Secondary Math 3

Concept: \_\_\_\_\_Model and describe periodic phenomena\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **Learning Objective:** I know…I can… | **Assessment Examples:** |
| 1. I can describe the amplitude, frequency (period) and midline of a periodic function given as a graph or an equation
 | Find the aAmplitude: \_\_\_\_\_\_ Period: \_\_\_\_\_\_ |
| 1. I can graph a sin or cos graph
 | Graph  |
| 1. I can model periodic phenomena using a sin or cos function.
 | The graph below shows height as a function of time for a ride on a Ferris wheel. Find a sine equation for the graph. |

**Launch:** (How will you begin your lesson to help students make connections to material already learned and help students understand why they are learning the new concept?)

A Ferris wheel has a radius of 30’. A particular car is 3’ off the ground at its lowest point, and it takes 60 seconds to make one complete revolution. Make a graph describing the height of the car over a 4 minute period. What do you notice about the shape of the graph? How long does it take for the graph to repeat? What is the distance between the midline and the high/low point of the graph?

**Explore:** (How will you allow students to construct their own understandings?)

* Have students make an input/output table for and discuss similarities and differences to Ferris wheel graph. How long does it take for graph to repeat? What is the high/low point? Where is the midline?
* Have students graph on their graphing calculators experimenting on different values values of a,b, and c for the equations . What

**Discuss:** (How will you share students’ learning and assure all students have a minimal level of understanding?)

* Ensure students know the effect of the values of a,b and c.
* Difference between period and frequency
* When it is appropriate to use sin vs cos graph

**Summarize:** (How will you help students understand what they learned, why they learned it, how does it connect to what you already know?)