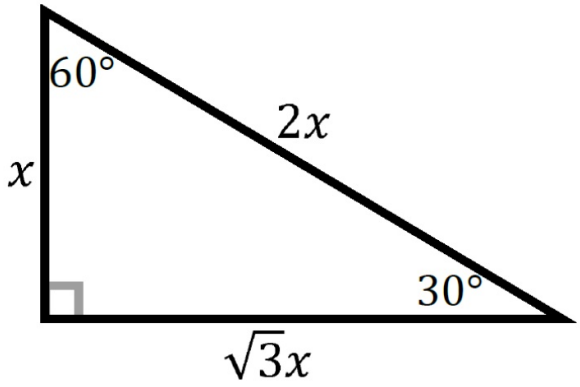
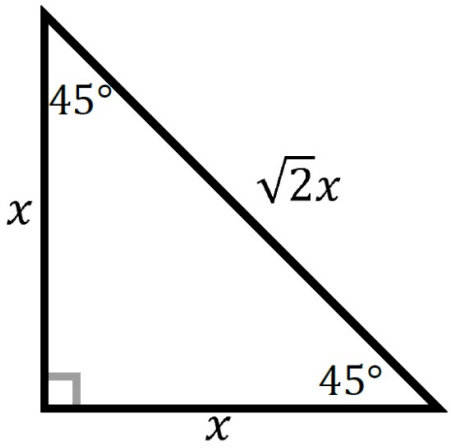
30° - 60° - 90° Triangle

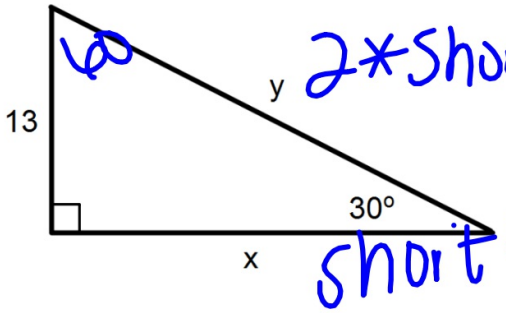


45° - 45° - 90° Triangle

Also known as an
Isosceles Right Triangle



1.

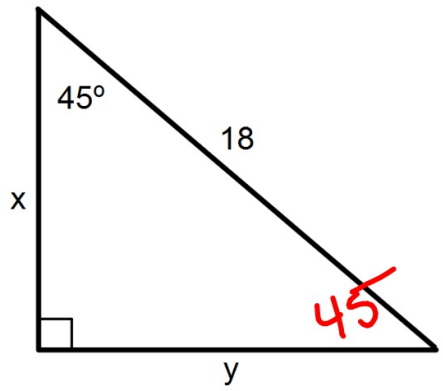


2 * Short leg

x = $13\sqrt{3}$ y = 26

short * $\sqrt{3}$

2.

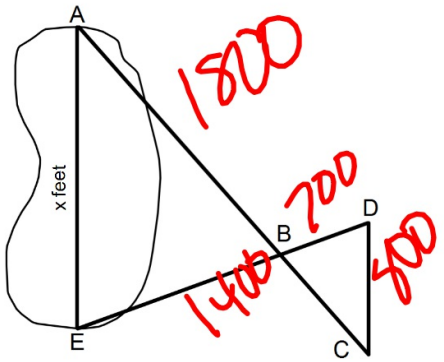


x = $9\sqrt{2}$ * Leg

y = $9\sqrt{2}$ = hyp / $\sqrt{2}$

$\frac{18}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{18\sqrt{2}}{2}$

3. A surveyor wants to find the length, x, in feet, across a lake as represented in the sketch below. The lengths represented by AB, EB, BD, and CD on the sketch were determined to be 1800 ft, 1400 ft, 700 ft, and 800 ft, respectively. Segments AC and DE intersect at B, and ∠AEB and ∠CDB have the same measure. What is the value of x?



