NCLB Math Institute Summer 2011

Faculty Name: Sharon Harris

School: I. T. Montgomery Elementary
Mound Bayou, Mississippi

Grade Level: Third Grade
Line Plot / Pie Graph

I. Teaching Objectives

- **MS 5 a: Compare data and interpret quantities represented on tables and different types of graphs (line graphs, pie graphs, pictographs, bar graphs), make predictions, and solve problems based on the information. (DOK 3)**
- **NCTM Standards: Data Analysis and Probability**

This lesson has been developed to help students interpret quantities represented on different types of graphs (line plots, pie chart/circle graph, etc.) and solve problems based on the information.
The line plot will display the frequency of data in a clear and organized way. It will allow the students to easily identify the range and mode of a set of data. In comparison, the pie chart/ circle graph, which is a circular chart divided into sectors, will illustrate the quantity or proportion of a representation of data.
The "hands on" activities will help students to understand both visually and kinesthetically.

II. Instructional Activities:

Introduction:

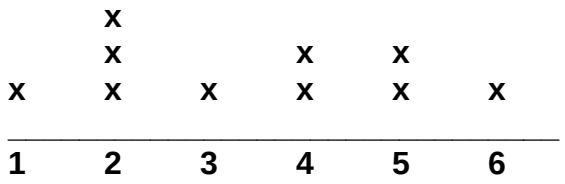
•The teacher will introduce mathematical terms to the students and explain how the following terms are related to central tendencies (mean, mode, and median) and range**. (See Attachment # 1)**

Activity # 1 (Small Group)

•Teacher will show students an example of a line plot.
•Teacher will select 10 names of students from a basket and give each student an index card with numbers such as, **1, 2, 2, 2, 3, 4, 4, 5, 5, and 6.**
Teacher will remind students what a number lime is, then have a student to draw a number line on the board.
•Have a student to write the numbers 1 - 6 on the number line.
•Have students to place the number of the index card above the number on the number line.

•Have students to explain how they obtained the range from the list of data provided. Then have students to explain how they obtained the mode.
•Teacher will share that the greatest number for everyone is 6. The least number for everyone is 1.
(Findings: 6-1 = 5, 5 is the range and 2 is the mode because it is the number that occurs most often.)

Example:

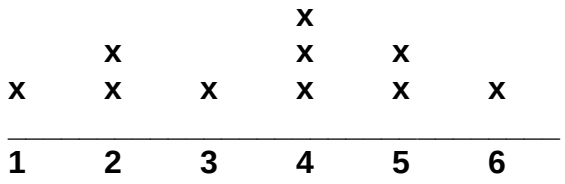


Line Plot of Card Data

Activity # 2: (Small Group)
• Teacher will give each group a number cube, two counters per student, and frequency table or tally table. **(See Attachment #2)**
• Have students to roll the number cube two times each, and record all the numbers rolled in the frequency table or tally table.
• Have students to draw a line plot labeled 1-6 on a sheet of paper. Then have students to use the frequency table to place counters above the numbers they rolled.
Tell students each group will have a different range and mode.
• Teacher will ask questions to check for understanding.

Questions:
1. What is the least number on your line plot? (1)
2. What is the greatest number on your line plot? (6)
3. Which number received the most rolls? (4)

Example:



Number Cube Roll Outcome

•Teacher will ask students to observe the line plot and state the mode.
•Have students to explain how the mode was obtained from the set of data.

Activity # 3: Pie Chart/Circle Chart Activity

- Teacher will demonstrate to students how to divide a pie chart into sections.
- Teacher will use data from previous third graders summer vacation.
- Teacher will show on the pie graph, (using a ruler and overhead projector or dry erase board) ½ of the third graders at the beach, 1/4 of the third graders camping, and 1/4 of the third graders at a theme park. **(Attachment # 3)**

Activity #4

- **Have students to make their own pie graph using the following data:**
  Robbie surveyed 60 students about their favorite fruit. One half of the students chose apple, 15 students chose orange, and 15 students chose grapes.
- **Students will divide each section accordingly.**
- **Teacher will check to make sure students are dividing correctly.**
- **Tell students to use a drawing of each fruit in each section.**
- **Have students to color the fruit (optional).**

III. Materials:

- **Counters**
- **Number Cubes**
- **Tally Table Chart**
- **Index Cards**
- **Paper**
- **Pencils**
- **Rulers**
- **Blank Pie Charts**
- **Summer Camp Activity**
- **Crayons or color pencils (optional)**

IV. Resources:

- HSP Math Mississippi Edition
- Harcourt School Publishers 2009
- www.harcourtschool.com
- www.superteacherworksheets.com
- www.mathplayground.com

V. Assessment:

- **Teacher generated activity sheets**
- **Model and draw line plot and pie chart**

Observe students while completing task

Attachment # 1

Vocabulary Word Wall

Line Plot - a graph that records each piece of data on a line.

Range - the difference between the greatest and the least number in a set of data.

Mode - the number or item found most often in a set of data.

Data - information collected about people or things.

Tally Table - a table that uses tally marks to record data.

Pie Chart (Circle Graph) - A pie chart / circle chart is a circular chart that is divided into sections which shows portions or how much. Each section is the same as the amount that is represented.

Attachment 2:

Tally Table Activity

Directions: Have students to repeat the activity using a new frequency table. Then have student to roll the number cube twice. The group should then make a line plot from the new data.

New Frequency Table Work Area:

Question:

1. **Is this line plot different from your first one? Explain your answer in the response area below.**

Response Area:

Attachment 3:

Pie Graph (Circle Graph) Activity