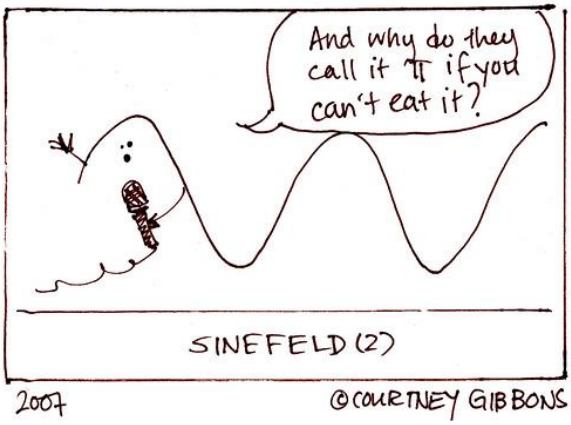
Algebra II Honors – Real-World Trigonometry Project



1) **The Data:** Observe/Research a real-world situation that can be modeled using the periodic functions of either sine or cosine. Your subject must be factual and based on documented research or measurable by you. (It could be a situation you have observed yourself, as long as you have actual data!) Some examples include: daylight hours, sunrise times, sunset times, maximum temperatures, minimum temperatures, average temperatures, height of a car on the London Eye or other specific Ferris wheel, moon phases, object moving on a record player, hands of a clock, orbit of a planet, etc……

   Your topic should be approved by me (along with the data) by April 20 (B-day) or April 23 (A-day).

2) **The Graph:** A graph of your raw data, along with the sine or cosine curve that you are using to model your data. Needless to say, your graph should be carefully and accurately created. Both axes should be labeled with a clear and consistent scale. (This is not a "sketch" of a graph!)

3) **The Equation:** Determine the full equation of your data, using either: $y = a \sin b(x - h) + k$ *or* $y = a \cos b(x - h) + k$ with an explanation of each of the following measures:

   a: Amplitude

   b: Period & calculation of "b" value

   x: Explain your units on the x axis

   h: Phase shift (if necessary)

   k: Vertical Shift

4) **The Calculated Data Point:** You should demonstrate how you can use the equation to predict a random point on your graph. The point should NOT be one of the maximum, minimum, or mid-line values.

5) **The Visual Presentation:** You may present each of the above items on the medium of your choice, including, but not limited to, a poster, a paper, a PowerPoint, a model, etc.

Your final project will be due on Monday April 30 (B-Day) or Tuesday May 1 (A-Day).

Projects turned in after the due date will have 10 points deducted per school day (does not matter if you have math class or not – get it to me on time!)