

**SOHCAHTOA** October 8, 2018, Monday

Find the measure of the indicated angle to the nearest degree.

1)  $\sin \theta = \frac{8}{31}$   
 $\sin^{-1} \sin ? = \sin^{-1} \left( \frac{8}{31} \right)$

Find the missing side. Round to the nearest tenth.

2)  $\cos \theta = \frac{9}{20}$   
 $\cos 39 = \frac{20}{x}$   
 $x \cos 39 = 20$   
 $x = \frac{20}{\cos 39}$

Find the value of each trigonometric ratio.

3)  $\tan Z = \frac{15}{20}$   
 $\tan Z = \frac{3}{4}$

Find the measure of the indicated angle to the nearest degree.

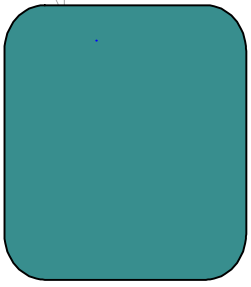
1)  $\frac{34}{31}$   
 $66^\circ$

Find the missing side. Round to the nearest tenth.

2)  $\frac{20}{25.7}$

Find the value of each trigonometric ratio.

3)  $\tan Z = \frac{12}{24} = \frac{1}{2}$



Oct 4-10:42 AM

**SOHCAHTOA** Complete 1 level C, 1 level B, 1 level A  
 Draw pictures, if one is not already drawn!


Math 7 \_\_\_\_\_  
 Trig. Problem Solving Group Activity Name \_\_\_\_\_

Directions: Solve the following problems. If a drawing is not provided, create and label one and show all work. Be sure to include the correct units for all answers. Round to the nearest tenth. You may use your notes and homework problems.

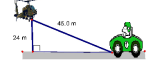
EVERY PERSON MUST TURN IN HER/HIS PAPER  
 ONE PAPER WILL BE RANDOMLY CHOSEN TO BE GRADED.  
 WORK ON ONE PROBLEM AT A TIME TOGETHER.

**C-Level Problems:**

1. Solve for  $x$ .



2. A helicopter is hovering above a road at an altitude of 24 m. At a certain time, the distance between the helicopter and a car on the road is 45.0 m. Calculate the angle of depression from the helicopter from the car.



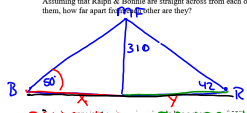
3. A ramp has an angle of elevation of  $20^\circ$ . It has a vertical height of 1.8 m. What is the length of ramp?

OVER →

Oct 5-1:52 PM

**B-Level Problems:**

4. Cedar Point's Millennium Force is 310 feet high. Ralph is sitting on a bench eating an elephant ear and could see the top of Millennium Force at an angle of elevation of  $42^\circ$ . Bonnie is standing in line for the ring toss and could see the top of Millennium Force at an angle of elevation of  $50^\circ$ . Assuming that Ralph & Bonnie are straight across from each other and Millennium Force is between them, how far apart are they? (Picture see they?)

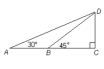


**SOHCAHTOA**  $\tan \theta = \frac{o}{a}$   
 $\tan 50 = \frac{310}{x}$   
 $x \tan 50 = 310$   
 $x = \frac{310}{\tan 50}$   
 $x = 260$

**SOHCAHTOA**  $\tan \theta = \frac{o}{a}$   
 $\tan 42 = \frac{310}{y}$   
 $y \tan 42 = 310$   
 $y = \frac{310}{\tan 42}$   
 $y = 344$   
 $x + y = 260 + 344 = 604$  M

**A-Level Problem:**

6. A person observes that from point A, the angle of elevation to the top of a cliff at D is  $30^\circ$ . Another person at point B, notes that the angle of elevation to the top of the cliff is  $45^\circ$ . If the length of the cliff is 80.0 m, find the distance between A and B.



Answers: 1. 19.1 2. 32.2° 3. 5.3m 4. 604.48 5. 300m² 6. 58.6m

Oct 5-1:52 PM

October 9, 2018, Tuesday

Know SOHCAHTOA, because you need to decide which trig ratio to use!

