



PRACTICE TASK: HOW HEAVY IS IT?

Approximately 1 day

STANDARDS FOR MATHEMATICAL CONTENT

MCC.K.MD.1 Describe measureable attributes of objects, such as length or weight. Describe several measureable attributes of a single object.

MCC.K.MD.2 Directly compare two objects with a measureable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*

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.

BACKGROUND KNOWLEDGE

It is important to keep several big ideas in mind when circulating throughout the room having math conversations with your students:

- It is important that the students clearly identify the attribute being measured.
- It is important that the students realize that BOTH objects must share the attribute before a comparison can be made.

ESSENTIAL QUESTIONS

- What attribute are we measuring?
- Does it matter how we measure?
- How can I compare 2 objects by their weight?
- How can I record my information?

MATERIALS

- Mighty Maddie by Stuart Murphy or a similar book
- Balance scales for each small group
- Common objects to weigh on the balance scales- such as a CD, marker, glue stick, paper clip, pencil, pack of Post-It Notes, marble, golf ball, tennis ball, etc.

GROUPING




Whole group and small group task

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Part I

Gather students in meeting area and say, “There are lots of ways to measure items. We have talked about longer, shorter, or the same length. What are other ways we can measure?” Record student responses on a class chart. “If I wanted to pick something up, what would I want to know about what I was going to lift?” (How heavy it is...how much it weighs.)

Read a book such Mighty Maddie by Stuart Murphy or similar book. Show real examples of scales. Discuss where they see these in the real world such as the grocery store, the doctor’s office, and the bathroom. Discuss how scales can be used to find the weight of objects and balance is like a seesaw. Balance Scales can be used to compare two objects to see which one weighs more. Help students develop the concept of weight by holding several objects such as a tennis ball and a golf ball or a marble and a tennis ball (both are spheres) in their hands. Then compare the weights when they are placed in the scale. Be sure to use the terms heavier and lighter. Model on a chart how to write a math statement about the two objects. For example:

 My  is heavier than my  .
crayon pencil

Tell students they are going to explore comparing objects and writing true math statements. Explain that, as a group, they are to compare five objects of varying sizes. Give each group a pre-made bag of items such as books, pencils, crayons, glue sticks, paperclips, CD, marker, glue stick, paper clip, pencil, pack of Post-It Notes, marble, golf ball, tennis ball, etc.

Once they have their bag of objects, they are to lay the objects on their table. Students choose 2 items at a time to compare. They should compare the two objects simply by holding them in their hands. If the objects are too similar to compare accurately in your hands, then they should use the balance scale. Each student should record his/her math thinking by writing a true math statement to describe the comparison of common attributes.

All students in the group do not have to choose the same two objects to compare. Different comparisons between partners will encourage more productive discussions. For example, a marble may be heavier than a paperclip but lighter than a book. Students can have these discussions when writing their math sentences. Again, please note students are only comparing 2 items at a time. When students complete their comparisons, let them discuss their findings.

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Allow students time to share their comparisons. Record these findings on a class chart for later reference. This gives an opportunity to communicate their discoveries in mathematical language. Discuss that choosing when to use a math tool is important.

Teacher reflection questions:

- Are students able to compare objects by their size and explain why this would be important?
- Are students able to determine which item is heavier/lighter than another?
- Are students able to use mathematical language to describe the measurement of attributes of items?
- Can students decide or offer ideas for how to organize/record information?
- Are students able to explain how to record results? Do they understand why this is important to do?
- Can students explain why we need to have common endpoints when comparing the height or length of two objects?

FORMATIVE ASSESSMENT QUESTIONS

- What attribute did you measure?
- Are there any more ways to compare these objects?
- Why did you decide to measure it this way?
- Which object is heavier (longer, taller, holds more, etc.)? How do you know?

DIFFERENTIATION

Extension

- Students can be encouraged to find objects throughout the room that can be measured with identified attributes or choose another bag to discuss and record observations.
- Encourage students to compare different attributes of the same two objects.

Intervention

- Allow students to work through the stages at a speed that is appropriate for their performance level. Some students may need additional experiences acting out problems, using manipulatives, or drawing pictures.
- Put together baggies that have only two items in them which are significantly different in weight.
- Allow additional time with balance scales. To begin, have them concentrate on items that weigh the same so they can practice getting things balanced.
- Provide the student with copies of a recording sheet to help organize their thinking. See the “How Heavy Is It” example page.

ADDITIONAL RESOURCES:

NCTM: Navigation Series – Navigating through Measurement in Pre-kindergarten - Grade 2 Body Balance: p.14 -15

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How Heavy Is It?

Name: _____

Have the student draw representations of the objects being compared and circle the correct measurement term.

	is heavier than is lighter than	
	is heavier than is lighter than	
	is heavier than is lighter than	
	is heavier than is lighter than	
	is heavier than is lighter than	
	is heavier than is lighter than	
	is heavier than is lighter than	