

Measuring Length

- Strand:** Measurement and Geometry
- Topic:** Measuring length, using U.S. Customary and metric units
- Primary SOL:** 3.7 The student will estimate and use U.S. Customary and metric units to measure
- a) length to the nearest $\frac{1}{2}$ inch, inch, foot, yard, centimeter, and meter.

Materials

- Inch and/or centimeter measuring tapes (Ask students to bring from home, if possible)
- Inch-centimeter rulers
- Yardsticks
- Meter sticks
- Getting to Know You Recording Sheet (attached)

Vocabulary

actual measure, centimeter, estimate, foot, inch, length, measure, meter, yard

Student/Teacher Actions: What should students be doing? What should teachers be doing?

Note: Before this activity, ask each student to bring from home a measuring tool that can be used to measure length. Provide tools for students who cannot borrow them from home.

1. Discuss with students the assembled measuring tools, asking them to describe situations where they or others have used these tools. Create a concept chart on the board for students to use to review the tools.

Tool	Who Would Use This?	What Would They Measure?

2. Have students compare the difference between a ruler and a yardstick. Ask, “Which tool would be the best to measure an eraser?” “Which would be best to use to measure the height of the door?” Have students estimate the length of an eraser and then measure. Have them estimate the height of the door and then measure.
3. Explain that they will be using tools to measure various parts of their bodies, but only after first estimating the measurements of each body part.
4. Ask which tools would be appropriate to use to measure the distance around the head. Demonstrate with a student volunteer how to take the measurement with a standard measuring tape in inches and/or centimeters. Explain how to read the tape.
5. Distribute U.S. Customary rulers, and have students find $3\frac{1}{2}$ inches on the ruler. Ask, “What numbers is $3\frac{1}{2}$ closest to?” Have students find 3 inches and 4 inches on their rulers, and ask

them to describe the half-inch mark found between the 3 and the 4. Direct students to use the ruler to draw a line $3\frac{1}{2}$ inches long, and have them record the measurement of their lines.

6. Distribute the Getting to Know You Recording Sheet. Explain that students are to use the available tools to take the measurements indicated on the sheet. Review each item, and ask students to suggest tools to use. Demonstrate how to use a piece of yarn to take an indirect measurement if a tool is not available (i.e., cut a piece of yarn the length of your body and then measure it with a yardstick or meter stick). Remind students to estimate each measurement before measuring with the selected tool. Have students work with partners to assist in taking the measurements. Circulate, and offer assistance as needed.

Assessment

- **Questions**

- Which measuring tool did you bring from home, and why did you choose that particular tool?
- Why might you want to estimate the measurement of an object? In what situations might such an estimate be all you need to know?
- What jobs would need to use these types of measurements of the body?
- What jobs would require measuring length?

- **Journal/Writing Prompts**

- Compare the metric measurements you made with the U.S. Customary measurements you made. How were they alike? How were they different?
- Explain which measurement system you think is the easiest to use—U.S. Customary or metric—and explain why.

- **Other**

- Use the completed recording sheet for assessment purposes.
- Have students estimate and then measure specific objects around the room.

Extensions and Connections (for all students)

- Give students a list of measurements, and have them locate objects in the classroom that have those exact measurements.
- Have students measure distances on maps, and use the map scale to determine the actual distances between various pairs of places.
- If available, give each student a piece of bulletin-board paper and have them, with a partner, trace the outline of their body. Then list their measurements on the drawing.

Strategies for Differentiation

- Group students in pairs, and have each student cut a piece of adding machine tape to match his/her partner's height. Then, have each student measure his/her own tape (the one that matches his/her height) with a ruler, yardstick, or meter stick. Next, have each student calculate how many toothpicks, cubes, or popsicle sticks must be laid end-to-end to equal the length of his/her tape.

- Ask, “Did you get similar measurements? If not, why do you think that happened? Why is it important to use a standard tool to measure the length of an object?”
- Have students make measurement estimates before giving them the measuring tools to measure the designated objects.
- Provide students with a generic, nondetailed drawing of a person to measure to the nearest one-half inch, and record the measurements on the recording sheet.
- Remind students of the definition of estimation and why and when to use estimation.
- Create stations and have students work in small groups to do the measurements. Station examples would be:
 - Station 1: Ruler Activity
 - Station 2: Yardstick or Meter Stick Activity
 - Station 3: Measuring Tape Activity

Note: The following pages are intended for classroom use for students as a visual aid to learning.

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Getting to Know You Recording Sheet

Name: _____ Date: _____

Measurement to be Made	Measuring tool used	U.S. Customary Measurement	Metric Measurement
Distance around head		Estimate: Actual:	Estimate: Actual:
Length of longest finger: distance from tip to base		Estimate: Actual:	Estimate: Actual:
Arm span: with both arms extended, the distance from the tip of the longest finger on one hand to the tip of the longest finger on other hand		Estimate: Actual:	Estimate: Actual:
Length of foot: distance from the tip of the longest toe to the back of the heel		Estimate: Actual:	Estimate: Actual:
Width of largest fingernail		Estimate: Actual:	Estimate: Actual:
Width of smile		Estimate: Actual:	Estimate: Actual:
Length of body: distance from the top of the head to bottom of the foot		Estimate: Actual:	Estimate: Actual: