

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.

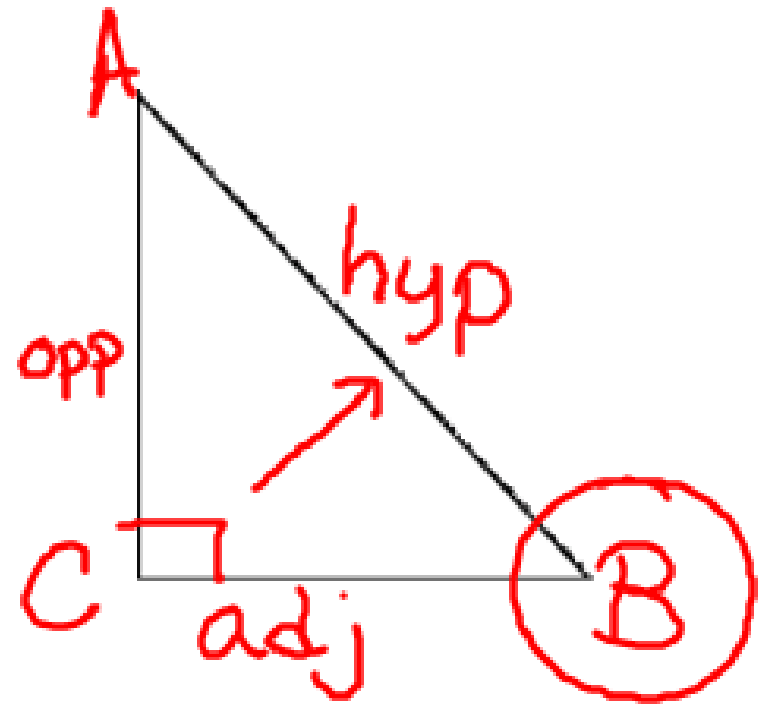
There are three main trigonometric ratios.

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

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

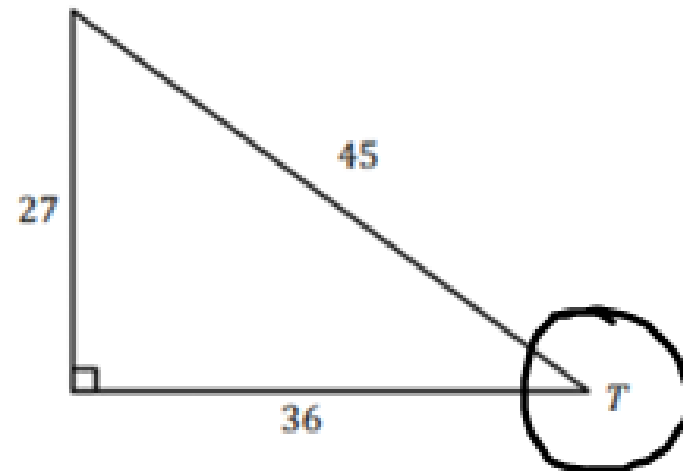
$$(tan) \underline{tangent} = \frac{\text{leg opposite to the angle}}{\text{leg adjacent to the angle}}$$

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Let's Practice!

1. Consider the figure below.

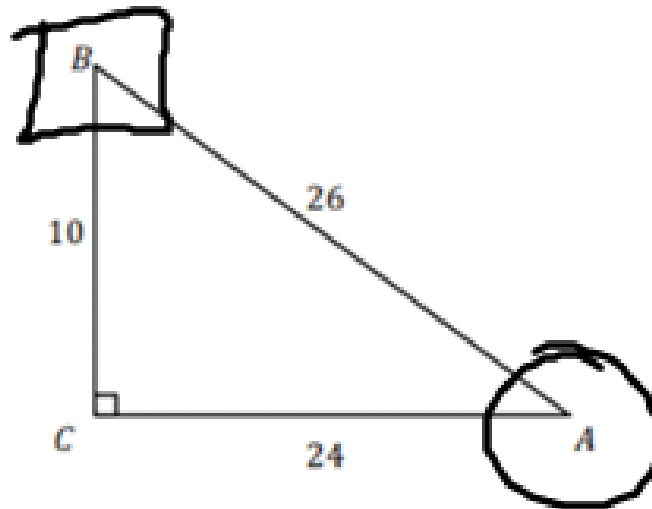


Find the sine, cosine, and tangent of $\angle T$ for the figure.

$$\sin T = \frac{27}{45} \quad \cos T = \frac{36}{45}$$
$$= \frac{3}{5} \quad = \frac{4}{5}$$

$$\tan T = \frac{27}{36} = \frac{3}{4}$$

2. Consider the figure below.



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

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

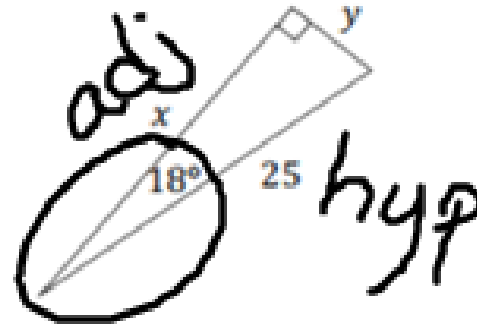
b. Find $\cos B$ for the above triangle.

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

c. What do 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

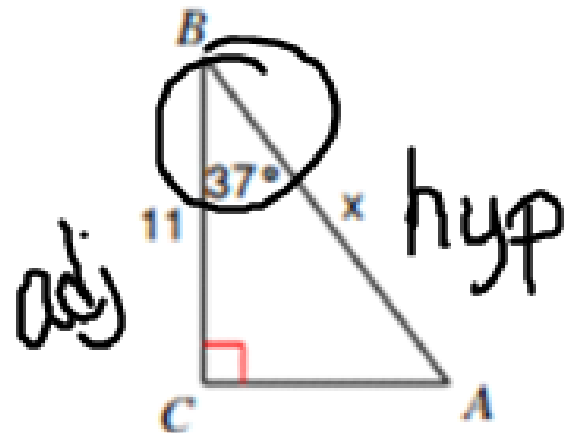
b. Write an equation to find x in the above figure.

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

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

$$25 \cos 18 = x$$
$$25 \times 18 \cos =$$

$$x = 23.8$$



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

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

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

$$11 \div 37 \cos = 13.8$$

