7-26-2006

Graphs on TI-84

Evan Brauer
The College at Brockport

Name:	Evan Brauer
Grade level(s)/Subject taught:	AP Statistics – Grade 12 or Algebra 2 – Grade 11

Objectives:

- Simultaneously graph numerical data from one population with two different graphs on the TI-84+
- Concurrently graph numerical data for two populations on the TI-84+
- Learn how to best display the graphs on the TI-84+

1. *Write* the Mathematical Concept or "key idea" that modeling will be used to teach: (e.g. Students use mathematical modeling/ multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships)

Students use mathematical modeling/ multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships

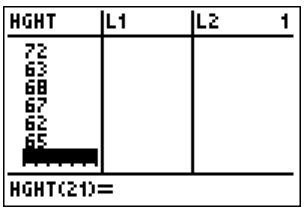
Students use patterns and functions to develop mathematical power, appreciate the true beauty of mathematics, and construct generalizations that describe patterns simply and efficiently.

Materials:

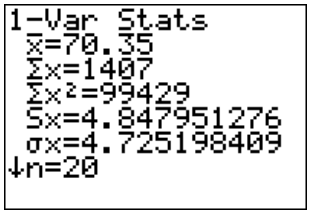
TI-84+ Graphing Calculator

The class will begin by reviewing what types of graphs are best used to display numerical data (boxplots, histograms, scatterplots, etc.). I will ask the students what numerical variable we might be able to gather from everyone in the classroom right now in order to obtain a visual representation of the data. At some point someone will say heights of students. We'll talk about units of measure (feet vs. inches), accuracy and rounding, and then we'll decide to graph student heights to the nearest inch.

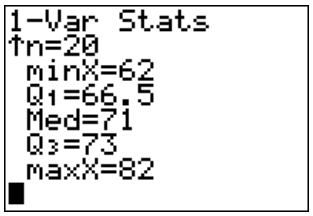
I will show the students how to create and name new lists on the TI-84+ (Display #1). We will create the list "HGHT" and everyone will enter on their calculator each person's height, in inches, as we go around the room and state out loud what our height is. Once entered we will briefly review from an earlier lesson some descriptive statistics obtained from the calculator (Display #2). We will then discuss how to graph this data using first a modified boxplot, showing any possible outliers (Display #3), then a histogram (Display #4), then both at the same time (Display #5).



Display #1



Display #2



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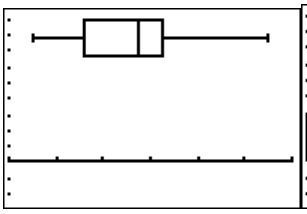
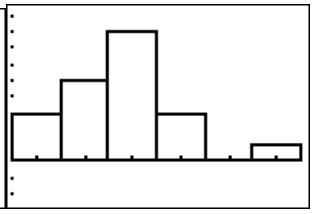
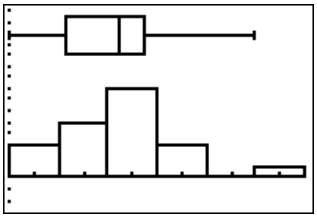
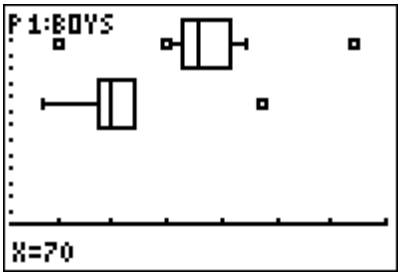

Display #3


Display #4


Display #5

Next we will create two new lists – "BOYS" and "GIRLS". We will then enter the above data, but separate by gender. Once this is done I will ask the students to graph both sets of data simultaneously using modified boxplots in order to compare the five-number summaries of the genders as well as to look for outliers (see plots below).



The success of this lesson is dependent on the students having already discussed terminology (outliers, five-number summary, etc.) and having a good grasp of quantitative data analysis. At the end of this lesson students should be able to produce accurate modified boxplots and histograms on the TI-84+, know which graphs to use and when, as well as alone or together, and be able to decipher information the graphs tell us. As an assignment students will enter their classmate's combined SAT scores, separately for gender, and produce summative data as well as concurrent boxplots and histograms. They will analyze the data to compare the genders (mean, median, quartiles, standard deviation), and discuss which graph better displays what type of data (when might we want to use each graph). Is the selection of a graph dependent on the type or amount of data, or is it somewhat determined by whether or not two populations are being compared?

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Graphing : Boxplots and Histograms

Teacher Name: **Evan Brauer**

Student Name: _____

CATEGORY	4	3	2	1
Type of Graph Chosen	Graph fits the data well and makes it easy to interpret.	Graph is adequate and does not distort the data, but interpretation of the data is somewhat difficult.	Graph distorts the data somewhat and interpretation of the data is somewhat difficult.	Graph seriously distorts the data making interpretation almost impossible.
Neatness and Attractiveness	Exceptionally well designed, neat, and attractive. Colors that go well together are used to make the graph more readable. A ruler and graph paper (or graphing computer program) are used.	Neat and relatively attractive. A ruler and graph paper (or graphing computer program) are used to make the graph more readable.	Lines are neatly drawn but the graph appears quite plain.	Appears messy and "thrown together" in a hurry. Lines are visibly crooked.
Accuracy of Plot	All points are plotted correctly and are easy to see. A ruler is used to neatly connect the points or make the bars, if not using a computerized graphing program.	All points are plotted correctly and are easy to see.	All points are plotted correctly.	Points are not plotted correctly OR extra points were included.
Data Table	Data in the table is well organized, accurate, and easy to read.	Data in the table is organized, accurate, and easy to read.	Data in the table is accurate and easy to read.	Data in the table is not accurate and/or cannot be read.
Title	Title is creative and clearly relates to the problem being graphed (includes dependent and independent variable). It is printed at the top of the graph.	Title clearly relates to the problem being graphed (includes dependent and independent variable) and is printed at the top of the graph.	A title is present at the top of the graph.	A title is not present.