

Measure Like a Scientist

Choose metric tools that match each measurement.

4.1.b.iv "planning and carrying out investigations take metric measurements using appropriate tools"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each measuring tool and circle the metric unit named with it. This shows how a scientist matches a tool to the measurement needed.

Hana's Seedling Investigation

- ① To investigate how water affects bean seedling growth, Hana planted three similar seedlings in identical cups. She kept them on the same windowsill and gave each one a different amount of water each day. Before starting, Hana decided which measurements would help her compare growth fairly. She chose metric units because they make it easy to record and compare results.
- ② Each morning, Hana poured water with a graduated cylinder. This tool measured the water volume in milliliters, so she could give exact amounts. On Monday, she gave one cup 20 mL, another 40 mL, and the last 60 mL. She used a metric ruler to measure each seedling from the soil surface to the tallest tip.
- ③ After seven days, Hana measured the seedlings again and wrote every length in centimeters. She also checked the soil temperature with a thermometer and recorded degrees Celsius. A ruler would not measure water volume, and a graduated cylinder would not measure a seedling's height. By matching each tool to the kind of measurement, Hana could collect clear data for her investigation.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 Which tool did Hana use to measure the amount of water, and what metric unit did she use?

2 What two points did Hana measure with her metric ruler to find a seedling's height?

3 What tool and metric unit did Hana use to check the soil temperature?

4 Why would a ruler not be the right tool for measuring water volume?

3 YOUR TURN _____ Your own words

Plan how to compare the water capacities of three classroom containers. Name the tool and metric unit. With your teacher, use a graduated cylinder or metric measuring cup to fill each container to an agreed level. Read the scale at eye level and record the actual volume with mL. If several fills are needed, record and add their volumes. Compare your results. Use extra paper for repeated fills or your comparison.

CONTAINER	TOOL / METHOD	ACTUAL VOLUME (ML)

PART 1 • READ AND MARK

Underline each measuring tool and circle the metric unit named with it. This shows how a scientist matches a tool to the measurement needed. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Which tool did Hana use to measure the amount of water, and what metric unit did she use?	She used a graduated cylinder and measured water in milliliters (mL).
2	What two points did Hana measure with her metric ruler to find a seedling's height?	She measured from the soil surface to the tallest tip.
3	What tool and metric unit did Hana use to check the soil temperature?	She used a thermometer and recorded degrees Celsius.
4	Why would a ruler not be the right tool for measuring water volume?	A ruler measures length, not the volume of water.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Illustrative completed measurements only; learners must measure their own containers.

CONTAINER	TOOL / METHOD	ACTUAL VOLUME (ML)
Small paper cup	Graduated cylinder; one fill	150 mL
Plastic bowl	Graduated cylinder; 3 fills of 200 mL	600 mL
Water bottle	Metric measuring cup; one fill	500 mL

Accept any three reasonable containers. Each row should name a tool that measures liquid volume, such as a graduated cylinder or measuring cup, and a metric volume unit, such as milliliters or liters. Teacher setup: supply three stable containers, water, a tray, towels and a graduated cylinder or metric measuring cup. Agree on fill levels, demonstrate reading the scale and help transfer water. Observe each learner making a measurement. Require real numerical values with units and correct sums for repeated fills; accept different capacities. The sample sum is $200+200+200=600$ mL; its bowl holds most.