

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## The Mystery of the Wilting Fern: A 4th Grade Inquiry Quiz

Evaluate 10 complex scenarios requiring students to identify variables, analyze conflicting data sets, and refine hypotheses in a rigorous scientific investigation.

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**1. An oceanographer notices that bioluminescent algae glow brighter in colder water. If they want to perform an experiment to prove why, which of these is the most effective 'Independent Variable' to isolate?**

- A. The brightness of the glow measured by a light meter
- B. The exact temperature of the water samples
- C. The amount of salt added to the water
- D. The time of day the observations are made

**2. Maya is testing which birdseed attracts the most Northern Cardinals. She must keep the height of the bird feeders the same. This 'unchanging' factor is known as a \_\_\_\_\_.**

- A. Dependent Variable
- B. Hypothesis
- C. Controlled Variable
- D. Observation

**3. If an experiment's results do not support the original hypothesis, the entire experiment is considered a failure and the data should be discarded.**

- A. True
- B. False

**4. Which of these represents a 'Quantitative' observation that a geologist might record while studying a canyon wall?**

- A. The rock layers look very old and dusty
- B. The sandstone feels rough like sandpaper
- C. The sediment layer is exactly 4.2 meters thick
- D. The stripes in the rock are a reddish-brown color

**5. A scientist writes: 'If I increase the amount of zinc in the battery, then the flashlight will stay lit longer.' This statement is a(n) \_\_\_\_\_.**

- A. Inference
- B. Conclusion
- C. Research Question
- D. Hypothesis

**6. Scientific 'Communication' only happens after the experiment is completely finished and a conclusion has been reached.**

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- A. True
- B. False

**7. Leo is studying how different types of bridge shapes hold weight. He builds three bridges: a beam bridge, an arch bridge, and a suspension bridge. Why is it important for him to use the same material (like popsicle sticks) for all three?**

- A. To make sure the results are caused by the shape, not the material
- B. Because popsicle sticks are the strongest material available
- C. To ensure the experiment takes a long time to complete
- D. Because the hypothesis must always involve wood

**8. After collecting data on how fast ice melts in different liquids, Dr. Aris looks for patterns in the numbers. This step is called Data \_\_\_\_\_.**

- A. Questioning
- B. Analysis
- C. Hypothesizing
- D. Experimenting

**9. An 'inference' is the same thing as a direct 'observation.'**

- A. True
- B. False

**10. A team of researchers wants to know if a specific type of soil helps sunflowers grow taller. They plant 50 seeds in the new soil and 50 seeds in regular garden soil. What is the group in the 'regular garden soil' called?**

- A. The Experimental Group
- B. The Variable Group
- C. The Control Group
- D. The Hypothesis Group