

Right Triangle Trig Review

Warm Up – Trig Ratio Recap

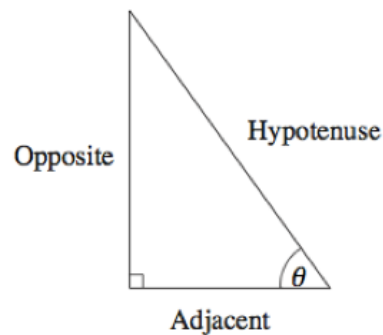
(Work on this part individually)

For a right triangle, the sine, cosine, and tangent of the angle θ is defined as:

$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$$

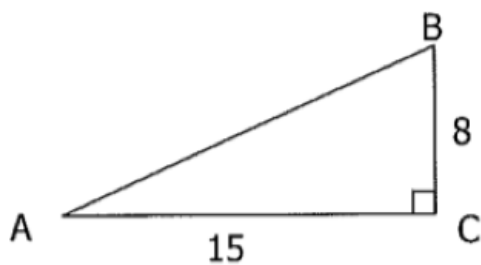
$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$



Remember:

Example 1 Using Trig Ratios



$$\sin A = \frac{8}{17}$$

$$\sin B = \frac{15}{17}$$

$$\cos A = \frac{15}{17}$$

$$\cos B = \frac{8}{17}$$

$$\tan A = \frac{8}{15}$$

$$\tan B = \frac{15}{8}$$

Example 2 Finding Missing Sides

Use trig ratios to find the missing sides of the following triangles. Make sure your calc is in DEGREE MODE!

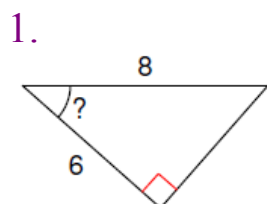
<p>1.</p> $\sin 70 = \frac{x}{7}$ $x = 7 \sin 70$ $x = 6.58$	<p>2.</p>	<p>3.</p>	<p>4.</p>
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Example 3 Finding Missing Angles

To find a missing angle in a right triangle, we must use inverse trigonometry.

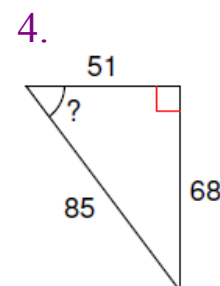
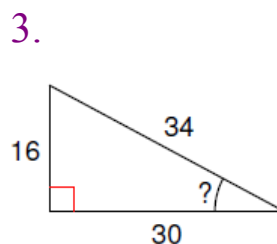
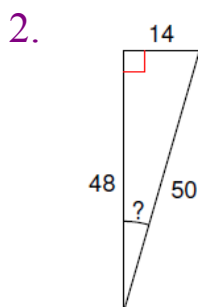
Ex: $\sin(\text{angle}) = \text{value} \rightarrow \sin^{-1}(\text{value}) = \text{angle}$
 $\sin(30^\circ) = 0.5 \rightarrow \sin^{-1}(0.5) = 30^\circ$

Find the ? angle measure to the nearest degree.



$$\cos^{-1} \frac{6}{8} = ?$$

$$? = 41.41^\circ$$



Still confused on the right triangle trig ratios? Try watching:

