

# Lesson 2.6.2: Sine, Cosine, and Tangent Defined

## Targets:

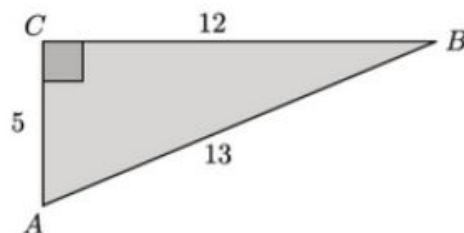
1. I can define sine, cosine, and tangent and can write them in abbreviated form.
2. I can find sine, cosine, and tangent when given all 3 side lengths of a right triangle.

## Warm Up

a.) Identify the  $\frac{opp}{hyp}$  ratios for angles  $\angle A$  and  $\angle B$ .

b.) Identify the  $\frac{adj}{hyp}$  ratios for angles  $\angle A$  and  $\angle B$ .

c.) Describe the relationship between the ratios for angles  $\angle A$  and  $\angle B$ .



## Defining the Ratios

First, read the paragraph that describes the reason for the words sine, cosine, and tangent. Then watch the video and take all the notes.

In everyday life, we reference objects and people by name, especially when we use the object or see the person frequently. Imagine always calling your friend "hey" or "him/her" or "friend"! We want to be able to easily distinguish and identify a person, so we use a name. The same reasoning can be applied to the fractional expressions that we have been investigating:  $\frac{opp}{hyp}$ ,  $\frac{adj}{hyp}$ , and  $\frac{opp}{adj}$  need names.

1. Sine:

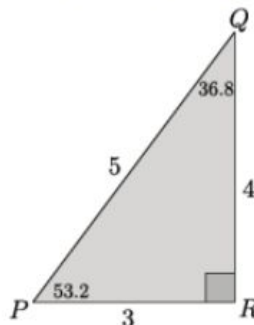
2. Cosine:

3. Tangent:

4. What does SOH-CAH-TOA mean?

## Practice 1

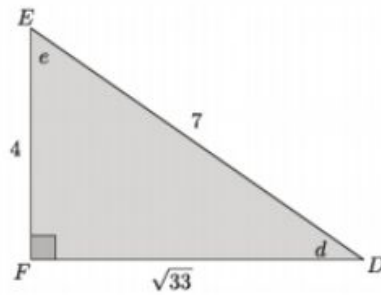
In  $\triangle PQR$ ,  $m\angle P = 53.2^\circ$  and  $m\angle Q = 36.8^\circ$ . Complete the following table.



Measure of Angle	Sine $\left(\frac{opp}{hyp}\right)$	Cosine $\left(\frac{adj}{hyp}\right)$	Tangent $\left(\frac{opp}{adj}\right)$
53.2			
36.8			

### Practice 2

In the triangle below, let  $e$  be the measure of  $\angle E$  and  $d$  be the measure of  $\angle D$ . Complete the following table.



Measure of Angle	Sine	Cosine	Tangent
$d$			
$e$			

### Practice 3

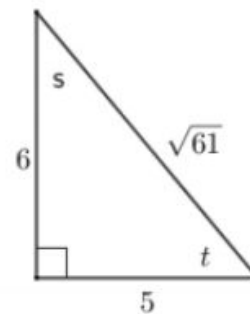
Tamer did not finish completing the table below for a diagram similar to the previous problems that the you have worked through in this lesson. Use any patterns you notice from today's lesson to complete the table for Tamer.

Measure of Angle	Sine	Cosine	Tangent
$p$	$\sin p = \frac{11}{\sqrt{157}}$	$\cos p = \frac{6}{\sqrt{157}}$	$\tan p = \frac{11}{6}$
$q$			

### Exit Ticket

1. Given the diagram of the triangle, complete the following table.

Angle Measure	$\sin \theta$	$\cos \theta$	$\tan \theta$
$s$			
$t$			



a. Which values are equal?

b. How are  $\tan s$  and  $\tan t$  related?