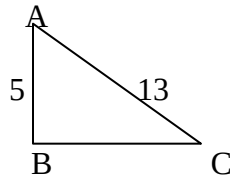


Task

Inverse Trigonometric Functions

How did right triangle trigonometry develop?

Check homework for completion and go over answers. Begin lesson on inverse trig ratios. Give the students a handout with several right triangles on it. This time each triangle has only one angle labeled—the right angle and two side lengths labeled.



Explain that this time the goal will be to find the measure of the other acute angles in the triangle. To make things simpler we are going to start by trying to find the measure of angle A in each triangle.

- ❑ Have the students organize the given information for each triangle. For the example above, the given information would be $\angle A = ?$, $Hyp = 13$, and $Adj = 5$. Assign the students to their cooperative groups and have them compare answers within their groups. Also ask them to classify the triangles into groups.
- ❑ Discuss as a class the different possible classifications. Most groups probably form three categories: Triangles with the opposite and hypotenuse sides given, triangles with the adjacent and hypotenuse sides given, and triangles with the opposite and the adjacent sides given. They should see the relationship between these three categories and the three trig ratios sine, cosine, and tangent.
- ❑ Ask the students to set up equations for each triangle. For example, the equation for $\angle A$ in the triangle above $\angle A$ would be $\cos \angle A = A/H = 5/13$.
- ❑ Show students how to solve the equation for A. Remind the students before they were given the angle measure and asked to find the side length, now they are given both side lengths and asked to find the angle measure. Explain that you need to reverse the process and uncover the angle measure. Show students how they can use the trig table to find the angle or use a scientific calculator to find the cosine inverse of 5/13. By punching in, they should get a result of 67° .
- ❑ Finish off the rest of the problems by solving each equation for angle B. Ask the students how they would get the answer to the other acute angle in each triangle. Answers may vary here. Some students might suggest setting up another trig ratio, while others might realize that you can simply subtract the total of the two known angles from 180° .
- ❑ Assign worksheet on sine, cosine, and tangent inverse for homework.