Name: _____ **Date:** _____

Your Mission: Conquer the 4th Grade Metric Mastery Challenge

Synthesize data and apply multi-step logic to solve complex measurement problems using International System (SI) units in real-world engineering scenarios.

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1. An environmental engineer is building a wildlife corridor that is 2.5 kilometers long. If they place a motion-sensor camera every 500 meters, how many cameras are needed (excluding the very start)?

A. 2 cameras
B. 5 cameras
C. 50 cameras
D. 250 cameras

2. A scientist has a liquid sample with a mass of 1.2 kilograms. After an experiment, the mass decreased by 400 grams. What is the final mass in grams?

A. 1,600 grams
B. 0.8 grams
C. 800 grams
D. 700 grams

3. True or False: If a digital scale is calibrated to show 0.00g when empty, but consistently measures a 10g weight as 10.5g every time, the scale is precise but not accurate.

A. True
B. False

4. You are designing a vertical garden. Each planter box is 40 centimeters tall. If you stack 8 boxes, how many decimeters tall is the entire garden tower?

A. 3.2 decimeters
B. 32 decimeters
C. 320 decimeters
D. 48 decimeters

5. A botanist notes that a rare fern grows 15 millimeters every week. How many centimeters will the plant have grown after 4 weeks?

A. 6 centimeters
B. 60 centimeters
C. 1.5 centimeters
D. 600 centimeters

6. Which of these scenarios requires the highest level of precision in measurement?

A. Measuring a playground for new mulch
B. Estimating the distance of a hiking trail

C. Creating a chemical solution for medicine
D. Counting the number of trees in a forest

7. True or False: The 'mole' is the SI unit used by scientists to measure the amount of a substance, such as the number of atoms in a sample.

A. True
B. False

8. An Olympic pool is 50 meters long. A swimmer completes 20 laps (one-way trips). How many kilometers did the swimmer travel in total?

A. 10 kilometers
B. 1,000 kilometers
C. 0.1 kilometers
D. 1 kilometer

9. Why do scientists across the globe use the International System of Units (SI) instead of local measurement systems like the Imperial system?

A. SI units are easier to say in different languages
B. SI units are always much larger than other units
C. To ensure data can be shared and verified without conversion errors
D. Because SI units are the only ones that use decimals

10. True or False: If you are measuring the luminous intensity of a light source, the standard SI unit you would record is the Candela.

A. True
B. False