SCAFFOLDING TASKS: "THE INFORMTION STATION!"

Adapted from North Carolina's Core Essentials Mathematics Program

STANDARDS FOR MATHEMATICAL CONTENT

MCC.3.MD.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets**.**

MCC.3.MD.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units – whole numbers, halves, or quarters.

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
8. Look for and express regularity in repeated reasoning**.**

BACKGROUND

Data and graphing are not isolated concepts. They can and should be integrated with the majority of mathematics.

ESSENTIAL QUESTIONS

- How can data displayed in tables and graphs be used to inform?
- How can graphs be used to compare related data?
- How can data displays be used to describe observations?
- When is it appropriate to use a line plot graph?

MATERIALS

- MATH Journals (or paper)
- Lima Beans
- Magazines and Newspapers

GROUPING

Students may be grouped individually, in pairs, or in small groups at the teacher's discretion.

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Part I

The teacher will begin by asking students to complete the following investigation using their math journals:

Survey your classmates and record the length of their shoes.

The teacher will call the students back together. Collectively, the class will create a table to display the data. This would be an excellent opportunity for the class to discover that many students have the same length of their shoe, and since this data is quantitative, it would make the perfect line plot graph. The group will work together to turn this data into a line plot graph.

Part II

In small groups students will complete the following investigation:

How many lima beans can you pick up in one handful? What about two other classmates?

Students will collect their data in their individual math journals. After the experiment, students will collectively organize their data into a group table on chart paper. They will use their data to create a bar graph.

Part III (may take a few days)

The teacher and students will visit the school parking lot each day for a few days.

- Students should collect information regarding the types or colors of vehicles seen each day in math journals. (This would be a valuable opportunity for the teacher to take his or her own math journal to the parking lot and model using a "think aloud.")
- After a few days, the class will organize the data into a table.
- As a class, the students and teacher will create a pictograph with a scale of 2.
- In small groups, the students will create different pictographs with different scales.
- At the completion of this activity, students will compare their graphs and ask/answer questions about the graphs.

QUESTIONS FOR FORMATIVE ASSESSMENT

- When should you use a line plot to display your data?
- What questions can you answer using your data?
- Was one type of graph easier to create than the other? Why?

- What types of one and two step story problems can you create using your data?
- How can graphs describe observations?

DIFERENTIATION

Extension

- Try this!
    - Using the weather data in your local newspaper, compare the high and low temperatures in your town/city to the city of your choice. Collect these data for two weeks. Make two line plots to compare the temperatures. What statements can you make about these data?
- Have students to create bar graphs and pictographs using alternate scales.
- Challenge students to develop a survey question to collect data in which a line plot would be appropriate. Have them to create line plots of their own.

Intervention

- Try This!
    - Cut out examples of graphs from magazines or newspapers.
        - What information is being shown?
        - How would you classify these data displays?
        - Can you determine where the data came from?
- Students may use manipulatives such as counters, and a calculator
- Work with students in a guided group and assist with thoughtful questioning