

Name: _____ Date: _____

Answer Key: 5th Grade Scientific Method Variables Quiz

Differentiate between independent and dependent variables while analyzing experimental design scenarios to build analytical inquiry skills.

1. A scientist is testing if the shape of a paper airplane affects how far it flies. In this experiment, what is the 'independent variable'?

Answer: C) The shape of the airplane

The independent variable is the factor that the scientist intentionally changes to see if it causes an effect.

2. After collecting data, a scientist looks for patterns to see if the results support the hypothesis. This step is called _____.

Answer: B) Data analysis

Data analysis is the process of interpreting the measurements and observations taken during the experiment.

3. A hypothesis is only useful to a scientist if the experimental results prove that the hypothesis was correct.

Answer: B) False

A hypothesis must be testable, but it is still valuable even if the data disproves it; this helps scientists refine their ideas.

4. Why do scientists conduct multiple 'trials' (repeating the same test several times) during an experiment?

Answer: C) To ensure the results are consistent and not a mistake

Multiple trials help verify that the results are reliable and reduce the impact of accidental errors.

5. In an experiment testing how loud music affects heart rate, the heart rate measurement is the _____ variable.

Answer: C) Dependent

The dependent variable is the factor being measured or observed to see how it responds to changes.

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6. Constants are the factors in an experiment that must stay exactly the same in every group to ensure a fair test.

Answer: A) True

Constants prevent outside factors from interfering with the relationship between the independent and dependent variables.

7. Which of these is the best example of a 'testable' scientific question?

Answer: B) Which brand of battery lasts the longest in a flashlight?

A testable question can be answered through measuring and observing physical evidence rather than personal opinion.

8. When a scientist shares their results in a professional journal so other experts can check the work, this is known as _____.

Answer: B) Peer review

Peer review is a critical part of the communication step where other scientists evaluate the methods and logic of a study.

9. A scientific 'conclusion' is just a summary of the steps you took during the experiment.

Answer: B) False

A conclusion must explain whether the data supports the hypothesis and what the findings mean for the initial question.

10. A student notices that bread in the pantry grows mold faster than bread in the fridge. What step of the scientific method is this?

Answer: C) Observation

Observation is using your senses or experiences to notice something interesting that leads to a scientific question.