Find the measure of the indicated angle to the nearest degree.

1)  $59^\circ, 59^\circ$

4)  $30.4^\circ, 35.8^\circ, 39.8^\circ$

5)  $47.2^\circ, 47.2^\circ, 32^\circ$

8)  $30.2^\circ$

Choose 1 from the left & 1 from the right!

**SOHCAHTOA**  $\tan \theta = \frac{o}{a}$   
 $\tan \theta = \frac{33}{46}$   
 $\theta = \tan^{-1} \left( \frac{33}{46} \right)$   
 $\theta = 35.8^\circ$

**SOHCAHTOA**  $\sin \theta = \frac{o}{h}$   
 $\sin \theta = \frac{33}{46}$   
 $\theta = \sin^{-1} \left( \frac{33}{46} \right)$   
 $\theta = 35.8^\circ$

Oct 8-1:38 PM

Geometry Name \_\_\_\_\_ ID: 1

Know SOHCAHTOA, because you need to decide which trig ratio to use!

Find the measure of the indicated angle to the nearest degree.

1)  $\frac{4}{5}$

2)  $\frac{20}{25}$

3)  $\frac{10}{15}$

4)  $\frac{12}{16}$

5)  $\frac{15}{20}$

6)  $\frac{25}{30}$

7)  $\frac{24}{30}$

8)  $\frac{5}{12}$

9)  $\frac{17}{25}$

10)  $\frac{10}{20}$

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Find the missing side. Round to the nearest tenth.

11)  $\frac{4}{5}$

12)  $\frac{10}{15}$

13)  $\frac{15}{20}$

14)  $\frac{25}{30}$

15)  $\frac{10}{15}$

16)  $\frac{12}{16}$


17)  $\frac{24}{30}$

18)  $\frac{5}{12}$


19)  $\frac{17}{25}$


20)  $\frac{10}{20}$


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
20) 


Find the length of the side labeled  $x$ . Round intermediate values to the nearest tenth.


21) 

22) 

23) 

24) 

25) 


26) 


Oct 5-1:54 PM


Geometry Name \_\_\_\_\_ ID: 1


Your pick the trigonometry ratio based on the information (SOHCAHTOA)


Find the value of each trigonometric ratio.


1)  $\cos C$  


2)  $\sin d$  


3)  $\tan d$  


4)  $\sin d$  


5)  $\cos C$  


6)  $\tan C$  


7)  $\sin X$  


8)  $\tan C$  


9)  $\cos C$  


10)  $\sin C$  


11)  $\tan A$  

12)  $\cos A$  

13)  $\sin X$  


14)  $\cos Z$  


15)  $\sin C$  

16)  $\tan X$  

A)  $\frac{3}{4}$  B)  $\frac{3}{5}$   
C)  $\frac{4}{5}$  D)  $\frac{4}{3}$

A)  $\frac{3}{5}$  B)  $\frac{4}{5}$   
C)  $\frac{4}{3}$  D)  $\frac{3}{4}$

17)  $\sin X$  

18)  $\cos Z$  


A)  $\frac{4}{5}$  B)  $\frac{5}{3}$   
C)  $\frac{3}{4}$  D)  $\frac{4}{3}$


A)  $\frac{3}{5}$  B)  $\frac{4}{5}$   
C)  $\frac{4}{3}$  D)  $\frac{3}{4}$


Geometry Name \_\_\_\_\_ ID: 1


Your pick the trigonometry ratio based on the information (SOHCAHTOA)


Find the value of each trigonometric ratio.


