

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 . $\frac{\text{opp}}{\text{hyp}} = \frac{5}{13}$

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

trigonometric ratio.

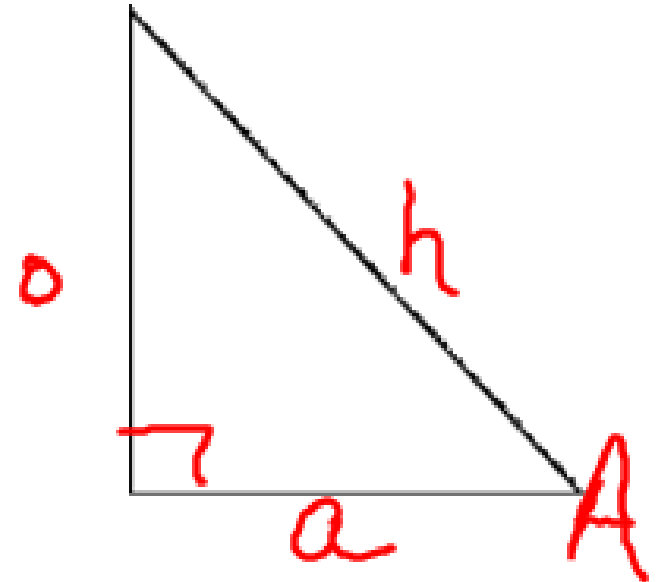
Sohcahtoa

There are three main trigonometric ratios.

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

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

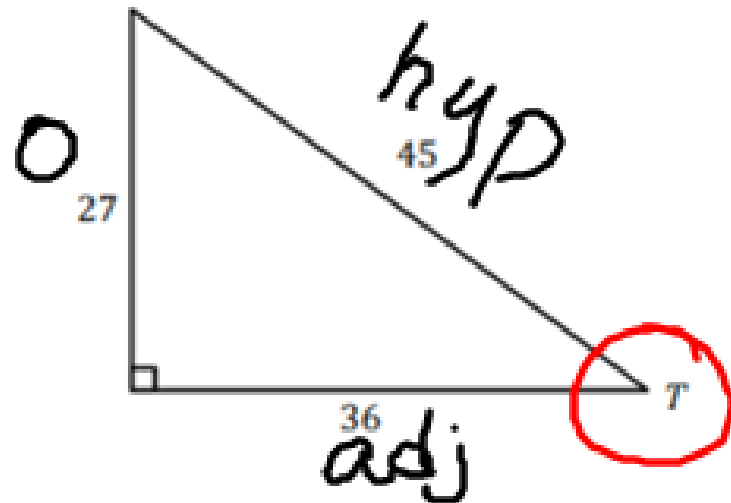
$$\text{(tan) } \underline{\text{tangent}} = \frac{\text{leg opposite to the angle}}{\text{leg adjacent to the angle}}$$



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i p y o d y a p e
n p p s u p n p j

Let's Practice!

1. Consider the figure below.



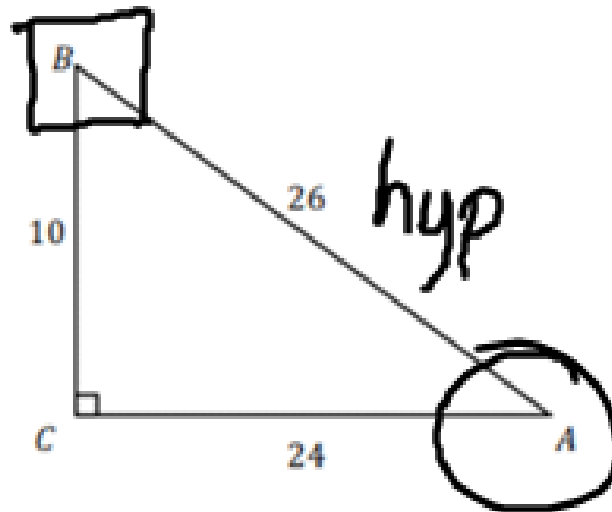
Find the sine, cosine, and tangent of $\angle T$ for the figure.

$$\begin{aligned}\sin T &= \frac{\text{opp}}{\text{hyp}} \\ &= \frac{27}{45} = \frac{3}{5}\end{aligned}$$

$$\begin{aligned}\cos T &= \frac{\text{adj}}{\text{hyp}} \\ &= \frac{36}{45} = \frac{4}{5}\end{aligned}$$

$$\begin{aligned}\tan T &= \frac{\text{opp}}{\text{adj}} \\ &= \frac{27}{36} = \frac{3}{4}\end{aligned}$$

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.

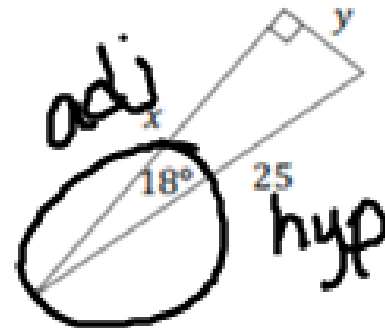
$$\cos B = \frac{10}{26} = \frac{5}{13}$$

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

they are =

$$\sin A = \cos B$$

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.

$$25 \cos 18 = x$$
$$x = 23.8$$