Kindergarten
Lesson: Properties of Matter and Measurement - Length
MASTERY FOCUS (PL-2, PL-3, I-1, I-6)

Essential Understanding: The student will understand that information can be gathered using their senses and simple non-standard measurement tools to describe properties of an object, such as length.

Standards: What will students know, understand, and be able to do?

TEKS

SCI.K.5A – Observe and record properties of objects, including relative size and mass, such as bigger or smaller and heavier or lighter, shape, color and texture.

SCI.K.2C – Collect data and make observations using simple equipment such as hand lenses, primary balances, and non-standard measurement tools.

CCRS

CCRS 1.D3 Demonstrate appropriate use of a wide variety of apparatuses, equipment, techniques, and procedures for collecting quantitative and qualitative data.

CCRS 1.E1 Use several modes of expression to describe or characterize natural patterns and phenomena. These modes of expression include narrative, numerical, graphical, pictorial, symbolic, and kinesthetic.

CCRS 2.F1 Select and use appropriate Standard International (SI) units and prefixes to express measurements for real world problems.

ELPS

C.1e Internalize new basic and academic language by using and reusing it in meaningful ways in speaking and writing activities that build concept and language attainment.

C.2c Learn new language structures, expressions, and basic and academic vocabulary heard during classroom instruction and interactions.

C.4f Use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language.

Key Vocabulary: What key terms will my students need to understand?
properties, matter, short, long, length, measure

Assessment Plan (Evaluate, Day 3 of 3): How will I assess prior knowledge? How will I know my students mastered standards?

In this lesson, students are required to compare and contrast objects based on their properties. The use of natural objects here allows students to become familiar with them as they compare. Given a variety of objects, students will be able to sort them in order from shortest to longest.

Relative Length

**This is an example of a performance task assessment; see attached rubric.
See logistics for instructions on how to create sorting game board.

LESSON CYCLE (I-1, I-4, I-5, I-6, I-8)

How will I engage my students in learning? How will I lead my students to mastery?

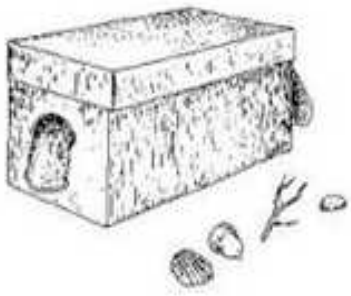
CHECKS FOR UNDERSTANDING (I-2)

1 Engage and Connect Day 1 of 3

The "Touchy Feely Box." This mystery box is just another twist to learning to identify things by touch and will review previous unit. See logistics for how to build.

1. Begin the activity during carpet time. Model to set behavioral and participation expectations for the "Touchy-Feely Box".
2. Have each table, or group of children, take turns reaching in and describing the objects in the box by touch.
3. Within their groups (or partners), students will orally discuss what they felt in the box.
   Ask students-
   T: Using your sense of touch, what does it feel like? Can you describe it? Does it remind you of anything?
4. Teacher will regain all attention and ask for student volunteers to share descriptors of items in the box; Teacher compiles list on chart paper.
5. After they have listed their observations, tell students that what they have described are some properties of an object. We use our five senses to discover the properties of objects. Today we used our sense of touch. We will be learning more about properties in the next few days and will be using some of our other senses.
6. Lastly, the "touchy feely" box can go into a center. Change the contents out of the box or allow students to bring in items that can be added to the box. Partner children up and as one child describes an object, challenge the other to reach into the box and find it. You can also place an object on the top of the box and have children reach inside to find the match

1. How are properties of objects observed?
2. What properties of an object can be observed and recorded using our senses?
3. What properties of an object can be observed and recorded using non-standard measurement tools?



2 Introduce New Learning Explore

Explain to students that they will be working at their tables to explore the relative size of various straw lengths.

