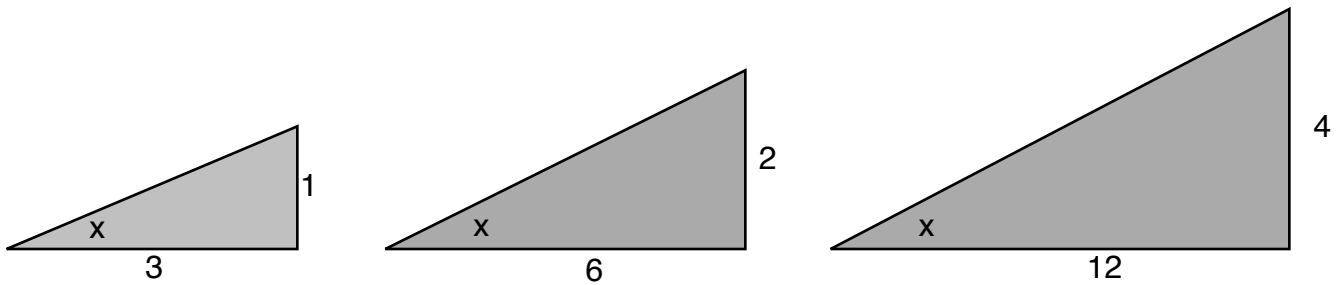


Unit 3: TRIGONOMETRY  
DAY 1: TAN RATIO



SOH-CAH-TOA

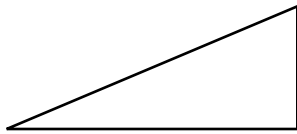
Since  $\angle x$  is the same in each triangle, and each triangle has a corresponding  $90^\circ$  angle, therefore the 3 right triangles are **similar**.

**RECALL:** Similar triangles have the **same shape**, but are a **difference size**.

What is the measure of  $\angle x$ ?

How can we figure it out?

**Trigonometric ratio:**



**(TRIGONOMETRIC RATIOS only work for RIGHT-ANGLED TRIANGLES)**

**LABELING A RIGHT TRIANGLE**

point of reference.

The angle is where you are standing in the triangle. It is your

For the similar triangles above, write the ratios of the opposite side, to the adjacent side.

	<u>#1</u>	<u>#2</u>	<u>#3</u>
<u>Opposite side</u>			
<u>Adjacent side</u>			

These ratios are called **Tangent Ratios (TOA)**

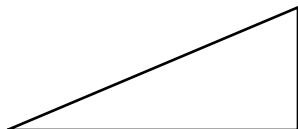
$$\tan \angle x = \frac{\text{opposite}}{\text{Adjacent}}$$

**Ex) Find the measure of angle x from the triangles given above.**

STEPS:

- 1) Make sure calculator is in degree mode
- 2) Decide what you are looking to find
- 3) Use inverse trig function button to find and angle

CONCLUSION



We can use this tangent equation to solve for:

- A) angles
- B) Ratio of sides
- C) Sides

**Ex) Find the tangent ratio for each angle.**

a)  $40^\circ$

b)  $53^\circ$

c)  $73^\circ$

Ex) Find the angle for each given ratio of sides.

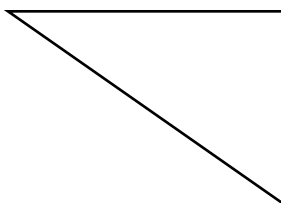
a)  $\tan A = 1.7820$

b)  $\tan B = 0.5090$

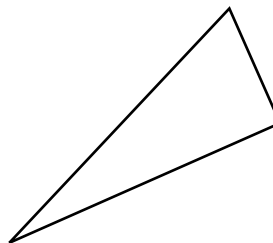
c)  $\tan C = 6.8950$

Ex) Find the missing variable (always label triangles with O, H, A).

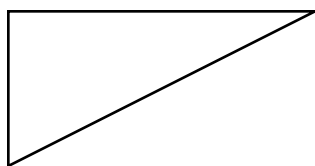
a)



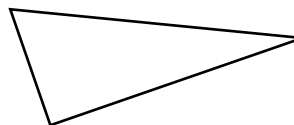
b)



c)



d)

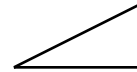


Unit 3: TRIGONOMETRY  
 DAY 2: SINE & COS RATIO

**RECALL:** Trig. Ratios are the ratios of the lengths of two sides of a RIGHT TRIANGLE.

TAN RATIO (TOA)

$$\text{TAN}\theta = \frac{\text{Opposite}}{\text{Adjacent}}$$



You can solve for 3 pieces of information using Trigonometry.

Angles

Ratios of Sides

Sides

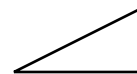
$$\begin{aligned} \text{Tan}\theta &= 1.2345 \\ \theta &= ? \end{aligned}$$

$$\text{tan}42^\circ = ?$$

$$\text{tan}15^\circ = \frac{x}{10} \quad \text{or} \quad \text{tan}15^\circ = \frac{10}{y}$$

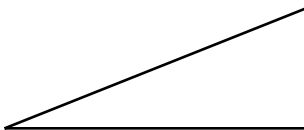
SINE RATIO (SOH)

$$\text{SIN}\theta = \frac{\text{Opposite}}{\text{Hypotenuse}}$$

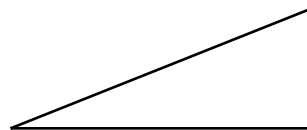


**Ex) Find the sine ratio for  $\angle B$ .**

a)



b)



**Ex) Find the sine ratio for each of the following angles.**

a)  $75^\circ$

b)  $52^\circ$

c)  $90^\circ$

**Ex) Find each angle measure, for each ratio.**

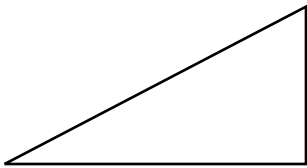
**a)  $\sin B = 0.6$**

**b)  $\sin B = 0.5$**

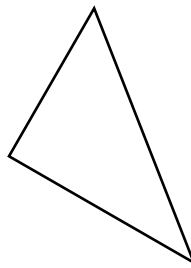
**c)  $\sin B = 0.33333$**

**Ex) Find the missing variable.**

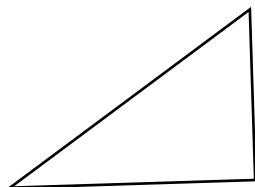
**a)**



**b)**



**c)**

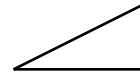


**d)**



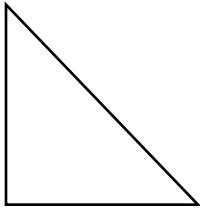
COSINE RATIO (CAH)

$$\text{COSINE} = \frac{\text{Adjacent}}{\text{Hypotenuse}}$$

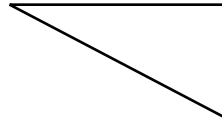


**Ex) Find the cosine ratio for angle D.**

a)



b)



**Ex) Find the cosine ratio for each of the following angles.**

a)  $42^\circ$

b)  $90^\circ$

c)  $20^\circ$

**Ex) Find each angle measure, for each ratio.**

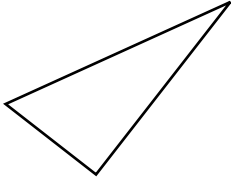
a)  $\cos D = 0.8$

b)  $\cos D = 0.6$

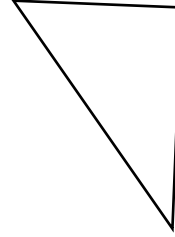
c)  $\cos D = 0.375$

Ex) Find the missing variable.

a)



b)



**SOH - CAH - TOA**