

Measure It Right

Choose metric tools and collect fair, useful data.

6.1.b.iii "planning and carrying out investigations take metric measurements using appropriate tools"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline every metric unit in the passage. Then number the four sentences that begin First, Second, Third, and Fourth to show the order of the accurate height-measurement steps.

Garden Measurement Team

- ① Scientists choose a metric tool that matches what they need to measure. During a school garden investigation, a team compares the heights of bean plants. A meter stick measures plant height in centimeters, because the plants are taller than a small ruler. A graduated cylinder measures liquid volume in milliliters. A balance measures mass in grams. Choosing units and tools before collecting data helps the team make measurements that can be compared fairly across trials.
- ② To measure one bean plant accurately, the team follows four steps. First, they place the zero end of the meter stick at the soil surface beside the stem. Second, they hold the stick straight up, rather than slanting it. Third, they look across at the top of the plant, keeping their eyes level with the mark on the stick. Fourth, they record the height as 18.4 cm in their data table. The same procedure is used for every plant.
- ③ Metric measurements also need consistent conditions. Suppose the team tests how much water different mulch samples absorb. They cut each sample to the same size and add 50 mL of water. After waiting two minutes, they pour any water that did not soak in into a graduated cylinder. The volume left tells them how much water was not absorbed. They subtract that leftover volume from 50 mL to find the amount absorbed. Repeating each trial improves confidence in the results.

2

ANSWER WITH EVIDENCE

Use the passage

- 1

You need to measure a bean plant from the soil surface to its top. What tool and metric unit should you use?
- 2

Which numbered step helps you avoid reading the height from an angle?
- 3

A mulch sample receives 50 mL of water. A graduated cylinder shows 17 mL of water left over. How much water did the sample absorb? Show the calculation.
- 4

Name two conditions the team keeps the same when testing mulch samples.

3

YOUR TURN

Your own words

Test two equal-size cloth squares to compare how much water they absorb. Add the same amount of water to each, wait the same length of time, and complete the table. In the last column, state how you measured the water left, how you kept the test fair, and how you found the amount absorbed.

MATERIAL	WATER ADDED (ML)	WATER LEFT (ML)	WATER ABSORBED (ML)	HOW MEASURED, KEPT FAIR, AND CALCULATED

PART 1 • READ AND MARK

Underline every metric unit in the passage. Then number the four sentences that begin First, Second, Third, and Fourth to show the order of the accurate height-measurement steps. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	You need to measure a bean plant from the soil surface to its top. What tool and metric unit should you use?	Use a meter stick and measure in centimeters, or cm.
2	Which numbered step helps you avoid reading the height from an angle?	Step 3. Keep your eyes level with the mark on the meter stick.
3	A mulch sample receives 50 mL of water. A graduated cylinder shows 17 mL of water left over. How much water did the sample absorb? Show the calculation.	33 mL. Subtract 17 mL from 50 mL.
4	Name two conditions the team keeps the same when testing mulch samples.	Any two: the size of each sample, the amount of water added, and the two-minute waiting time.

PART 3 • YOUR TURN (SAMPLE ANSWER)

MATERIAL	WATER ADDED (ML)	WATER LEFT (ML)	WATER ABSORBED (ML)	HOW MEASURED, KEPT FAIR, AND CALCULATED
Cotton cloth	40 mL	14 mL	26 mL	Measured runoff after 30 seconds with a graduated cylinder. Both squares were the same size and got 40 mL. $40 - 14 = 26$ mL.
Fleece cloth	40 mL	9 mL	31 mL	Measured runoff after 30 seconds with a graduated cylinder. Both squares were the same size and got 40 mL. $40 - 9 = 31$ mL.

Accept equivalent wording for the correct metric tools, units, and measurement steps. For Your Turn, accept different materials and results if students use mL, identify a graduated cylinder or another valid measurement method, show subtraction, and state controlled conditions.