- Assign students to work cooperatively in table groups of 3-4. Provide each group of students various straws (pre-cut at a variety of length & quantity of straws depends on the maturity/ability level of groups; differentiate here if needed). Tell students that they will use their sense of sight and touch to observe and share observations about the various straw sizes
- Using paperclips or counters, have students find the non-standard lengths of the straw samples at their tables. Model this task first.
- Cooperatively, challenge the students to put their straw samples in order from longest to shortest, or vice versa (depending on class time and strength, groups can glue seriated straws down on construction paper).
- Walk around and monitor group progress, providing assistance where needed. As groups' skills increase, be prepared to provide some groups additional straws to seriate if need be.
- Ask students:

  T: How did you determine which straws were short and which straws were long? How did your group decide to order your straws?
- Record student responses on chart paper.

3 Guided and Independent Practice Explain & Elaborate Day 2 of 3

Guided Practice Explain

- T: Start with reviewing the previous days' activities during the "Explore" (straw study). Pose question (see right) and ask for student volunteers to respond.
- T: Engage the children in a discussion about size as a property of an object. Explain to the children that people can measure something when they want to know more information about its length, or how long an object is.
- Ask students-

  T: Can you tell me about a time you have measured something or have seen someone in your family measure or compare sizes of something?

Independent Practice Elaborate

- S: Invite each child to choose one stick from a group of sticks. Next, set out 3 sticks of various lengths. Ask the children to take turns comparing their sticks to each of the three sticks you set out and encourage students to describe similarities and differences (encourage and model for the students how to use the academic and content specific vocabulary in their sentences).
- S: After the children finish comparing their sticks to the three you set out, invite the children to find a partner and compare their sticks; even seeing if they can find a partner with a stick of the same length. Encourage students to use the vocabulary while discussing.
- T: Regain the students' attention back to whole group. Put one stick down (of your selection).

CHECKS FOR UNDERSTANDING (I-2)

Question:

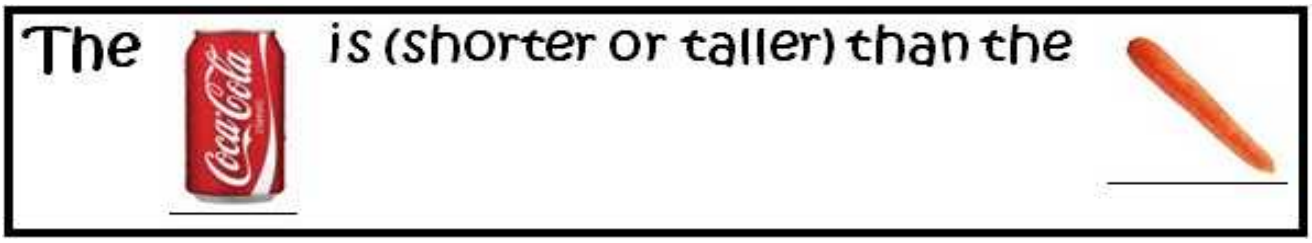
- How did you determine which straws were short and which straws were long? How did your group decide to order your straws?

Say-
T: If your stick is shorter than mine, place it on this side (gesturing to the left). If your stick is longer than mine, place it here (gesturing to the right). Help each child place their stick on the appropriate side of yours.

- S: Students write and complete pre-constructed sentence frames. Students can write sentence out on sentence strips or in science notebooks (if available). Encourage students to draw pictures to represent the items used in the comparison.

The (common item) is (shorter or longer) than the (illustrated picture).

Possible Sample:



DIFFERENTIATION (I-3)

How will I scaffold and/or accelerate learning? For whom? How will I group my students?

SCAFFOLD:

ACCELERATE:

GROUP:

LOGISTICS (I-6, I-10)

What materials, resources, and technology will I need to prepare and arrange?

