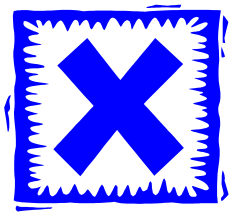


CONSTRUCTING TASK: X Marks the Spot
3 Days to complete

STANDARDS FOR MATHEMATCIAL CONTENT

MCC.3.OA.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

MCC3.3.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 MATHEMATCIAL 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.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

*****Mathematical Practices 1 and 6 should be evident in EVERY lesson. *****

BACKGROUND KNOWLEDGE

(Information quoted from Van de Walle and Lovin, Teaching Student-Centered Mathematics: Grades 3-5, page 333)

" Line plots are useful counts of things along a numeric scale. To make a line plot, a number line is drawn and an X is made about the corresponding value on the line for every corresponding data element. One advantage of a line plot is that every piece of data is shown on the graph. It is also a very easy type of graph for students to make. It is essentially a bar graph with a potential bar for every variable."

ESSENTIAL QUESTIONS

- How does your graph communicate your data?
- What are the steps involved in making and reading graphs?
- How can you use a graph to solve the answer to a question?
- When can you use a line plot graph to organize data?

MATERIALS

Line Plot Graph student record sheet
Rulers or measuring tape
Index cards or post-its
Scale
Stopwatch
Possible items to graph (ice, pencils, shoes, backpacks)

GROUPING

Small group or partner

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Line plot graphs use a number line to display data. They are great for displaying measurement tasks using length, time and weight. This task will give you a few ideas to get started using line plots graphs. Students really enjoy exploring measurement and recording data using a line plot graph.

Measuring Length:

Introduce line plot graphs with the idea of measuring each student's pencil. Review how to use a ruler or measuring tape. Students, working in small groups or pairs will measure their favorite pencil. Record the measurement to the nearest whole number. Distribute one index card or post-it to each student. Next, have the students write the measurement on the card. Then, with the whole number written on the card, ask students to get in numerical order (challenge them to do it without talking). Students will have to decide what to do with the numbers that have more than one. Discuss the challenges or ease it took for the class to get organized. How did they know where to go? How could we display this data using a number line? Continue with creating a number line on the board, smart board or chart paper. Have the students decide what number the number line should start and end with and why it makes sense using the collected data. Create a title for the line plot. Display the line plot graph and create questions to answer using the graph.

Other measurement tasks could be to measure length student's pinkie fingers, shoes, or height. Choose at least one or create your own measurement line plot graph to repeat constructing a line plot graph for student retention or evaluation.

In conclusion, students can choose their own topic, collect data and present their own line plot graph using measurement. They can create a question and ask the class or the class can create questions and ask the student to find the answer using their line plot graph.

FORMATIVE ASSESSMENT QUESTIONS

- How does your graph communicate your data?

- What are the steps involved in making and reading graphs?
- How can you use a graph to solve the answer to a question?
- When can you use a line plot graph to organize data?

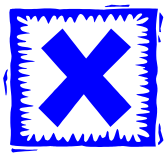
DIFFERENTIATION

Extension: Students can gather data from the entire grade level. Compare and contrast a single bar graph and a line plot graph.

Intervention: Students may use centimeter graph paper to organize data.

Name _____ Date _____

Line Plot Graph
Student Record Sheet



Topic or Item: _____

Data:

Item or Topic	Lengths

Line Plot Graph