

Measure It Right

Estimate first, then use the right tool.

GRADE 3 • 3.MG.1

3.MG.1 “The student will reason mathematically using standard units (U.S. Customary and metric) with appropriate tools to estimate and measure objects by length, weight/mass, and liquid volume to the nearest half or whole unit. Justify whether an estimate or an exact measurement is needed for a contextual situation and choose an appropriate unit. Estimate and measure: length of an object to the nearest U.S. Customary unit (12 inch, inch, foot, yard) and metric unit (centimeter, meter); weight/mass of an object to the nearest U.S. Customary unit (pound) and metric unit (kilogram); and liquid volume to the nearest U.S. Customary unit (cup, pint, quart, gallon) and metric unit (liter). Compare estimates of length, weight/mass, or liquid volume with the actual measurements.”

NAME _____

DATE _____

Work with an adult. Record your estimate before measuring. In a table, use its labels; on lines, write the estimate first and measurement second. Include units. Explain aloud unless asked to write.

Materials and setup

Adult setup: provide inch rulers marked in halves, centimeter rulers, scales reading pounds to half-pounds and kilograms to whole kilograms, a liquid cup measure and a marked liter jug. Label two ribbons A and B and two water containers A and B. Supply a bag of books. Choose amounts within each tool's range.

Work in pairs at adult-supervised stations. Estimate before reading a tool. Zero scales; start rulers at zero. Read water on a level surface at eye level. Measure the water present, not the container's capacity.

Try the idea

A tool reading is a measurement to a stated precision. Choose a unit and tool for the quantity. Record your estimate before measuring. Include units in every result.

Try it together

A ribbon was estimated at 5 inches. The ruler reading is 4 1/2 inches. Compare the results.

A completed record

Record	My result
Estimate	5 inches
Measurement	4 1/2 inches

Use the same unit. The estimate is 1/2 inch above the measurement. The estimate is 1/2 inch high.

1. Length in inches

Estimate ribbon A's length. Then align it with zero on an inch ruler. Measure to the nearest half inch. Record both results.

Estimate, then measure

Record	My result
Estimate in inches	
Measured inches (nearest half)	

2. Length in centimeters

Estimate ribbon B's length. Use the centimeter ruler to measure to the nearest whole centimeter. Record both results.

3. Mass in kilograms

Estimate the bag of books' mass in kilograms. With an adult, zero the kilogram scale and weigh it. Record to the nearest whole kilogram.

Estimate, then measure

Record	My result
Estimate in kg	
Measured kg (nearest whole)	

4. Weight in pounds

Estimate the bag of books' weight. With an adult, zero the pound scale and weigh it. Record the reading to the nearest half pound.

5. Water in cups

Estimate the water in container A in cups. Pour and measure it with the cup measure. Count full cups and compare the remainder with half a cup. Record the nearest whole cup.

6. Water in liters

Estimate the water in container B in liters. With an adult, measure using the liter jug. Count full liters and compare the remainder with half a liter. Record the nearest whole liter.

7. Check your estimate

A ribbon must fit a picture frame. Tell an adult a suitable unit and tool. Is an estimate enough to cut it to fit? Explain aloud. Choose a completed task. Write its name, estimate and measurement. Was your estimate high, low or equal to the measurement? Write the difference with units.

Teacher notes

Prepare ribbons with non-whole-inch lengths; choose masses and water amounts that give useful nonzero readings at the stated precision. Adults manage heavy items and pouring. Never describe a tool reading as perfectly exact. Check procedure and student observations, not invented fixed answers. Nearest-half readings use the closest half-unit mark; for a tie use the higher mark. Oral explanations accompany the short written records.

Task 1

Answers vary. Record the estimate first and the measured length in inches to the nearest half inch.

Task 2

Answers vary; use a centimeter ruler and whole centimeters.

Task 3

Answers vary; use kilograms to the nearest whole kilogram and zero the scale before weighing.

Task 4

Answers vary; pounds to the nearest half pound, within scale range.

Task 5

Answers vary. Count full cups; a remainder below half rounds down, at least half rounds up. Record cups. Keep track of each full pour once and use the half-cup mark for the remainder.

Task 6

Answers vary; use liters and the nearest whole liter. Do not substitute the jug capacity for the water present. Count liters directly, rather than converting cup counts.

Task 7

Accept an appropriate length unit and tool, such as inches with an inch ruler or centimeters with a centimeter ruler. Measure to fit the frame; a guess alone may not fit. For the chosen task, verify the records, direction and difference with units.