

## IM3 Spring Writing Assignment

In preparation for the IB math course you will take next year we will do a short writing assignment to introduce you to a 'mathematical' style of writing. To do this you will need to do some or all of the following:

- Use an equation editor
  - Import images of graphs
  - Build tables of data
  - Capture and import screenshots or other images
  - Cite your sources properly
  - Gather data from online resources
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Sinusoidal relations show up in many places. Any data which follows a periodic or cyclic pattern, and which repeats itself, can be modelled by a sine or cosine function. Your task is this:

Find some data which can be modelled by a sinusoidal (sin or cos) function. Collect this data, and present it graphically in your paper. Then using your knowledge of the function  $y = A\sin(B(x - c)) + D$  or  $y = A\cos(B(x - c)) + D$  create a function to model the data as accurately as possible. Explain how you built the model and somehow display your data and your model together. In this writing assignment you should: Use your model to predict some future value in the data set (i.e. finding the temperature in Siberia in June in 2030). Discuss at least two ways in which your model is likely to provide good future data, and at least two ways in which the model might NOT be accurate in the future.

NOTE: Your data set must deal with "natural" phenomena (weather, tides, daylight, etc...) as opposed to "man-made" things (Ferris Wheels, Grandfather clocks etc...). Also only one student may use a certain data set (i.e. Daylight in New York City). You MUST confirm your data set with Mr. S or Mr. D BEFORE you start writing your paper.

This paper should be 2-3 pages long.

You will be assessed on:

- The Data Set. (Is the source reputable, is the data reliable, is it periodic?)
- The Mathematics (Does your equation model the data set accurately)
- The Presentation (Are your graphs and equations neat and easy to understand, do the graphs take up too much space?)
- The Writing. (Grammar mistakes? Does everything make sense?)
- The Analysis (Do your explanations for why the model is good or bad make sense? Are the arguments persuasive?)