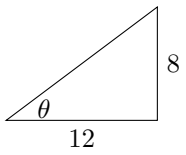
Section 5.5 Learning Objectives:

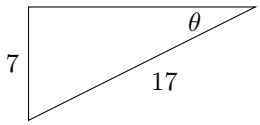
- Video 1 (7:42): The Right Triangle Relationships
  - State the three basic formulas for right triangle trigonometry.
  - Understand the relationship between the right triangle formulas for the sine and cosine functions and the definitions of the sine and cosine functions using points on the plane.
- Video 2 (4:27): The Cofunction Identities
  - State the cofunction identities.
  - Understand the relationship between the cofunction identities and the right triangle formulas.
- Video 3 (10:27): Solving Right Triangles
  - Apply the right triangle trigonometry to solve right triangles using exact values from the unit circle or approximate values from a calculator.

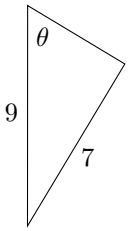
Individual Learning Objective Binder Check: Before class, you should have completed the Learning Objective Worksheet for each of the learning objectives in the video. These should have been placed in a binder in an organized manner so that it can be quickly checked by the instructor. If you have specific questions, this is a good time to ask the professor about them. While you are waiting for the professor to make their way around the room, you can work on the rest of the activities.

Group Practice Problems: In a group of no more than 3 students, work on the following problems. While everyone in the group should work together, each student should write out their work for themselves. This work can prove to be helpful when working on the homework assignment. If questions arise as you're working on these problems, feel free to seek help from the instructor or other groups of students.

Group Practice Problems #1 - Determining Trigonometric Functions from Triangles: For each triangle, calculate all six trigonometric functions of the angle θ.







Group Practice Problems #2 - Cofunction Identities:

- Write a short paragraph that explains why the cofunction identities are true. You may find it helpful to include a diagram as part of your explanation.
- Using the logic of your explanation, find two more pairs of cofunction identities.

Group Practice Problems #3 - Solving Triangles: Draw the triangle that matches the given description. The solve it. Provide exact values, if possible. If not, round all values to two decimals.

- A 30-60-90 triangle where the short leg has length 14.
- A triangle where one of the acute angles θ satisfies $\cos(\theta) = \frac{4}{11}$ and the hypotenuse is length 33.
- A triangle where one of the acute angles α satisfies $\tan(\alpha) = \frac{8}{5}$ and the hypotenuse is length 15.

Group Practice Problems #4 - Word Problems:

- The angle of elevation to the top of a building is found to be 2 degrees from the ground at a distance of 2 miles from the base of the building. Using this information, find the height of the building.
- A 400-foot tall monument is located in the distance. From a window in a building, a person determines that the angle of elevation to the top fo the monument is 18° and the angle of depression to the bottom of the is 3°. How far is the person from the monument?

Group Work Check: Present your work for the practice problems to the instructor for approval. The work will not be graded deeply, but simply graded on whether it appears that you have put in a good faith effort to do the work. If you are not confident about particular problems, this is a good time to ask about them.

Section 5.5 Homework:

- 5.5 (General Problems): #1, 3, 5, 9, 11, 15, 19
- 5.5 (Write-Up): #25, 26