

Constructing Task: Measurement Scavenger Hunt

(Approximately 2 Days)



STANDARDS FOR MATHEMATICAL CONTENT

MCC2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

MCC2.MD.2 Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

MCC2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters.

MCC.2.MD.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

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.
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

Students should begin to understand that a ruler is a representation of a consistent row of units. Students should have experience measuring the length of the same object using different tools (ruler with inches, ruler with centimeters, a yardstick, or meter stick). This will help students learn which tool is more appropriate for measuring a given object. They describe the relationship between the size of the measurement unit and the number of units needed to measure something. For instance, a student might say, “The longer the unit, the fewer I need.” Multiple opportunities to explore provide the foundation for relating metric units to customary units, as well as relating within customary (inches to feet to yards) and within metric (centimeters to meters). . The more students work with a specific unit of measure, the better they become at choosing the appropriate tool when measuring.

Estimation helps develop familiarity with the specific unit of measure being used. To measure the length of a shoe, knowledge of an inch or a centimeter is important so that one can

approximate the length in inches or centimeters. Students should begin practicing estimation with items which are familiar to them (length of desk, pencil, favorite book, etc.). For additional information on measurement read chapter 8 in *Teaching Student Centered Mathematics* by John A. Van de Walle.

Using the table for this task is optional because students need to learn to independently draw and record their work for three reasons:

- Standard of Mathematical Practice 2: Reason abstractly and quantitatively
- Standard of Mathematical Practice 3: Construct viable arguments and critique the reasoning of others.
- Standard of Mathematical Practice 4: Model with Mathematics

ESSENTIAL QUESTIONS

- How can we decide on appropriate units of measurement (i.e. inch, foot, yard, centimeter, meter)?
- Why is it important for me to know how to measure different objects using different units of measurement?

MATERIALS

- Ribbons (it is recommended to not use yarn as it stretches and can complicate the lesson as the students measure items)
- Rulers with inches and centimeters markers
- Scissors
- *Inch by Inch* by Leo Lionni or similar book
- *Optional: measuring tapes*

GROUPING

Large Group, Partner

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Part I

Gather students together and ask questions such as: Where have you seen a worm? What did it look like? Does anyone know what an inch worm is? What does it look like? How long is it? What is an inch? Can anyone show me something that is about one inch long, wide, or thick? What are some ways to measure length? Make a chart or list on the board with student responses. Tell students that you are going to read a story about an inch worm who likes to measure different things. Read a book like *Inch by Inch* by Leo Lionni.

Part II

Students will work with a partner to cut ribbons into the following lengths: 5 inches, 5 centimeters, 10 inches, 10 centimeters. Students will measure various objects in room and record in a math journal (sample recording table is provided)

****Having the students create their recording sheet would better provide them practice with the standards for mathematical practice. See Background Knowledge for further explanation.****

Strings	Equal to	Less than	Greater Than	Not Equal/but close
String 1 (5 cm.)				
String 2 (5 in.)				
String 3 (10 cm.)				
String 4 (10 in.)				

Allow the children to estimate, measure, and record data for each string with their partner. As the groups are working, look to see that the children are correctly measuring and recording. *After they have completed their chart students will need to reflect on how they measured and estimated.* Students should use math vocabulary in their writing about this activity. Partners will then share findings with the class by creating a poster with their strings, measurements, and recording chart and present it to the class.

Teachers can create a chart similar to one shown on the right to show all of the information described above.

Part III

Have each student estimate the length and/or height of body parts. This information should be recorded in inches and centimeters on individual student task sheets.

- Thumb
- Index finger
- Arm
- Hand
- Foot
- Leg
- Head (Circumference and the height)
- Body (length)

Students should work in pairs to measure their body parts using ribbon. This will allow students to accurately measure round items (such as your head) and the use the ruler to measure the ribbon. Students record their data on their task sheet. After students have measured, bring them together as a class. Have students record their findings on a large class chart. Discuss results of student findings. Students then graph data from one interesting example. Closure should include review the concepts of inch and foot, centimeter and meter, and the relationships. The teacher could close this task by holding up different objects and asking students to estimate the object's length in both systems of measurement.

FORMATIVE ASSESSMENT QUESTIONS

- What unit of measurement are you using? Why?
- When you measure using a ruler or tape measure, how do you place the item so you can get the most accurate measurement?

DIFFERENTIATION

Extension

- Use the web site and choose the level of difficulty
<http://onlineintervention.funbrain.com/measure/index.html>
- Have students create a scavenger hunt within your classroom and have students guess what they can find that is of a particular length.
- Have students find and measure objects that are of a certain length.
- Home activity: Measure, graph, and compare someone at home.

Intervention

- Have students only measure items that can be measured using the ruler. This will keep students from having to use the ribbon.
 - Thumb
 - Index finger
 - Arm
 - Hand
 - Foot
 - Leg
 - Body (length)

Name _____



Measurement Scavenger Hunt

Body Part	Estimate (inches)	Actual Measurement (inches)	Estimate (centimeters)	Actual Measurement (centimeters)
Thumb				
Index finger				
Arm				
Hand				
Foot				
Leg				
Body (length)				

What is different about your measurements and your partner's?
