University of Mary Division of Education

Lesson Plan (Day 2)

**Name:** Courtney Kessler

**Grade Level:** 11

**Subject(s) Area:** Algebra II

**Materials Needed:** PowerPoint, circular graph copies, rectangle graph copies, spaghetti, glue

Standards:

* **F.TF.2** Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.

Objectives:

* Students will understand how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.

Learning Activities:

 (PowerPoint slide/exemplar references) [*Potential student responses*]

**0 min Introduce lesson:**

* Today we will be doing the Spaghetti Lab to emphasize the parent graphs of sine and cosine.
* Students will be paired up so that one student will do the sine graph and one student will do the cosine graph.
	+ - **DI:** Pairs will be predetermined by me to ensure that students who are above or on-level will be paired with students who are under level.
* Each student will need a circular graph, a rectangular graph, 8 pieces of spaghetti.
* Each group of two will need a glue bottle.
* Have each group pick a partner to be sine and a partner to be cosine.

**7 min Daily Activities:**

* (Refer to powerpoint)
* **Sine Partner:**
	+ On your circular graph, draw a perpendicular line segment from each angle measurement to the **x-axis**.
	+ Lay spaghetti down and carefully break at the same length of each line (every 15$°$) all the way around the unit circle (360$°$).
	+ Glue each spaghetti piece to the corresponding angle on the rectangle graph.
* **Cosine Partner:**
	+ On your circular graph, draw a perpendicular line segment from each angle measurement to the **y-axis**.
	+ Lay spaghetti down and carefully break at the same length of each line (every 15$°$) all the way around the unit circle (360$°$).
	+ Glue each spaghetti piece to the corresponding angle on the rectangle graph.
* (Show students how the final product should look).
* Before leaving, students will complete an exit slip stating:
	+ 2 things they learned
	+ 1 thing they are still not sure of

**45 min Final Announcements/Clean-Up Time:**

* Make sure students put all materials back where they belong.

**50 min Dismiss Class**

* **HAVE A FABULOUS DAY ☺**

Assessment:

The assessment I will use for this lesson is the completed product of the sine and cosine graphs as well as the exit slip. I will be able to see if the student understands the concepts by looking at the spaghetti graphs. The exit slip will help me to determine what concepts I should touch on again tomorrow before we move too far forward. At the end of the unit, there will be a test.
Reflection:
Overall, I think the lesson went well. In order to strengthen this lesson the next time I teach it, I will make sure to put the directions on the board or give the students a sheet with the directions on them instead of just having them on the PowerPoint. I also might just print out the PowerPoint so that students may refer back to different slides since the lesson is student paced. I also plan to write up “I Can” statements so that the students understand where we are going. Another thing that I had noticed is that some students finished faster than others and then just sat in their seats doing nothing. For the next time, I am going to have brain teasers for these high flyers to answer so that they are not sitting there doing nothing.