MBF 3C   Tech Skill Builder: Fitting Exponential Curves to Data Using *Fathom*

A-Goal: For a given data set, to learn how to determine the exponential equation for a curve (of best fit) using the statistical software program, *Fathom*.

Source of Today's Activity: http://mathbits.com/MathBits/TISection/Statistics2/exponential.htm

B-Here it is:

The data (back of page) shows the cooling temperatures of a freshly brewed cup of coffee after it is poured from the brewing pot into a serving cup. The brewing pot temperature is approximately 180º F.

C-Procedure*:*

Link to *Fathom* screencast: (link sent via school email and posted to my YouTube channel at …)

View the video, bits at a time, and use Fathom to complete the graphing of the decay curve.

D-Follow-up Questions:

Answer each of the following in the space provided.

1-Based upon the new equation, what was the initial temperature of the coffee?

2-Interpolate data: When is the coffee at a temperature of 106 degrees? (Make sure that you also use your equation to solve…not just the graph.)

3-Extrapolate data: What is the predicted temperature of the coffee after 1 hour? (Make sure that you also use your equation to solve…not just the graph.)

4-In 1992, a customer sued McDonald's for serving coffee at a temperature of 180º that caused them to be severely burned when the coffee spilled. An expert witness at the trial testified that liquids at 180º will cause a full thickness burn to human skin in two to seven seconds. It was stated that had the coffee been served at 155º, the liquid would have cooled and avoided the serious burns. The customer was

awarded over 2.7 million dollars. As a result of this famous case, many restaurants now serve coffee at a temperature around 155º. How long should restaurants wait (after pouring the coffee from the pot) before serving coffee, to ensure that the coffee is not hotter than 155º? (Solve using a method of your choice.)

E-Next Steps: In the next class, you'll return to your Statscan (or rebound height) data to determine the equation for the curve of best fit and to pose and answer some questions related to your data.

This, along with some of other components, will comprise your end-of-unit assignment for Exponential Relations. More details to come on what elements are required and what is expected from you.

Data Set

Time_mins	Temp_ºF
0	179.5
5	168.7
8	158.1
11	149.2
15	141.7
18	134.6
22	125.4
25	123.5
30	116.3
34	113.2
38	109.1
42	105.7
45	102.2
50	100.5