$$\frac{AE}{800} = \frac{1400}{700}$$

$$700x = 1{,}120{,}000$$

$$x = 1600$$

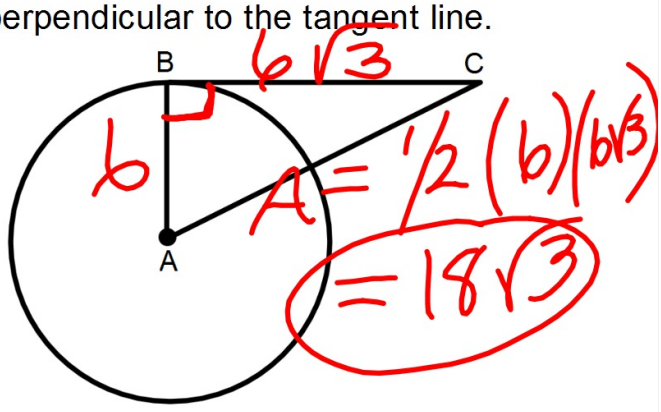
4. In circle A below BC is tangent to the circle at pt. B. Circle A has an area of 36π. If AB=1/2 AC, what is the area of△ABC. Round to the nearest tenth. NOTE: A radius drawn to the point of tangency is perpendicular to the tangent line.

$$A = 36\pi$$

$$A = \pi r^2$$

$$36\pi = \pi r^2$$

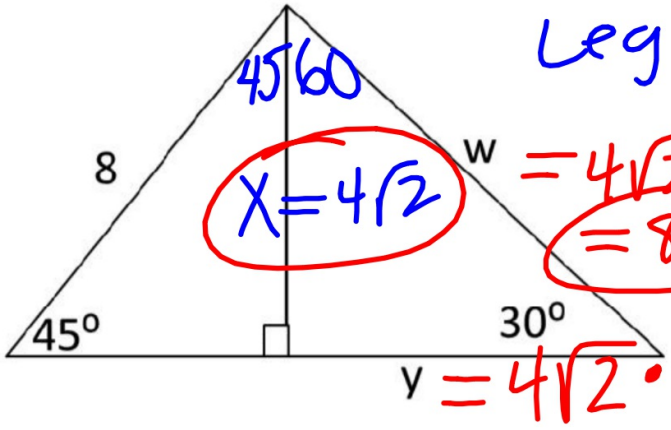
$$r = 6$$



$$A = \frac{1}{2}(6)(6\sqrt{3})$$

$$= 18\sqrt{3}$$

Find the EXACT values of w and y.



Leg $= \frac{8}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{8\sqrt{2}}{2} = 4\sqrt{2}$

$x = 4\sqrt{2}$

$w = 4\sqrt{2} \cdot 2 = 8\sqrt{2}$

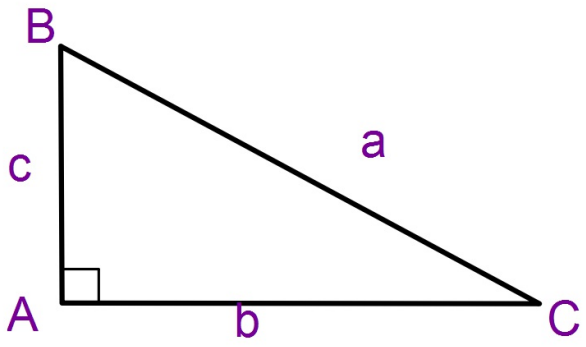
$y = 4\sqrt{2} \cdot \sqrt{3} = 4\sqrt{6}$

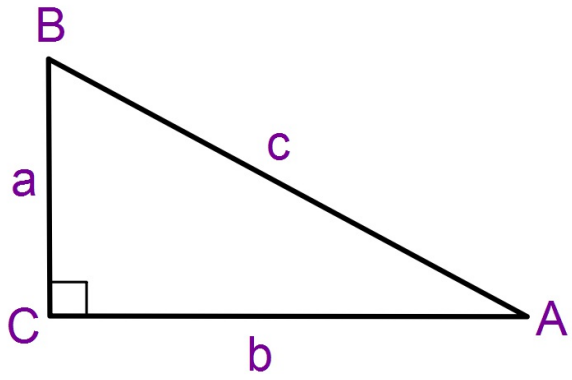
Not drawn to scale.

