

For angle A , find the ratio of the opposite leg to the hypotenuse.

$$\frac{\text{Opposite}}{\text{Hypotenuse}} = \frac{3}{5}$$

Find the same ratio for angle B .

$$\frac{o}{h} = \frac{5}{13}$$

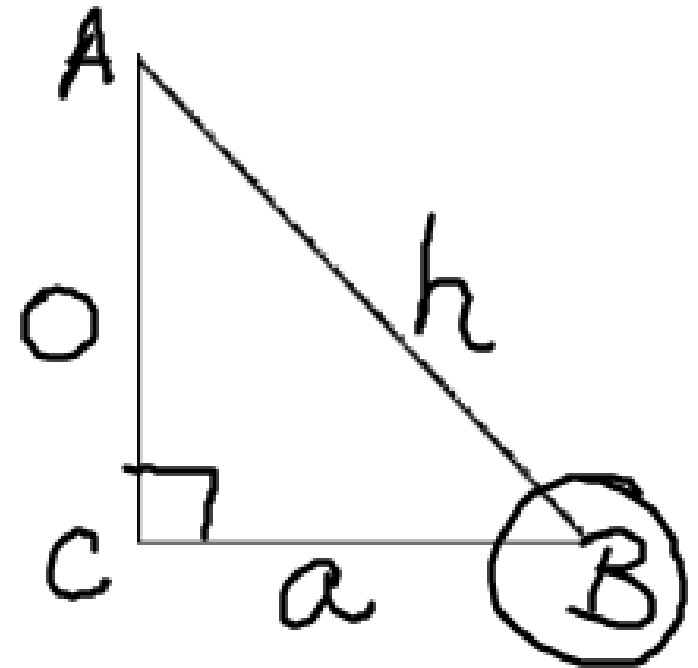
The ratio of the lengths of any 2 sides of a right triangle is a trigonometric ratio.

There are three main trigonometric ratios.

(sin) Sine = $\frac{\text{leg opposite to the angle}}{\text{hypotenuse}}$

(cos) Cosine = $\frac{\text{leg adjacent to the angle}}{\text{hypotenuse}}$

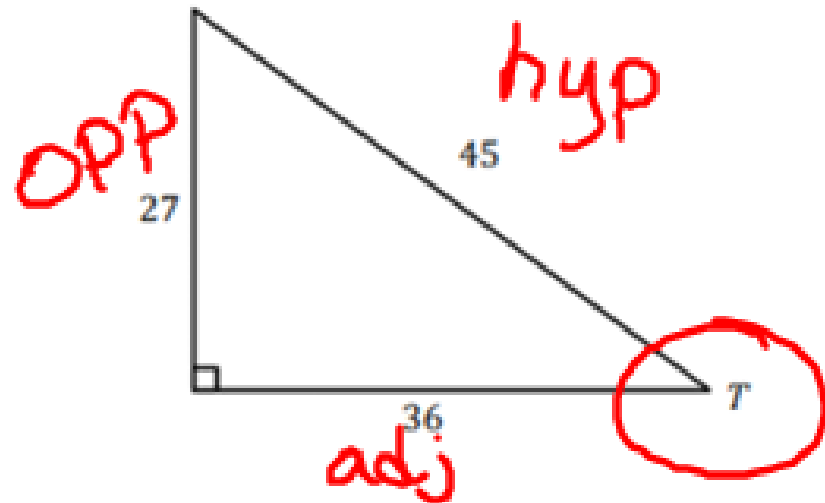
(tan) tangent = $\frac{\text{leg opposite to the angle}}{\text{leg adjacent to the angle}}$



Sohcahtoa

Let's Practice!

1. Consider the figure below.



Find the sine, cosine, and tangent of $\angle T$ for the figure.

$$\sin T = \frac{27}{45}$$

= $\frac{3}{5}$

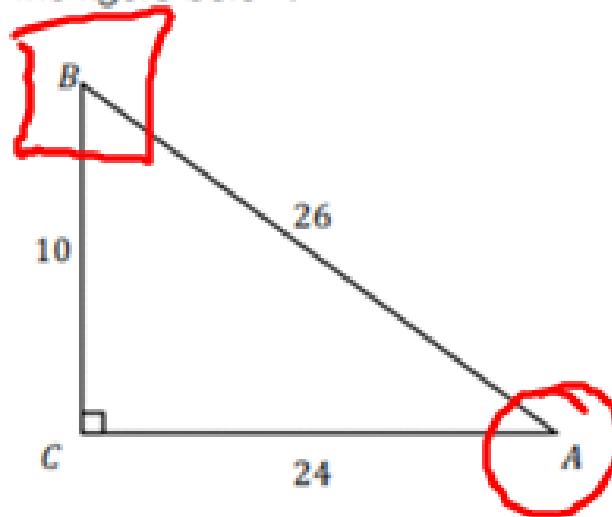
$$\cos T = \frac{36}{45}$$

= $\frac{4}{5}$

$$\tan T = \frac{27}{36}$$

= $\frac{3}{4}$

2. Consider the figure below.



a. Find $\sin A$ for the above triangle.

$$\sin A = \frac{10}{26} = \frac{5}{13}$$

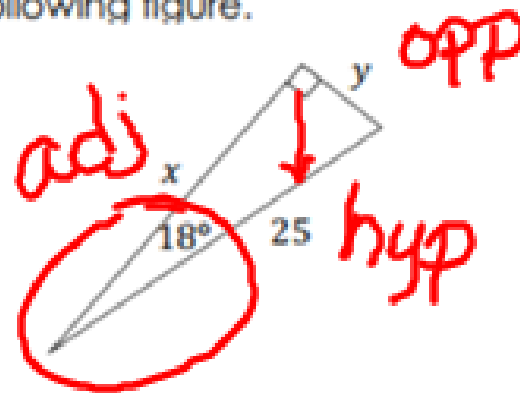
b. Find $\cos B$ for the above triangle.

$$\cos B = \frac{10}{26} = \frac{5}{13}$$

c. What do you notice about the values of $\sin A$ and $\cos B$?

$$\sin A = \cos B$$

3. Consider the following figure.



a. Which trigonometric function should you use to find the value of x ?

cosine

b. Write an equation to find x in the above figure.

