Lesson 2.1 – Measuring Plant Height: Protocol, Calibration, and Measurement Error

Quarter 2 · Technology, Measurement & Analysis: Energy in the Garden · Week 10

Name: _____ Partner: _____ Date: _____ Period: _____

Big Question: How do we make measurements that are precise, accurate, and comparable from week to week?

Word Bank: precision · accuracy · random error · systematic error · soil line · unfurl method · plant ID · significant figures · protocol

My Task

Record height (cm, nearest 0.1) for every plant.

Plant ID	Treatment height (cm)	Plant ID	Control height (cm)
T1 / C1			
T2 / C2			
T3 / C3			
T4 / C4			
T5 / C5			
T6 / C6			
T7 / C7			
T8 / C8			
T9 / C9			

Support: Provide a protocol card with photos for each step.	**AP Challenge:** Calculate the mean absolute difference between partners for cross-checked plants and propose a tolerance rule for the class.

Think & Respond

1. Cross-check: plant, my measurement, partner's measurement, difference:

2. One systematic error we prevented:

AP EXAM PRACTICE

(MCQ) A student measures every treatment plant with a ruler whose zero mark is 0.5 cm from its end but measures every control plant with a ruler that begins at zero. Which statement is correct? (A) The error is random and will average out (B) The error is systematic and will make treatment plants appear 0.5 cm shorter (C) The error is systematic and will make

treatment plants appear 0.5 cm taller (D) There is no error because both rulers are metric

EXIT TICKET

1. Explain the difference between accuracy and precision.

2. Describe one systematic error you prevented today.

3. Record the tallest plant in each cell.