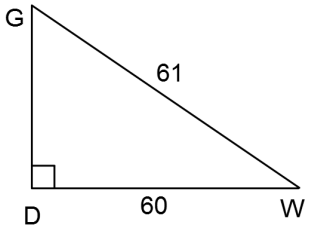
Find the exact value of x and y in each triangle.



Find the exact value of x and y in each triangle.



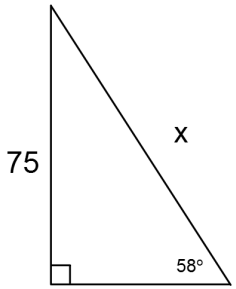
Write each as a ratio.



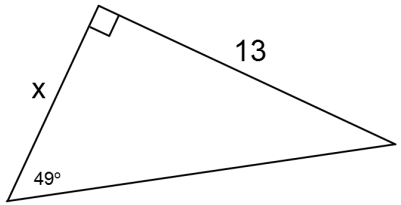
Tan G =

Cos W =

Find the value of x to the nearest hundredth.



Find the value of x to the nearest hundredth.



Find the value of x to the nearest hundredth.