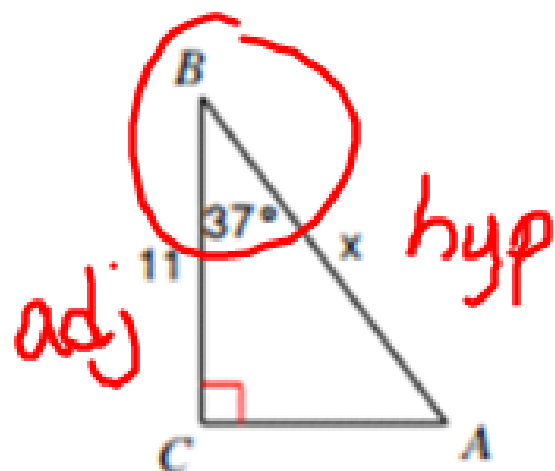
$$\cos 18 = \frac{x}{25}$$

c. Find the value of x in the above figure.

$$25 \cos 18 = x$$

$$25 * 18 \cos =$$

$$x = 23.8$$

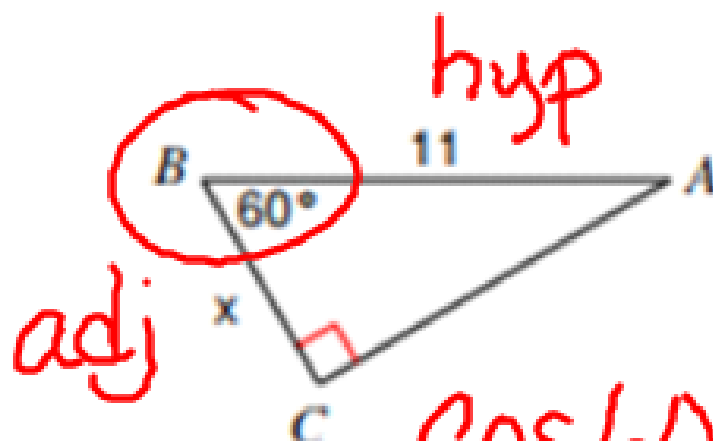


$$\cos 37 = \frac{11}{x}$$

$$\frac{x \cos 37 = 11}{\cos 37} \quad \frac{11}{\cos 37}$$

$$11 \div 37 \cos =$$

$$13.8 = x$$

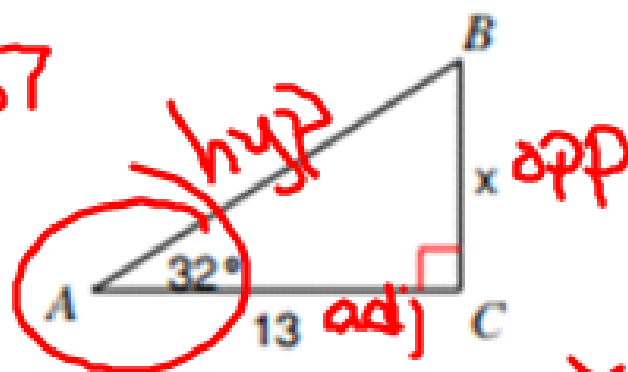


$$\cos 60 = \frac{x}{11}$$

$$11 \cos 60 = x$$

$$11 * 60 \cos =$$

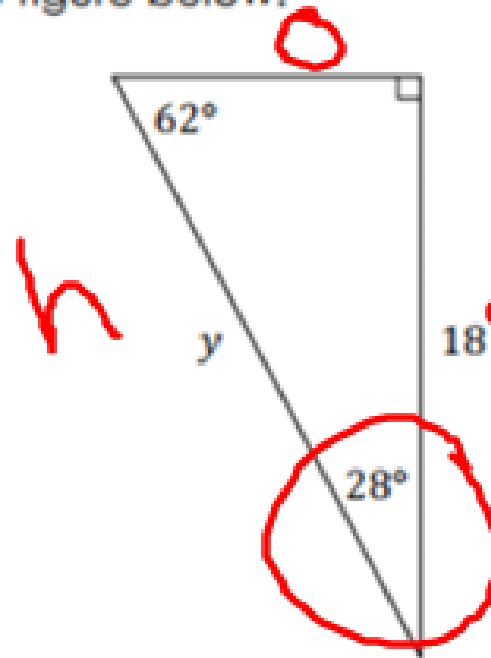
$$x = 5.5$$



$$\tan 32 = \frac{x}{13}$$

$$13 * 32 \tan = x = 8.1$$

Consider the figure below.



$$\cos 28 = \frac{18}{y}$$

$$y = \frac{18}{\cos 28}$$

$$y = 20.4$$

Determine the value of y.