

Just in Time Quick Check

Standard of Learning 2.MG.1

Strand: Measurement and Geometry

Standard of Learning 2.MG.1

The student will reason mathematically using standard units (U.S. Customary) with appropriate tools to estimate, measure, and compare objects by length, weight, and liquid volume to the nearest whole unit.

Students will demonstrate the following Knowledge and Skills:

- a) Explain the purpose of various measurement tools and how to use them appropriately by:
 - i) identifying a ruler as an instrument to measure length;
 - ii) identifying different types of scales as instruments to measure weight; and
 - iii) identifying different types of measuring cups as instruments to measure liquid volume.
- b) Use U.S. Customary units to estimate, measure, and compare the two for reasonableness:
 - i) the length of an object to the nearest inch, using a ruler;
 - ii) the weight of an object to the nearest pound, using a scale; and
 - iii) the liquid volume of a container to the nearest cup, using a measuring cup.

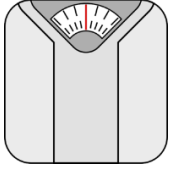
Just in Time Quick Check

Just in Time Quick Check Teacher Notes

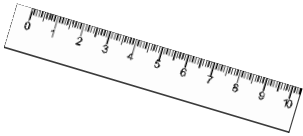
Supporting and Prerequisite SOL: 1.MG.1

Just in Time Quick Check 2.MG.1

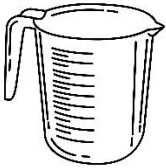
1. Determine whether each tool should be used to measure length, weight, or liquid volume.



length weight liquid volume



length weight liquid volume



length weight liquid volume



length weight liquid volume

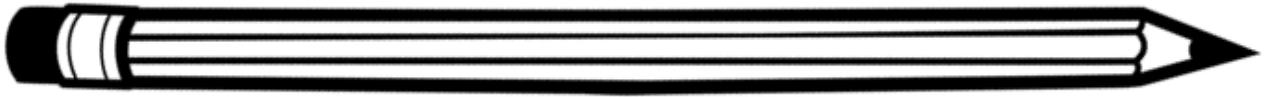


length weight liquid volume



length weight liquid volume

2. About how many inches long is this pencil? _____ inches



Use a ruler to measure the length of this pencil to the nearest inch.

_____ inches

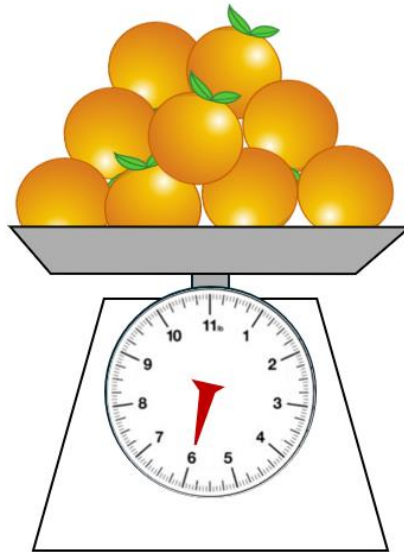
3. Estimate the length of this crayon. _____ inches



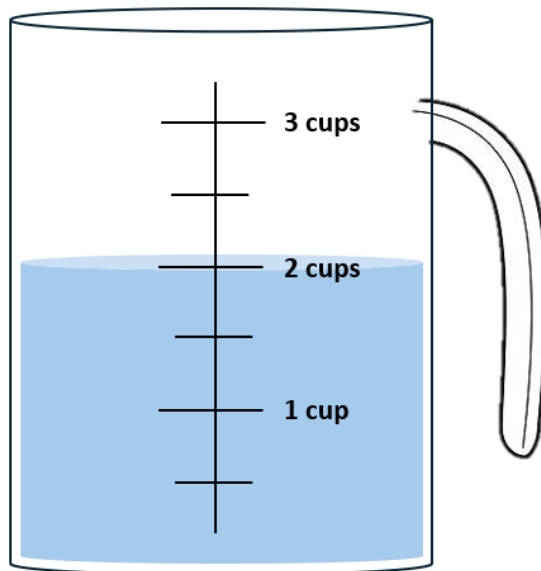
Use a ruler. Find the length of this crayon to the nearest inch.