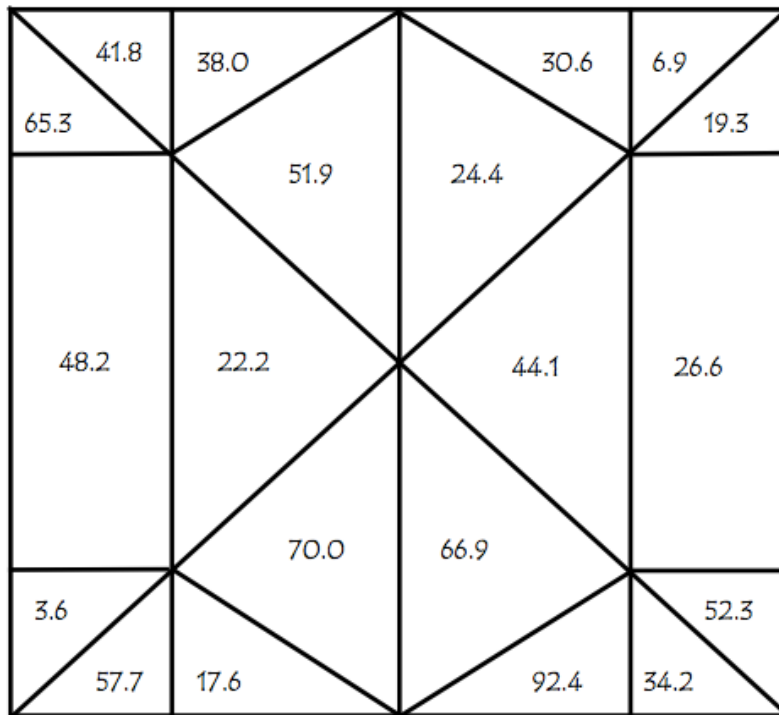
https://www.khanacademy.org/math/trigonometry/basic-trigonometry/basic_trig_ratios/v/basic-trigonometry

https://www.khanacademy.org/math/trigonometry/basic-trigonometry/basic_trig_ratios/v/example-trig-to-solve-the-sides-and-angles-of-a-right-triangle

Task 1 – Trig Ratio Puzzle

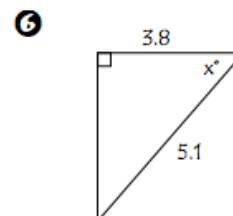
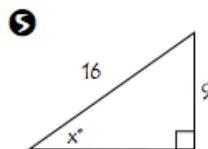
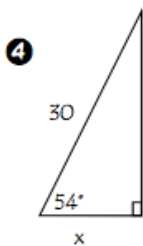
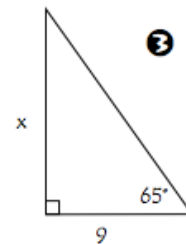
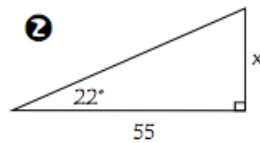
(Work on this part with your table partner)

Directions: Find the value of x in the following problems. Then, find the answer in the puzzle above and color that piece according to your color chart. The answers will only be used once and not all answers will be used.



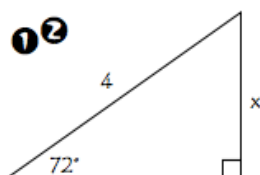
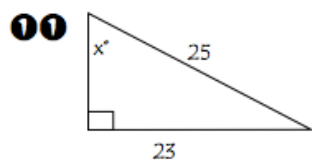
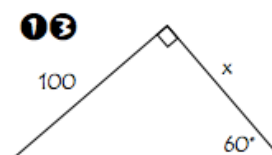
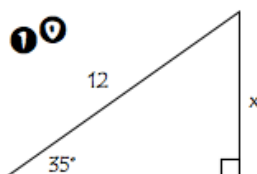
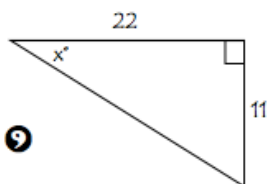
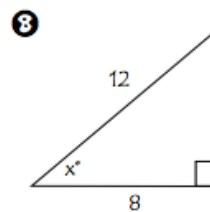
Color 1

1 $\sin 27^\circ = \frac{x}{8}$



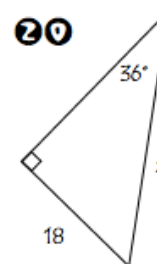
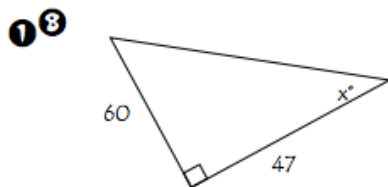
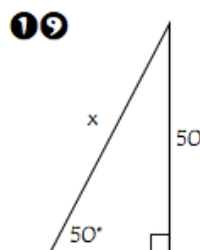
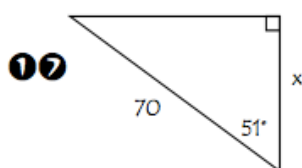
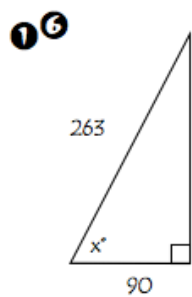
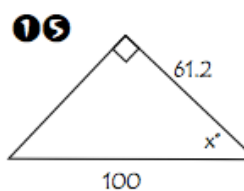
Color 2

