

Graphing Calculator Lesson Plan

Name: Neil Paul II – Understanding Data

Grade level(s)/Subject taught: Living Environment (10th grade)

Objectives:

- Students will understand how to input and analyze various data sets by using their graphing calculators.
- Students will grasp the importance of having numerous measures of average, in order to understand what their data actually shows.
- Students will be capable of applying the importance of statistics to real life scenarios, specifically science.

Scientific Concept:

- Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.

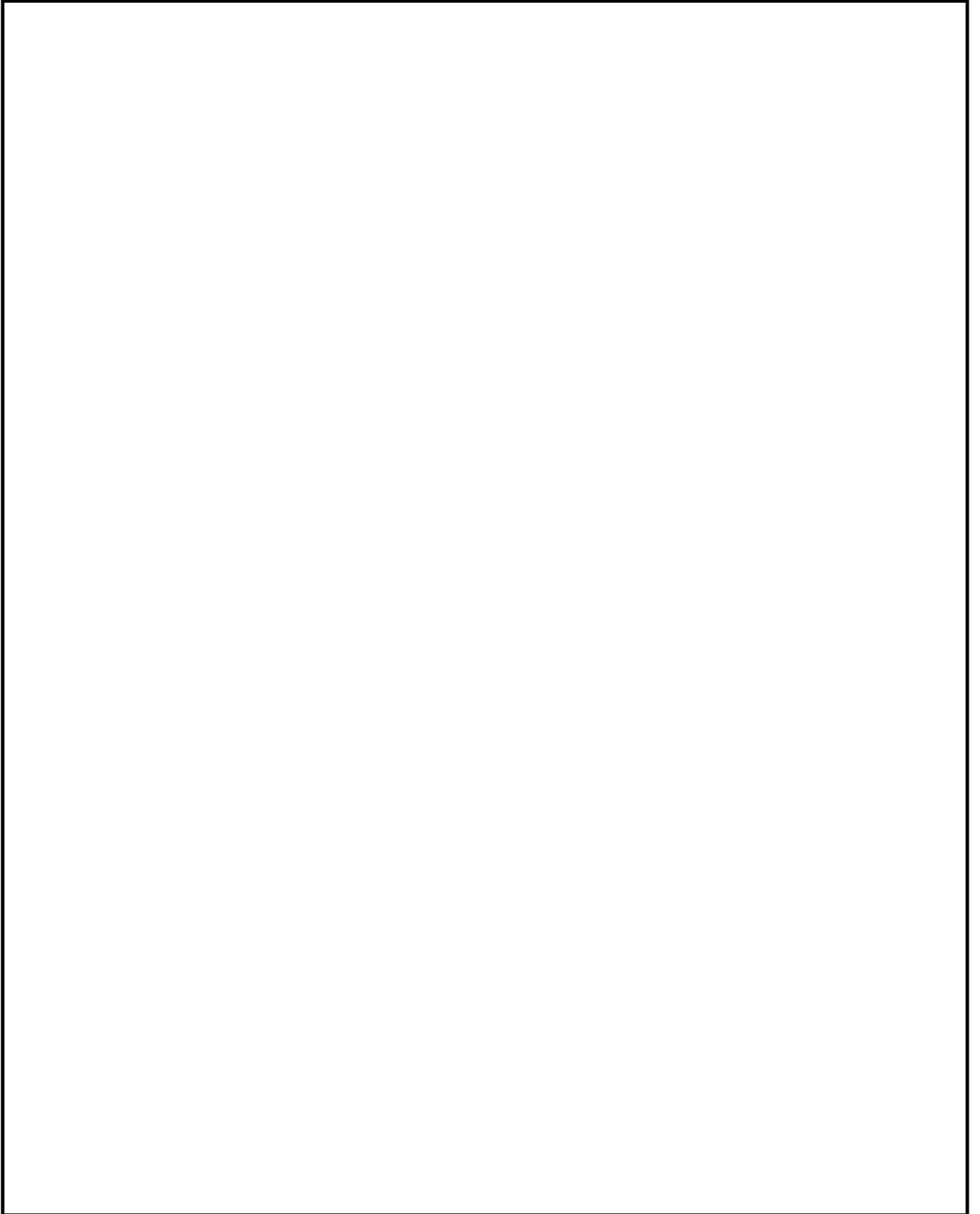
Materials:

Graphing calculators, paper, and pens/pencils.

