**Section 6.5 Learning Objectives:**

- Video 1: Geometric Word Problems (8:59)
  - Apply trigonometric concepts to solve geometric word problems.
- Video 2: Algebraic Word Problems (9:24)
  - Apply trigonometric concepts to solve word problems involving periodic oscillating behaviors.

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**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.

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**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 - Geometric Word Problem:* Sketch a diagram and solve the problem.

- A cable that anchors the center of the London Eye Ferris wheel to the ground must be replaced. The center of the Ferris wheel is 70 meters above the ground and the second anchor on the ground is 23 meters from the base of the wheel. What is the angle from the ground up to the center of the Ferris wheel and how long is the cable?
- A mathematician is standing 100 yards from the base of a building. The angle of elevation to the top of the building is 1.2 radians. (They're a mathematician. Of course they're using radians!) Determine the height of the building.

*Group Practice Problems #2 - Algebraic Word Problem:* Sketch the graph of the model and solve the problem.

- An object is connected to the wall with a spring that has a natural length of 20 cm. The object is pulled back 8 cm past the natural length and released. The object oscillates 3 times per second. Find an equation for the horizontal position of the object ignoring the effects of friction. How much time during each cycle is the object more than 27 cm from the wall?
- Outside temperature over the course of a day can be modeled as a sinusoidal function. Suppose you know the high temperature for the day is 92 degrees and the low temperature of 78 degrees happens at 4 AM. Assuming $t$ is the number of hours since midnight, find an equation for the temperature $D$ in terms of $t$.

**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.

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**Section 6.5 Homework:**

- 6.5 (General Problems): #1, 3, 7, 9, 11, 15
- 6.5 (Write-Up): #19, 20