7 $\tan 18^\circ = \frac{x}{75}$



Color 3

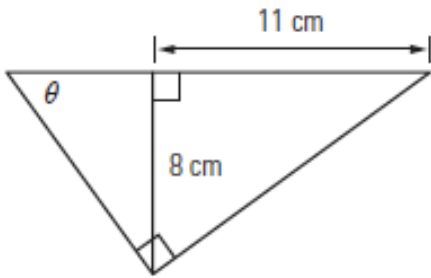
14 $\cos 5^\circ = \frac{92}{y}$



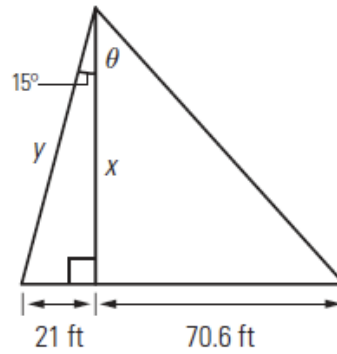
Task 2 - Applying Trig Ratios

(Work on this part with a partner of your choice)

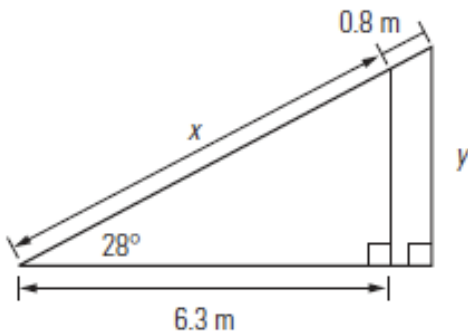
1. Calculate the measure of angle θ .



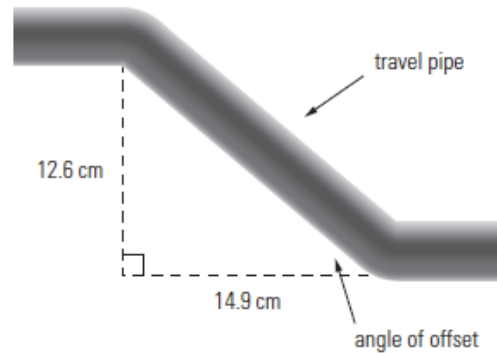
2. Solve for the indicated sides and angles.



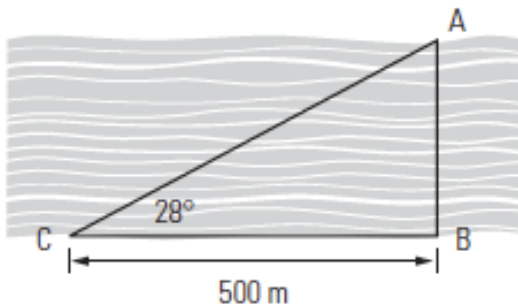
3. Find each of the indicated sides.



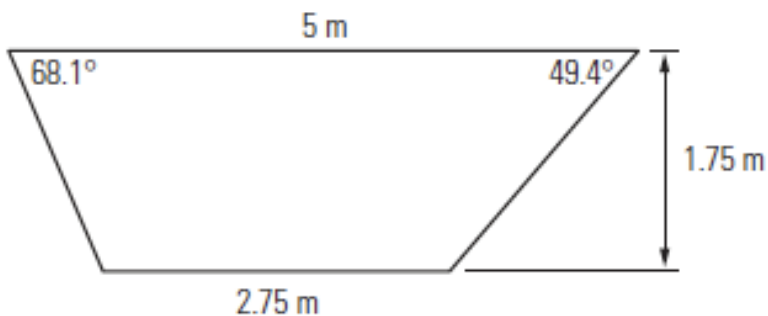
4. Find the angle of offset between the two pipes. How long is the travel pipe?



