Trig Ratios

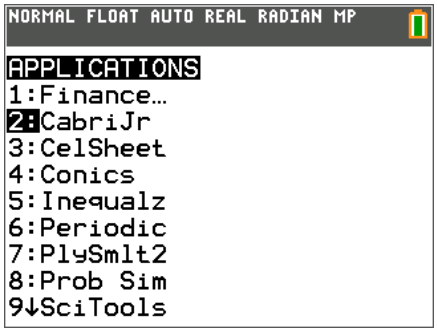
Student Activity

Name _____

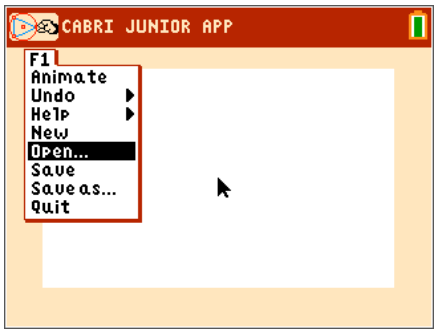
Class _____

Problem 1 – Investigation

Start the **Cabri Jr.** app by pressing apps and choosing it from the menu.

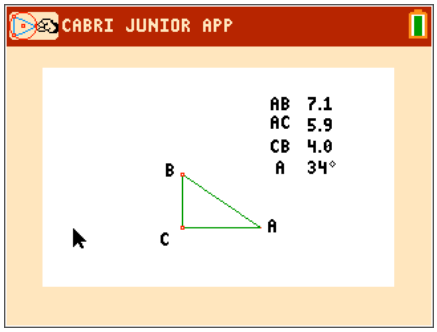


Open the file *TRIG* by pressing y= to open then **F1: File** menu, choosing **Open**, and choosing it from the list.



In right triangles, there is a relationship between the ratios of the side lengths and the trigonometric functions.

Record the following ratios and trigonometric values to two decimal places.



1. $\frac{CB}{AC} = \_\_\_ \approx \_\_\_\_$; $\frac{AC}{AB} = \_\_\_ \approx \_\_\_\_$; $\frac{CB}{AB} = \_\_\_ \approx \_\_\_\_$

2. sin*A* = ____; cos*A* = ____; tan*A* = ____

Repeat this for two more different triangles by moving either point **A** or **B** to a different location. To resize the triangle, place the cursor over either point **A** or **B**. Press alpha to grab the point and use the arrow keys to move it to any desired location.

Triangle #2

3. $\frac{CB}{AC} = \_\_\_ \approx \_\_$; $\frac{AC}{AB} = \_\_\_ \approx \_\_$; $\frac{CB}{AB} = \_\_\_ \approx \_\_$

sin*A* = ____; cos*A* = ____; tan*A* = ____

Triangle #3

4. $\frac{CB}{AC} = \_\_\_ \approx \_\_$; $\frac{AC}{AB} = \_\_\_ \approx \_\_$; $\frac{CB}{AB} = \_\_\_ \approx \_\_$

sin*A* = ____; cos*A* = ____; tan*A* = ____

Based upon your answers hypothesize which ratio goes with each trigonometric function.

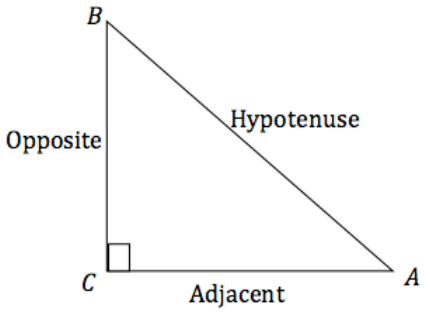
5. $\sin A =$ ——— ; $\cos A =$ ——— ; $\tan A =$ ———

A good acronym to use to help remember these relationships is SOHCAHTOA.

$$\sin A = \frac{\text{Opposite}}{\text{Hypotenuse}}$$

$$\cos A = \frac{\text{Adjacent}}{\text{Hypotenuse}}$$

$$\tan A = \frac{\text{Opposite}}{\text{Adjacent}}$$

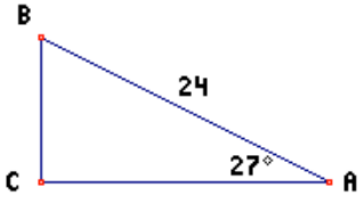


Problem 2 – Trigonometry, What is it good for?

One of the uses of trigonometry is finding missing side lengths of a triangle.

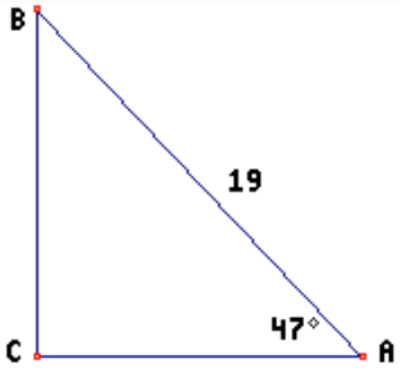
6. **a.** To find the length of side *BC* in the triangle to the right, write the sine relationship.

b. Now solve for *BC* and calculate using your calculator.



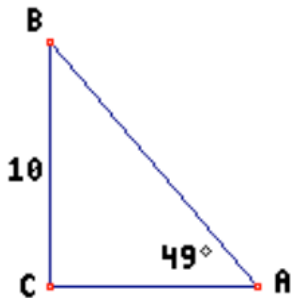
7. **a.** To find the length of side *AC* in the triangle to the right, write the cosine relationship.

b. Now solve for *AC* and calculate using your calculator.



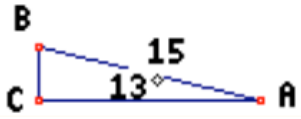
8. **a.** To find the length of side *AC* in the triangle to the right, write the tangent relationship.

b. Now solve for *AC* and calculate using your calculator.

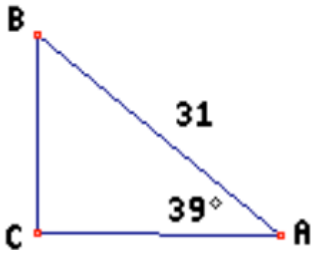


Write the correct trigonometric function for each triangle below and solve for the missing side.

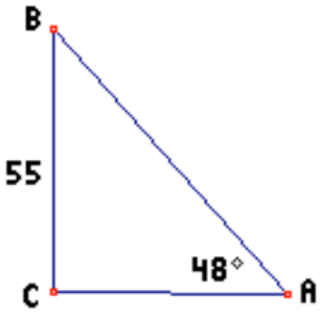
9. Find *AC*.



10. Find *BC*.



11. Find *AC*.



12. Find *AC*.