- Lesson Preparation: Collecting a variety of natural objects and common household objects is critical for this unit. Natural items might work best because nature seldom produces all things of the same kind at the same size. Items found in the classroom will work too. In Kindergarten, students will gather information using their senses and simple tools and refer to this information as a property of an object. Students will use their senses to observe and record properties of objects so they will need access to a collection of items for this to take place. You will also need to gather non-standard units of measure, such as balances, counters of any sort and/or paperclips. In Kindergarten, students will not associate exact measurements of length and mass with objects. However, they will simply compare and discuss relative size (like how long or short something is). In addition to items for observing and recording physical properties, you will also need 1 pack of drinking straws, sticks (natural or man-made), 1 old shoe box + 1 sock, sentence strips and chart paper to record group observations, create sorting boards and make graphic organizers.

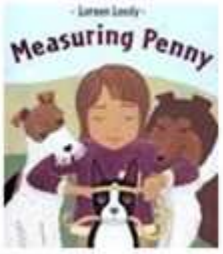
- Sorting Game Board (for assessment): This board can be created in a variety of ways, including but not limited to: poster board, shower curtain and electrical tape, canvas board and electrical tape, construction paper, etc. For this lesson, it can be as simple as a 8 ½ x 11" sheet of construction paper that is divided into 1 row and 3 columns; with one end labeled short and the other long.

- Touchy Feely Box Instructions: Take a medium box and cut a small hold (big enough for a child's hand) in the side. Place a variety of hand-sized items in the box. Search for items in a variety of shapes and textures. Household or natural items work great. Tape lid closed and give the box a little shake to mix the contents. For extra discretion, add old socks to cover the holes so no peeking can take place. Have a child reach into the hole and determine what they feel. This activity can be altered to a "Touchy Feely" bag. See picture below.

This lesson planning guide is designed to support HISD teachers in using the HISD Curriculum Planning Guides to plan daily lessons that meet the criteria outlined in the HISD Instructional Practice Rubric. The guide is not intended as a template that teachers are expected to complete for their lesson planning on a daily basis. Teacher teams might consider using the guide to help them collaborate in lesson planning.

- Possible Items to collect for the assessment: Pinecones, sticks or leaves, rocks, can goods, water bottles, pencils, acorns, shells, seeds, yarn, thread spools, old keys, old gloves, kitchen sponges, cotton balls, old combs, tennis or golf balls, small pebbles, corncobs, buttons, marbles, plastic eggs, pipe cleaners, stems of plants or flowers, different fruit, etc.

- Literature Connections:



By Loreen Leedy

By Kevin Sherry

Assessment Script:

Show a student the assessment board set up and sets of objects to choose from.

Say
T: Today we are going to observe properties of objects. Pick 3 objects of your choice and order them from short to long.

Use attached rubric to evaluate response(s).

Sample Rubric for Performance Assessment – Evaluation of Students' Work with Relative Lengths (used during the formal evaluation):
(PL-2, PL-3, 1-2)

Categories	Understanding Does the student seem to understand what they are selecting and organizing?	Observation and Research Does the student appear to be using either their 5 senses or non-standard measurement tools to make informed decisions?	Conveying Knowledge Does the student seems to understand what they are talking about and can they discuss their comparisons and other familiar referents?
Excellent (4 points each)	Student shows advanced understanding of relative lengths (can put multiple sets together)	Student has independently made observations of all relative sizes by using the materials provided and/or gestures conveyed information gathered	Verbal sharing of information/thinking is poised, confident and complete
Good (3 points each)	Student shows understanding of relative lengths	Student has independently made some observations of relative sizes by using materials provided and/or some gestures conveyed information gathered	Verbal sharing of information/thinking is clear
Acceptable (2 points each)	Student shows some understanding of relative lengths	Student independently made at least 1 observation of relative size by using materials provided	Verbal sharing of information/thinking is clear after prompting
Needs Improvement (1 point each)	Student shows little understanding of relative lengths	Showed little or no knowledge of how to use materials provided and/or use of gestures and needed prompting	Verbal sharing of information/thinking is not clear, even after prompting

Total:

12