1)  $\cos C$  


2)  $\sin d$  


3)  $\tan d$  


4)  $\sin d$  


5)  $\cos C$  


6)  $\tan C$  


7)  $\sin X$  


8)  $\tan C$  


9)  $\cos C$  


10)  $\sin C$  


11)  $\tan A$  

12)  $\cos A$  

13)  $\sin X$  


14)  $\cos Z$  


15)  $\sin C$  

16)  $\tan X$  

A)  $\frac{3}{4}$  B)  $\frac{3}{5}$   
C)  $\frac{4}{5}$  D)  $\frac{4}{3}$

A)  $\frac{3}{5}$  B)  $\frac{4}{5}$   
C)  $\frac{4}{3}$  D)  $\frac{3}{4}$

17)  $\sin X$  

18)  $\cos Z$  

A)  $\frac{4}{5}$  B)  $\frac{5}{3}$   
C)  $\frac{3}{4}$  D)  $\frac{4}{3}$

A)  $\frac{3}{5}$  B)  $\frac{4}{5}$   
C)  $\frac{4}{3}$  D)  $\frac{3}{4}$

Geometry

Unit 1 - Transformations in the Coordinate Plane

Unit 2 - Similarity, Congruence, & Proofs

Unit 3 - Right Triangle Trigonometry

Pre-Calculus Honors

Pre-Calculus

AP Calculus

Online Edgenuity

ACT/SAT Prep

The trigonometric functions are: **adj**  
**sine, cosine, tangent, cotangent, secant, and cosecant.**

UNIT 3 - RIGHT TRIANGLE TRIGONOMETRY

Students will apply similarity in right triangles to understand right triangle trigonometry. Students will use the Pythagorean Theorem and the relationship between the sine and cosine of complementary angles to solve problems involving right triangles.

The following will take you to activities that will provide a better understanding of materials in unit 3:

SOH CAH TOA explained, **Garick**

Tangent Ratio explained, **Owens**

Sine Ratio explained, **VirtusNerd**

Cosine Ratio explained, **VirtusNerd**

Geometry, right triangle trig, **Brazzinski**

Geometry, right triangle trig, **ayob**

Practice for unit 3 materials:

Basic Trig Quiz 9 questions, **By: freednews**

Basic Trig Quiz 17 questions, **Math15.com**

Basic Trig Word Problems 5, **multiple-choice**

Today! Some online practice!

Write your calculations/answers on a sheet of notebook paper, please!

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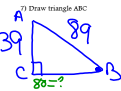
Unit 8 **SG** - Missing Sides & Angles

Given triangle ABC, find the following six trig ratios, simplest form required.

1)  $\sin A = \frac{10}{26}$       4)  $\sin B = \frac{10}{24}$   
 2)  $\cos A = \frac{24}{26}$       5)  $\cos B = \frac{10}{26}$   
 3)  $\tan A = \frac{10}{24}$       6)  $\tan B = \frac{24}{10}$


Round all remaining questions to two decimals. Use for questions 7 - 10.


In  $\triangle ABC$ ,  $m\angle ACB = 90^\circ$  and  $\sin(B) = \frac{39}{89}$

7) Draw triangle ABC. 

8) What is the length of BC?  $a^2 + b^2 = c^2$   
 $a^2 + 39^2 = 89^2$   
 $a^2 + 1521 = 7921$   
 $a^2 = 6400$   
 $a = 80$


9) What is  $\cos A$ ?  $\cos A = \frac{80}{89}$


11) Solve for x. 

12) Solve for theta. 

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13) Solve for x and y. 

14) Solve for all missing sides and all missing angles in the triangle below round to the nearest tenth. 

15) Evaluate  $\tan^{-1}(\sqrt{4096})$

16) Is there an acute angle, such that  $\sin A = \cos A$ ? If so, what is the measure of the angle?

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Hertel/Williams/Lambert

## TRIGONOMETRY PACKET

### GEOMETRY HONORS


SOH CAH TOA

**S** opp **H** hyp **O** sin  
**C** adj **H** hyp **O** cos  
**T** opp **A** adj **O** tan


Hypotenuse      Adjacent      Opposite

Keep the letter you want to work out below in the triangle and either multiply (horizontal connection) or divide (vertical connection)!


Oct 4-10:31 AM


Example: 


Definition: The angle between the horizontal line and the line of sight is called the angle of elevation.


