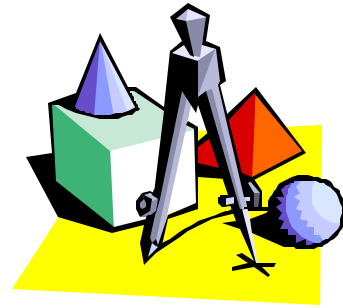# Algebra/Geometry Institute Summer 2003

Lesson Plan 2

Faculty Name: Garth Stewart
School: John F Kennedy Memorial HS
City: Mound Bayou, MS
Grade Level: Grade 9 Pre-Algebra

1.   Teaching objective(s)

- ❖ To find the mean, median, and mode of a group of data
- ❖ MS 8b;benchmark 10

2   Instructional Activities

- ❖ Start the class session with a motivational cheer from the file (such as - I can, I can, I can - THEREFORE I WILL - 3 repeats)
- ❖ Divide the class into two groups of equal numbers of students
- ❖ Tell them that today we are going to investigate the BIG 4 M's of data detective work – mean, median, and mode. The class will tell you that that is only 3 M's!! Say yes your right the fourth M stands for Measurement of central tendencies and that is what the three M's tell us how to best measure the central or middle point of a group of data.
- ❖ Give each group one bathroom scale and two tally sheets. Tell the groups they need to appoint a record keeper.
- ❖ Put a copy of the tally sheet on an overhead projector or draw it on the white board before class begins
- ❖ Explain to the class that every member of the group will be weighed on the scale and the record keeper will mark one of the tally sheets #1 and record the weights in the raw data column of tally sheet #1. When this has been completed, the group to the teacher's right is instructed to put one math text book on their bathroom scale and the group to the left is instructed to put two text books on the bathroom scale. Both groups are then to reweigh all their members and record the weights in the raw data column of tally sheet #2.
- ❖ After all the weighing is completed tell the groups that they are now to rearrange the weights in the raw data column by putting them in descending order and put the revised data in the descending order column.
- ❖ When the sorting of the weights for both tally sheet #1 and #2 is complete have the students add up all the weights in their raw data column and write the total in the box provided.

- ❖ Have the students return to their seats and take out their notebooks and have them write the definitions for mean, median, mode, and outliers as you write them on the white board. Have a discussion of the definitions taking particular care to make sure the concept of outlier has been understood and how it can affect the mean of a set of data.
- ❖ Have the students return to their groups and complete the summary on the bottom of their tally sheets.
- ❖ Discuss the results with the students, look for any possible outliers and discuss the affect they had on the means. Discuss what happened to the mean, mode, and median after the textbooks had been added to the scale and lead the students if necessary to the observation that a finite shift had occurred to all three.
- ❖ This is a long activity that will be spread over two fifty minute class periods. During the second class period review the tally sheets from the period before, then assign Practice Worksheet 3-3 for class work (this sheet deals with 5 different distributions that the students are required to find the mean, mode, median, and outliers and discuss their results). Divide the class into four groups. Have each group present their solution to one of the first four sections of the worksheet
- ❖ Have the class write a journal entry describing the affect outliers have on deciding which of the three M's best describes the center of the data group.
- ❖ Assign the homework just before the end of the class period – this will include exercises in finding the central measures of several distributions and at least one real life situation problem that will illustrate the effect that outliers have on these measures.
- ❖ Assign Reteaching Worksheet 3-3 (this worksheet in this series is similar to the practice worksheet described above, except that it has a header giving a brief summary of the lesson's theory for the student to use as ready reference as they do the work, always with teacher supervision) for completion with before or after school tutoring to any students needing remedial assistance.

3   Materials and Resources

- ❖ Two (2) Bathroom scales
- ❖ Four (4) Tally Sheets (see last page for a copy)
- ❖ Pre-Algebra – Tools for a Changing World - Prentice Hall textbook
- ❖ 24 copies of Practice Worksheet 3-3 Mean, Median, and Mode – Prentice Hall Resource File for the text book Pre-Algebra – Tools for a changing World – Prentice Hall
- ❖ Reteaching Worksheet 3-3 Mean, Median, and Mode – Prentice hall Resource File for the text book Pre-Algebra – Tools for a Changing World – Prentice Hall (if necessary)
- ❖ White board
- ❖ Dry erase markers in several colors

4   Assessment

- ❖ Observation
- ❖ Classroom work on practice worksheet 3-3
- ❖ Homework pg 134-135 exercises 5 - 14 and problem 20 (these exercises include finding the mean, mode, median, and outliers of several distributions and a real life problem that shows the effect of outliers on a population)

❖ Reteaching Worksheet 3-3 (if the student required remedial work)
❖ Journal entry
❖ Biweekly test

Tally Sheet

	Raw Data	Descending Order
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
Total		

Summary

Number of Data	Total of all Data	Mean	Median	Mode	Outliers