Prompts:

1. How will you assess the prior knowledge of the student?
2. How will you begin the lesson?
3. What are the teacher and students doing every 5-10 minutes? (Teacher Actions and Student Actions)
4. How will you assess the learning for the lesson?

As students arrive to class they will be handed a simple sheet of paper, entitled "The Salaries of Your Teachers". On this sheet would be a list of every teacher's salary and years in the district, granted no names would be included. The idea here is to catch the students' interest as soon as they walk in, so that discussion begins between students. As soon as the students have settled down the instructor will ask them ... So what do you think?... Jealous?... Surprised? ,, etc... Hopefully a small discussion would then ensue, in which the students would express their opinions about the data at hand. As they state their opinions, the instructor would be listing them on the board. Then after the discussion winds down the teacher would ask the students to come up with a method to figure out which statements are facts(observations) rather than opinion. At this point the teacher is attempting to get a sense of where the students stand, as far as problem solving skills are considered. Now he/she will take for granted that students would suggest taking the mean average, however not the median or mode average. If they do happen to bring these terms up, the instructor will simply use them as intro into their lesson. Once each is measure of average was discussed he/she would then ask them to arrange the data they have into the graphing calculator. Now if they didn't bring up the median and mode before they would simply be calculating the mean using the data tables. However if the discussion did lead to the definitions of mode and median they would be working on those too. The goal in doing so was to find out which students know how to use the calculator's data tables correctly. Then the teacher would tally a few responses on the board, so that it can be insured that the average was accurate. The value was purposely designed to be a poor indicator of the data set...in other words it will be a number created by the extremes... lots of low paid workers and lots of high paid workers. The goal in doing this was to show the class that the mean of a data set is not always a good indicator of what the data represents. Then the teacher would ask "well are you going take a job at Brockport? After all the average salary is quite high." Then through discussion the students would see the importance of various measures of average. To insure that knowledge was attained, problems would be given as classwork and then reviewed partially, time considered. The remaining problems would be discussed tomorrow and be built upon so that topics regression plots and standard deviations could be discussed down the road. An example of what the students would be given is a set of average weekly temperatures of NYS... from the year 2006 and 1896. They would be asked then to use their calculators to consider has average temperature changed? What do the three types of average show? Is this good data? D we need more? Why etc? This would be done so that they would not only understand the material but also have to apply it.



****Example:**“I was thinking about beginning the class on [modeling X] by using the overhead to ask students what they know about X. From this brainstorming session, I might ask them to get into groups and discuss one or more of the ideas they gave me. After about ten minutes, I would have the students give their ideas on X and write them down on a transparency so they would be able to see them for the entire hour. From here, I would provide a 10 to 15 minute demonstration of the basics of using _____ modeling software. I would use an conceptual example that they would find familiar with such as getting a cold and how it is transmitted. From here, I would have students at the computer stations using a prepared guide or tutorial to get them started on basic software usage. I expect that in a short time a number of students would “catch on” rather quickly and be able to help others. By the third lesson, I suspect that most would be well on their way to development of their own or small group models using the _____ software. My plan of assessment would probably be a group model so they would gain more confidence in using the software in a meaningful way. After the second or third lesson, I would ask them to choose from a list of thematic or topic areas that fit the software nice and develop a model using the technology. As a product, I may have partners share their model and describe to other small groups how it works. The rubric I design would be general at first so that I might see what kinds of the products the student were capable of creating. From the prototypes, I would hone my rubric to make the modeling product as challenging as possible without making it too difficult.” Etc...