Sides and Angles of triangles:

Angles are labeled with: Capital Letters

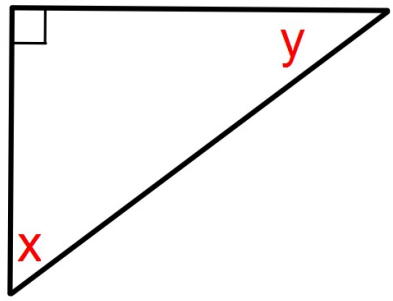
Sides are labeled with: lower case Letters





Side a is opposite Angle A
Side b is opposite Angle B
Side c is opposite Angle C

Sec 14-3: Right Triangles and Trigonometric Ratios



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

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

Trigonometry

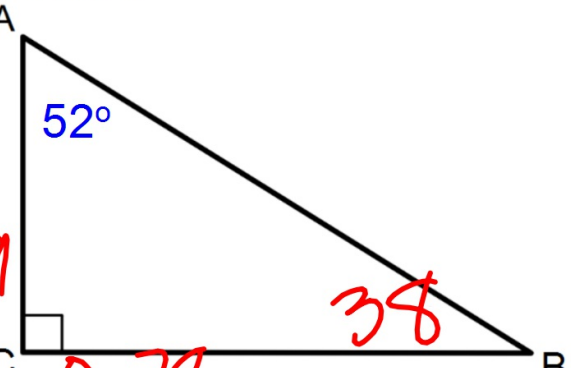
"branch of mathematics that deals with relations between sides and angles of triangles,"

from Modern Latin trigonometria

from Greek *trigonon*

"triangle" (from tri- "three," + gonia "angle,") + metron "a measure" .

Find each to the nearest hundredth.



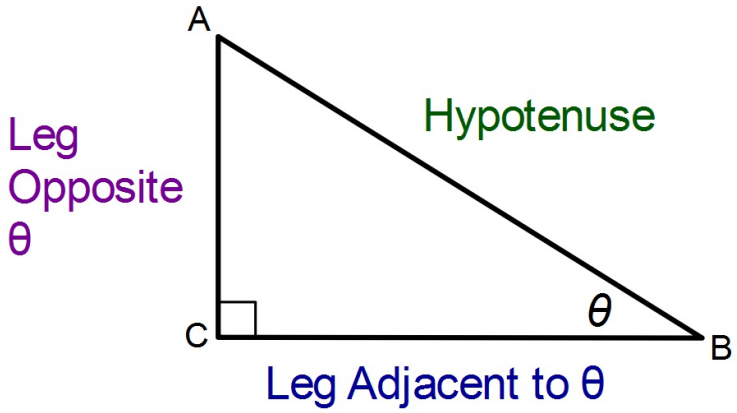
Cos A = cos(52) = 0.62

Sin A = sin(52) = 0.79

Tan B = tan(38) = 0.78

θ Greek letter - Theta

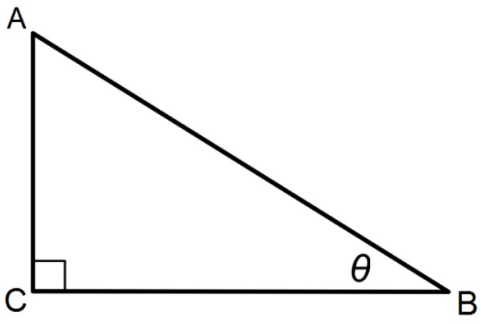
variable commonly used to represent an angle.



