

Name: _____ Date: _____

The Mystery of the Microbe Colony: A 5th Grade Inquiry Quiz

Aspiring biologists will identify variables within bioluminescence studies and synthesize data to refine hypotheses about deep-sea environments.

1. A marine biologist notices that deep-sea fish glow brighter in colder currents. This observation leads to the 'Question' phase. Which is the most scientifically sound question to advance this study?

- A. Are cold fish happier than warm fish?
- B. Does water temperature affect the rate of chemical reactions in bioluminescent bacteria?
- C. Why is the ocean so dark at the bottom?
- D. Will fish grow larger if they swim in warmer water?

2. In an experiment testing how different wing shapes affect the flight distance of a paper airplane, the specific shape of the wing is considered the _____ variable.

- A. Dependent
- B. Control
- C. Independent
- D. Constants

3. If an experimental result does not support the original hypothesis, the experiment is considered a failure and the data should be discarded.

- A. True
- B. False

4. Dr. Aris is studying why certain desert cacti bloom only at night. After researching, she thinks it is to attract nocturnal bats. What is her next logical step in the scientific method?

- A. Write a final report for a science journal.
- B. Draw a conclusion that bats are the only pollinators.
- C. Formulate a testable hypothesis and design a controlled experiment.
- D. Ask a question about why the desert is dry.

5. To ensure that an experiment's results are reliable and not due to chance, a scientist should perform multiple _____.

- A. Opinions
- B. Trials
- C. Variables
- D. Hypotheses

6. Which of these is a synthesis of data rather than just a simple observation?

- A. The liquid turned blue when I added the powder.
- B. The plant in the sun grew 5 centimeters.

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- C. Across three trials, the average growth rate increased by 20% when nitrogen was added.
- D. I think the beaker is getting hot.

7. A 'Control Group' is the part of an experiment that is kept under normal conditions to serve as a baseline for comparison.

- A. True
- B. False

8. Imagine you are investigating why a brand of biodegradable plastic breaks down faster in soil than in water. Which piece of background research would be MOST helpful?

- A. The history of the person who invented plastic.
- B. The cost of manufacturing plastic bags.
- C. Studies on the different types of bacteria found in soil versus water.
- D. A list of the largest oceans in the world.

9. When a scientist creates a graph to show the relationship between 'Hours of Sleep' and 'Test Scores,' they are engaging in the _____ stage.

- A. Hypothesis
- B. Data Analysis
- C. Research
- D. Observation

10. Peer review (Communication) is only necessary if a scientist discovers something that has never been seen before.

- A. True
- B. False