_____ inches

4. About how many pounds do these oranges weigh? _____ pounds



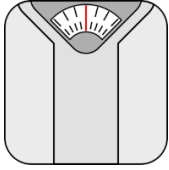
5. About how many cups of water are in this measuring cup? _____ cups



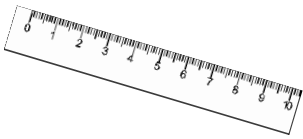
2.MG.1 Just in Time Quick Check Teacher Notes

Common Errors/Misconceptions and their Possible Indications

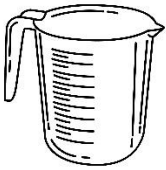
1. Determine whether each tool should be used to measure length, weight, or liquid volume.



length weight liquid volume



length weight liquid volume



length weight liquid volume



length weight liquid volume



length weight liquid volume



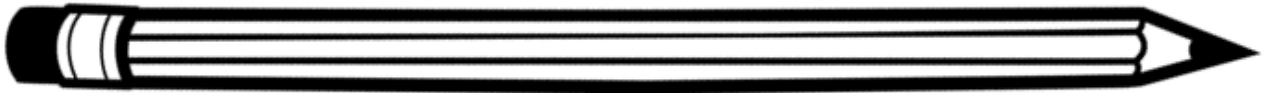
length

weight

liquid volume

Students may choose the wrong instrument to measure length, believing that any tool that has a scale with numbers measures length. Students may also believe that a ruler or tape measure can be used to measure length, weight and liquid volume because it is a familiar tool. Students may also confuse tools that measure liquid volume and weight, considering their experiences in holding various sized containers of liquid and referencing how heavy those containers feel. Additional practice measuring with standard units (e.g., rulers, scales) and non-standard units (e.g. toothpicks, paperclips, balances) will help build understanding of each attribute as well as the features of the tools used to measure them.

2. About how many inches long is this pencil? _____ inches



Use a ruler to measure the length of this pencil to the nearest inch.
_____ inches

Some students may provide “guesses” that seem unrelated to the length of the pencil. This may indicate the students need more opportunities to develop the concept of one inch. Discussions of real-world objects around the room that are about 1 inch long will provide benchmarks that help students understand the size of 1 inch. Re-examining an estimate after determining the actual length helps students develop a sense of the reasonableness of their estimates.

Students may report the length to the nearest inch as 6 inches, which may indicate students are counting inches from the end of the ruler instead of from zero. Students may benefit from constructing their own ruler from alternating colors of one-inch paper strips. Constructing a ruler in this way and then using it to measure length helps build conceptual understanding for measuring length and the tools used in measuring.

3. Estimate the length of this crayon. _____ inches

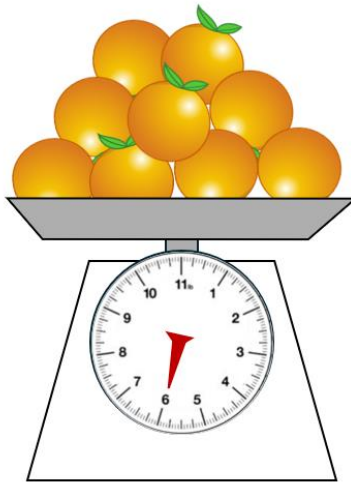


Use a ruler. Find the length of this crayon to the nearest inch.

_____ inches

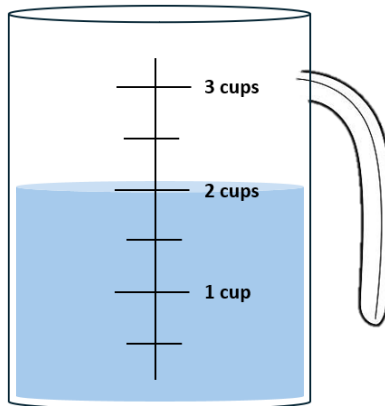
Students may report a length of five inches, which likely indicates the students are counting the tick marks and including zero in their count. Students may report one inch, indicating the students may have been influenced by the orientation of the crayon and measured the width of the crayon instead of the length. Students may need more experience measuring objects presented in a variety of orientations. Students may benefit from using rulers without numbers, on which they can label the units and then measure, and rulers that do not start at zero (“broken” rulers). Measuring with these instruments may foster understanding that one can measure from any starting place on the ruler and that the length of an object represents a count of units, or spaces between the tick marks.

4. About how many pounds do these oranges weigh? _____ pounds



Students may confuse the dial on the scale with the face of an analog clock and struggle with the tick marks between the numbers or the placement of the numbers on the dial. Some students may count the oranges that are visible on the scale and determine that there are 9 oranges and state the weight is 9 pounds without referencing the dial on the scale. Students may benefit from additional practice with a variety of scales with both analog and digital displays and conversations about how the displays are similar and different.

5. About how many cups of water are in this measuring cup? _____ cups



Students may believe that the measuring cup contains 3 cups of water because that is the largest volume noted on the container. These students may believe that the volume is determined by the size of the container and not the amount of water inside the container. Other students may struggle with the scale on the side of the container, ignoring the labels and counting each tick mark as one cup. Students may also struggle with the water level not aligning perfectly with the 2 cup marking on the measuring cup. Students may benefit from experiences measuring liquid volume with a variety of measuring cups and tools, with discussion focused on the scale that is part of each measuring tool.