Right Triangle Trigonometry:

SOHCAHTOA

SOHCAHTOA



Sine of an angle

$$\text{Sin}\theta = \frac{\text{Leg Opposite } \theta}{\text{Hypotenuse}}$$

Cosine of an angle

$$\text{Cos}\theta = \frac{\text{Leg Adjacent to } \theta}{\text{Hypotenuse}}$$

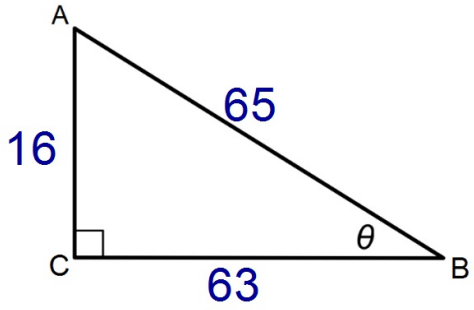
Tangent of an angle

$$\text{Tan}\theta = \frac{\text{Leg Opposite } \theta}{\text{Leg Adjacent to } \theta}$$

Write each trigonometric ratio as a fraction.

Tan B = $\frac{16}{63}$ Cos A = $\frac{16}{65}$

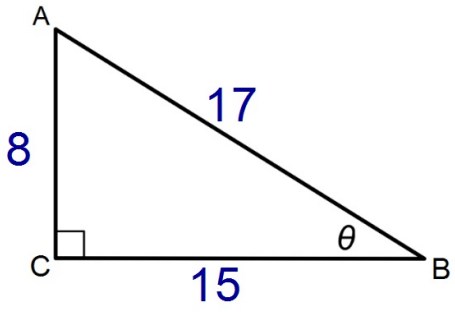
Sin B = $\frac{16}{65}$



Write each trigonometric ratio as a fraction.

Tan A = $\frac{15}{8}$ Cos A = $\frac{8}{17}$

Sin B = $\frac{8}{17}$



In right triangle trigonometry why don't we find the Sin, Cos, or Tan of C?

There is no Opposite Leg and there are two Adjacent Legs.

In Right Triangle Trigonometry we can only find the Sin, Cos, and Tan of the acute angles of a right triangle.

Write each trigonometric ratio as a fraction.

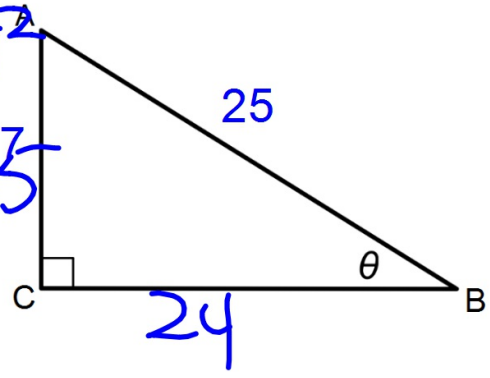
$a^2+b^2=c^2$

$7^2+b^2=25^2$

$49+b^2=625$

$b^2=576$

$b=24$



Tan A = $\frac{24}{7}$

Cos A = $\frac{7}{25}$

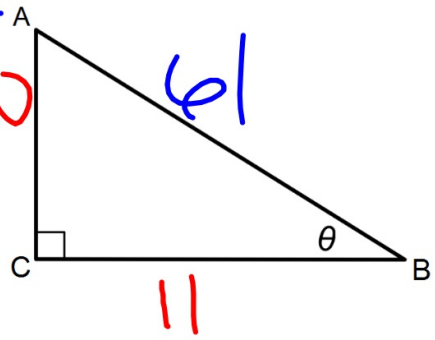
Sin B = $\frac{7}{25}$

In triangle ABC, C is the right angle.

Given $\text{Tan}A = \frac{11}{60}$ $60^2 + 11^2 = c^2$

$3600 + 121$

$3721 = c^2$



Find the following as ratios:

Cos A = $60/61$ Tan B = $60/11$

Sin A = $\frac{11}{61}$ Cos B = $\frac{11}{61}$ Sin B = $60/61$