

<p>Unit 6</p>  <p>Week 3</p>	<p>Small Groups: How Do I Measure? High Support</p>	<p>Math SG 1</p>	<p>Standards: MELDS.M.MD.PS.10 MELDS.M.MDPS.11</p>
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Guiding Math Ideas:

- Living things grow and have life cycles (Enduring Understanding)
- Empowering Mathematical Thinking- Habits of Mind for School Success
- Measurement as Practical and Purposeful: Measurable Attributes of Things that Grow

Math Concepts from Unit Learning Progressions:

- Using standard and non-standard measurement in different ways, with different tools
- Solving problems using measurement
- Demonstrating the practical use of measurement
- Applying data skills to everyday activities and practical questions

Materials:

- *Inch by Inch*, Leo Lionni
- *Balancing Act*, Ellen Walsh
- Books about Measuring from Other Units: *A Pig is Big* (Unit 1), *The Tall Tree* (Unit 5)
- A Variety of Measuring Tools- Measuring cups and spoons, 6 and 12 inch rulers, yardstick, cloth measuring tapes, metal measuring tapes, bathroom scale, bucket balance; pan balance; thermometer
- Measuring Hands resource OR another non-standard measuring tool, such as a unit block
- Small cube/blocks for Bucket Balance
- Data collection graph or chart (Teacher Resources) – Group and Blank
- Pencils or Pens

Math Vocabulary:

- Height- how tall something is from bottom to top.
- Length- how long something is from end to end.
- Width- how wide something is from side to side.
- Weight- how heavy something is.
- Capacity- how much something holds.

Preparation:

This activity takes place after Large Group, and after the Balancing Act SWPL. Gather a lot of different measuring tools and set them up on the small group table or the floor. Before small group begins, choose 6 or 8 things you might measure from the classroom that are all measured best with different tools. Customize the *Our Measurement Graph* from Teacher Resources. Place the assortment of books about measuring in Small Group Area.

Copy and cut out some measuring hands **OR** use another non-standard measurement, such as a basket of same sized wooden blocks.

Procedure:

We read about a Measuring Worm in Large Group.

Show *Inch by Inch*.

The Worm used his body to measure parts of birds. Worms and living things grow. We do too! In SWPL, we read Balancing Act and pretended to balance the different sides of our teeter-totter.

Show *Balancing Act*.

We have a lot of other books about measuring things we have read this year.

Show books and talk about the different ways we measured.

On our table we have a lot of measuring tools. Are there any that remind you of the Inch Worm or the Teeter-Totter?

Today we are going to measure things in our classroom using a lot of different tools. We can decide what kind of tool we might need. In our class this year, we have collected data a lot of times. We have made some special graphs and lists. Here is one about measuring.

Show the Data Chart and read the tools and the items, using symbols as needed. Children explore and choose measuring tools such as rulers, yardsticks, or the pan or bucket balance. They can brainstorming about things they could measure with a tool.

Before we measure, we need to know WHAT to measure—How Heavy something is? How Tall?

Go around the room measuring things and discussing what attribute they would like to measure, how to measure it, and what tool to choose. They will be going back and forth from Small Group area choosing tools. Choose the Measuring Hands as one options, and demonstrate about how they could be used for non-standard measurement. You can put the actual measurement in the chart, or a check mark to indicate what tool was used.

Examples of using accurate measurement words:

- 1. At our water table, we can measure how much water this dish could hold. That means we are measuring the **capacity**. What could we use to measure it?*
- 2. This block is laying down on the floor. Let's measure its **length**. That is how long it is from end to end. What could we use to measure it?*
- 3. We have some paper hands as measurement tools. How could we measure **height** using these?*

After measuring items, return to the small group area and invite children to measure more things on their own or with a partner. They can create their own chart (blank ones are included) if they wish.

Clarify measurement words, and observe children's understandings of the process of measurement.

Leave tools, measuring books, & blank graphs in the Small Group Area for continued exploration.

Bonus: IF you measured children's heights at the beginning of school, you could adapt this activity to re-measure children and talk about life cycles and growth.

Strategies to Provoke Math Thinking:

- Choosing the correct measuring tool: Measurement can be confusing because of the many different "units" shown on measuring tools. 1 cup of water is very different from 1 inch on a

ruler. Mastering measurement is not a preschool math expectation; children need many different types of measuring experiences in different contexts to construct measuring concepts. The **process of measurement** is a complex activity that involves the idea of selecting a unit; repeating the unit; repeating without gaps or errors; adding and comparing; direct and indirect comparisons. The more familiar children are with how we go about measuring things, the better the foundation will be for more accurate ways of measuring in the primary years.

- Non-standard measurement: Reinforce a key concept about non-standard measurement: (which seems contradictory). *The non-standard unit must be “standard”*. A lump of playdough won’t work. Neither will using everyone’s individual hands to measure. A piece of yarn? No- it stretches in a non-uniform way. Help children choose carefully.

Adaptations for Additional Challenge:

- Links to other Units: Revisit *A Pig is Big* or *The Tall Tree*. Ask children to do an activity similar to measuring with the large pig/box used in U 1, which adds the important math skills of estimating and direct comparisons. Link to Other Units: One activity based on *The Tall Tree* (online at <https://dawnpub.com/activity/tall-tall-tree-activities/>) shows how to measure a very tall tree using indirect measurement. It has several steps but will be fun for e children (and adults) to try.

Documentation:

- Substitute the group Data Collection Chart for an individual one, and document children’s understandings of measurement tools, attributes and the process of measuring.

Provocation:

- Use the school environment for measurement explorations. How tall is our school building? How long is the hallway? How many tables fit into the cafeteria? Is the basketball court smaller or larger than the PreK tarmac?