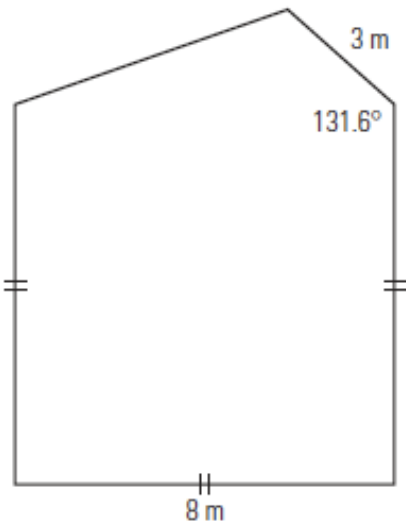
5. A surveyor must determine the distance, AB, across a river. He stands at point C, downriver 500 m from B, and using his theodolite, measures the angle of vision to A as 28° . How wide is the river?



6. Pauline is building a fence around her vegetable garden, shown below. What length of fence will she need to build?

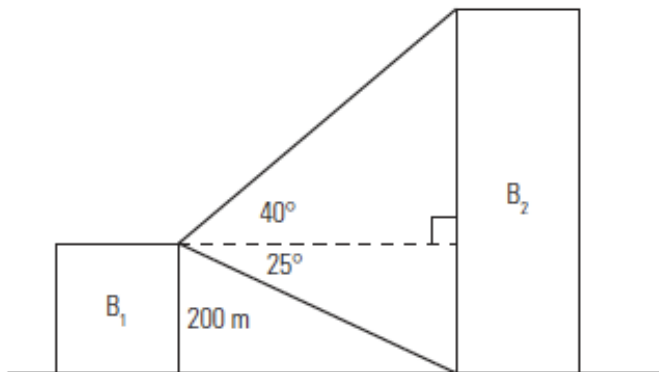


7. Soo-Jin is building a fence around his patio. Using the diagram below, calculate the amount of fencing he will need to buy.

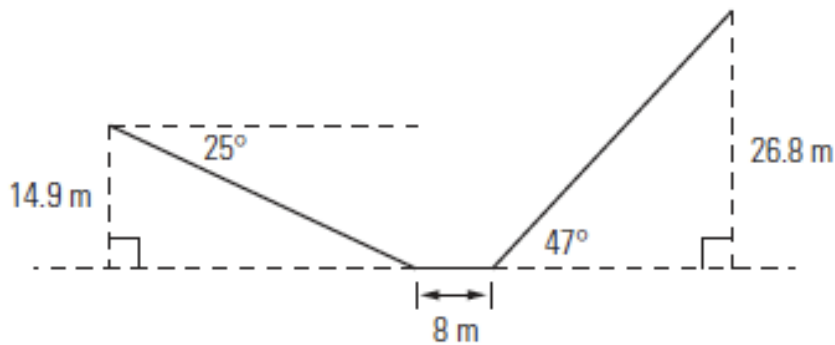


House is here (no fence necessary)

8. From the top of a 200 m-tall office building, the angle of elevation to the top of another building is 40° . The angle of depression to the bottom of the second building is 25° . How tall is the second building?



9. A roller coaster has a track that drops at an angle of depression of 25° from a height of 14.9 m. When it reaches the ground, it travels horizontally for 8 m. It then rises at an angle of elevation of 47° to a height of 26.8 m.



a) What is the total horizontal distance covered by this portion of track?

b) What is the total distance travelled by a car on this portion of the roller coaster track?

10. You're traveling on a road trip and you notice a mountain directly in front of you. The angle of elevation to the peak is 3.5 degrees. After you drive 13 miles closer to the mountain, the angle of elevation is 9 degrees.

- Draw a picture.
- Approximate the height of the mountain. (Hint: You may need to use substitution!)

Assignment Bonus Points –

With a partner, create an Educreations video that completely explains one of the problems in Task Two #4-10. Make sure to email the video to Ms. Hahn when complete!

**Upload this document completed to Schoology
by class tomorrow!**