Example: 


Definition: The angle between the horizontal line and the line of sight is called the angle of depression.


Example: 


Example: 


Example: 


Example: 


Example: 


Example: 


Example: 


Example: 


Example: 

Example: 

Example: 

Example: 

Example: 

Example: 

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SWBAT: 1) Solve problems involving angle of elevation/depression, and 2) Express sine and cosine in terms of its CoFunction.

**Real World Connection:**  
 Trigonometry can be used on a daily basis in the workplace. Since trigonometry means "triangle measure", any profession that deals with measurement deals with trigonometry as well. Carpenters, construction workers and engineers, for example, must possess a thorough understanding of trigonometry.

**Angle of Elevation**  
 The angle of elevation is always measured from the ground up. Think of it like an elevator that only goes up. It is always INSIDE the triangle.  
 In the diagram at the left, x marks the angle of elevation of the top of the tree as seen from a point on the ground.  
 You can think of the angle of elevation as relation to the movement of your eyes. You are looking straight ahead and you must raise (elevator) your eyes to see the top of the tree.

**Angle of Depression**  
 The angle of depression is always ON INSIDE the triangle. It is never outside the triangle.  
 In the diagram at the left, x marks the angle of depression of a boat as seen from the top of a lighthouse.  
 You can think of the angle of depression as relation to the movement of your eyes. You are standing at the top of the lighthouse and you are looking straight ahead. You must lower (depress) your eyes to see the boat in the water.  
 There are two possible ways to see our angle of depression to obtain an angle INSIDE the triangle.  
 1. Find the angle adjacent (next door) to our angle which is inside the triangle. The adjacent angle will always be the complement of our angle. Our angle and the angle next door will add to 90°. In the diagram on the left, the adjacent angle is 57°.  
 2. Utilize the fact that the angle of depression = the angle of elevation (alternate angles).  
 A. (Red arrow number) Just be sure to place it on the correct process.

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1) From the angle of view point the measure of angle x is shown in the diagram. Give each answer correct to the nearest tenth (angle of elevation).

Example 1:  
 From an airplane 6000 ft above the ground, you see a landing strip at an angle of depression of 23°. Assuming the distance above the ground, how far are you from the landing strip? Round your answer to the nearest hundred.

1.) From a point on the ground 25 feet from the foot of a tree, the angle of elevation of the top of the tree is 32°. Find to the nearest foot, the height of the tree.

2.) A lookout spots a fire from a 32 meter tower. The angle of depression from the tower to the fire is 13 degrees. To the nearest meter, how far is the fire from the base of the tower?

3.) To find the height of a pole, a surveyor moves 80 feet away from the base of the pole and then, with a transit 4 feet tall, measures the angle of elevation to the top of the pole to be 57°. What is the height of the pole? Round answer to the nearest foot.

4) Find the value of theta for which  $\sin \theta = \cos 25^\circ$  to two decimal places.

5) Find the value of theta for which  $\sin \theta = \cos 25^\circ$  to two decimal places.

Refer to the triangle below:

a) What is the relationship between  $m\angle A$  and  $m\angle B$ ? \_\_\_\_\_  
 b) What is the  $\cos A$ ? \_\_\_\_\_ What is the  $\sin B$ ? \_\_\_\_\_  
 c) What is the  $\sin A$ ? \_\_\_\_\_ What is the  $\cos B$ ? \_\_\_\_\_

What do you notice about the cosine and sine of complements? \_\_\_\_\_

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Oct 4-10:37 AM

1)  $\sin 15^\circ = \cos 75^\circ$   
This is true since  $15 + 75 = 90$ .

2)  $\cos 40^\circ = \sin \underline{\hspace{1cm}}$

3)  $\cos 8^\circ =$

4)  $\sin 26^\circ =$

5)  $\sin 43^\circ = \cos$

6)  $\cos 2^\circ =$

7)  $\cos 17^\circ =$

8)  $\sin 70^\circ =$

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Oct 4-10:55 AM