Mathematical SL Proposal: The Exploration—Initial planning	Due:

Name: Sample

1   Mathematical area of interest

Trigonometry and Modelling

2   Your specific topic and aim of exploration

I will model the behaviour of tides over a full 24 hours in Honolulu, Hawaii. I will be able to determine the best time of day to fish off the shore while I vacation this summer holiday.

3   Reason for choice (personal engagement is part of Criteria A)

One of my hobbies is fishing, and fish are easier to catch when they are feeding - tides and currents determine when they feed. So, by better understanding the relationship of tides, I will know when the best time to fish in Honolulu is.

4   Three areas you plan to explore

  1. Modelling the data collected.

  2. Finding an equation that best fits the data.   By hand and using technology, comparing which is the better between these and explaining why.

  3. I will attempt to generalize this model so we can extend this to other locations and compare tides.

5   How will you explore these areas mathematically

1. I will collect the data of tides over a given 24 hour period in Honolulu. I will discuss aspects of this graph the different parameters of the trigonometric equation and then, relate them to the topic. I will also mention possible limitations.

2. I will find the best model mathematically by hand, and by using regression tools of technology, then compare the models and explaining mathematically which is better.

3. I will model another coast by collecting data, graphing the data, and finding a equation that best fits the data. I will do research and determine what all this information means – I will relate it to the best time to fish on my trip to Hawaii or other parts of the world. I will also attempt to generalize this model for different locations.

6   Resources / Sources

Standard Level Mathematics 2012 Edition – Wazir and Garry, Pearson Baccalaureate pg. 181-191

Pre-Calculus, Mathematics for Calculus 3rd Edition, Stewart, Redlin, Watson, Brooks/Cole, pg. 393

http://www.tides4fishing.com

http://www.wolframalpha.com/input/?i=tides+in+Honolulu+over+24+hours