Solving Trigonometric Equations

TIMATH.COM: ALGEBRA 2

TEACHER NOTES

ID: 8219

Activity Overview

In this activity, students will find a missing angle measure in a right triangle by solving trig equations with a graph and table. They will find a point of intersection between two graphs using a **CALC** feature and using the inverse sine command.

Topic: Linear Systems

- Students will solve trigonometric equations and inequalities graphically and algebraically.

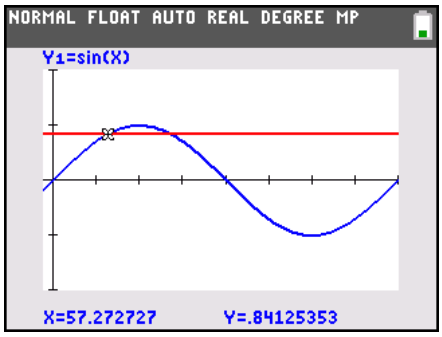
Teacher Preparation and Notes

- This activity is appropriate for students in Algebra 1. It is assumed that students are familiar with linear functions, their graphs, and have solved linear systems algebraically.
- This activity is designed to have students explore **individually and in pairs**. However, an alternate approach would be to use the activity in a whole-class format.
- **To download the student worksheet, go to education.ti.com/exchange and enter "8219" in the keyword search box.**

Suggested Related Activities

To download any activity listed, go to education.ti.com/exchange and enter the number in the keyword search box.

- Transforming the Sine Function (TI-84 Plus family and TI-Navigator™) — 8727
- What's My Sine? (TI-Nspire technology) — 10091



This activity utilizes MathPrint™ functionality and includes screen captures taken from the TI-84 Plus C Silver Edition. It is also appropriate for use with the TI-83 Plus, TI-84 Plus, and TI-84 Plus Silver Edition but slight variances may be found within the directions.

Compatible Devices:

- TI-84 Plus Family
- TI-84 Plus C Silver Edition

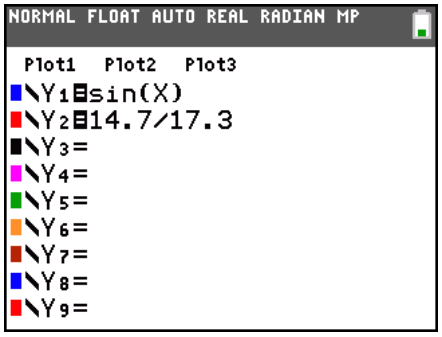
Lesson Files:

- SolvingTrigEquations_Student.pdf
- SolvingTrigEquations_Student.doc

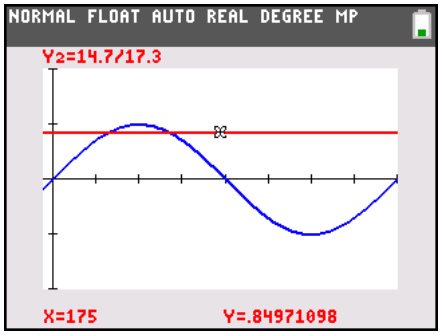
Click HERE for Graphing Calculator Tutorials.

Students consider a triangle *ABC*. They use the sine ratio to determine the measure of $\angle A$.

Students use their calculator to plot the graph for the ratio and the sine.

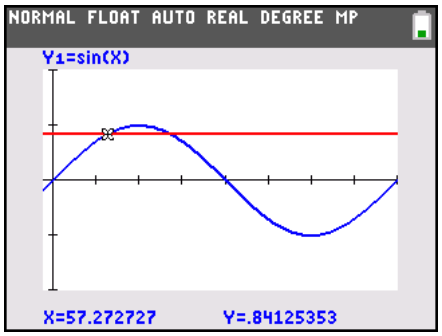


After graphing the two, students use TRACE to help students see that the ratio 14.7/17.3 is about 0.8497.

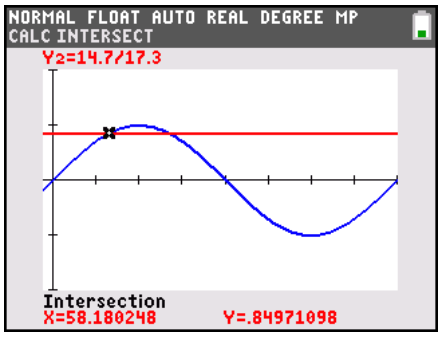


Students move to one of the intersection points. It appears to be about 121 degrees. Then they move to another intersection point, it appears to be about 57°.

They will see that either 121° or 57°, is going to be the measurement of $\angle A$.



To get a more exact estimate, examine a table in smaller increments or students can by using the **intersect** tool.



Another choice that students have is finding the sine inverse of the ratio.

At the end of this activity, students will know several ways to find a missing angle of a right triangle. They will also be able to find the intersection of two graphs.