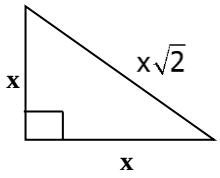
Special Right Triangles

THESE ARE ALWAYS RIGHT TRIANGLES!!!!

45-45-90 Triangles



The ratio of the sides of a 45-45-90 triangle are: x:x: $x\sqrt{2}$

45-45-90

if this measure is given:	and you want this measure:	then do this:
the leg	hypotenuse	multiply the leg by $\sqrt{2}$
hypotenuse	the leg	divide hypotenuse by $\sqrt{2}$

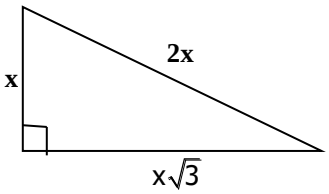
remember: the legs of a 45-45-90 are the SAME measure!

Leg = $\frac{\text{hypotenuse}}{\sqrt{2}}$ **Hypotenuse = Leg($\sqrt{2}$)**

30-60-90 Triangles

The ratio of the sides of a 30-60-90 triangle are: x: $x\sqrt{3}$: 2x

The short leg is always opposite the 30° angle!



30-60-90

if this measure is given:	and you want this measure:	then do this:
short leg	hypotenuse	multiply short leg by 2
short leg	long leg	multiply short leg by $\sqrt{3}$
long leg	short leg	divide long leg by $\sqrt{3}$
hypotenuse	short leg	divide hypotenuse by 2

remember: it is best to find the measure of the short leg first (that is if it is not given)

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

Short Leg = $\frac{\text{long leg}}{\sqrt{3}}$

Hypotenuse = 2 (short leg)

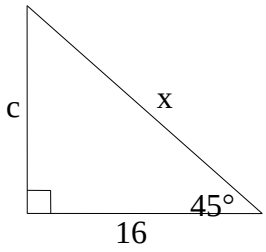
Long Leg = (short leg) $\sqrt{3}$

Theorem 5.5.1 and Theorem 5.5.2 is summarized on the previous page.

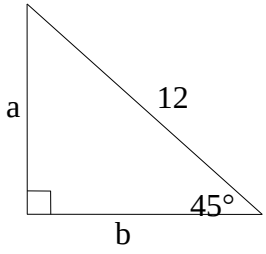
Example 1:

Find the missing sides for each of the following:

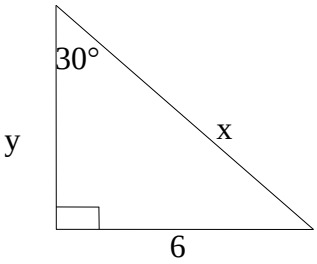
a. .



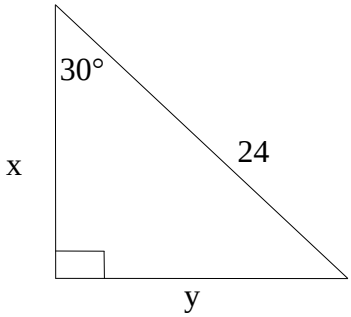
b.



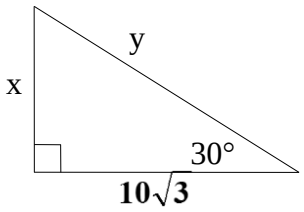
c.



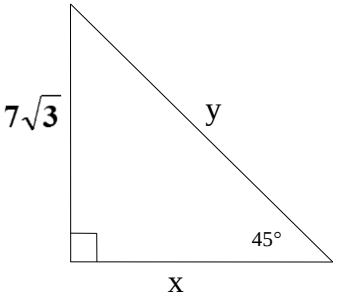
d..



e.

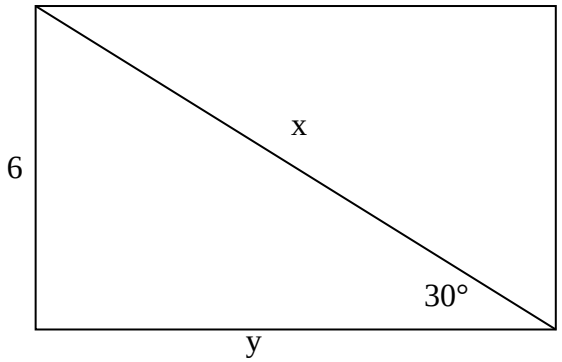


f.



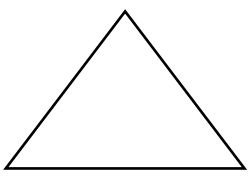
Example 2:

Rectangle find the values for and y.



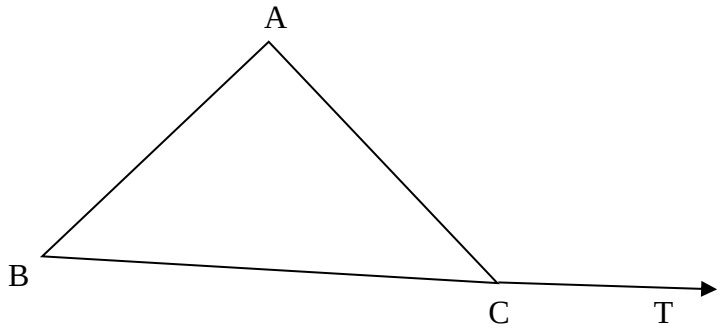
Example 3:

The length of the side of an equilateral triangle is 8. Find the length of altitude.



Example 4:

Given ΔABC is a right triangle with angle A is $90°$, $BC = 6\sqrt{2}$ and the $m\angle ACT = 150°$. Find AB and AC.



Example 5:

A tightrope performer in a circus begins his act by walking up a wire to a platform that is 120 feet high. If the wire makes an angle of $30°$ with the ground, how far does he walk along the wire to reach the platform? Assume the pole with the platform is vertical.