

Period _____

Name _____

Date _____

Guided Notes Scientific Method

The Scientific Method involves a series of steps that are used _____
_____.

The Scientific Method

Steps of the Scientific Method

1. Problem/Question: _____ that can be solved through experimentation.

2. Observation/Research: _____ your topic of interest.

3. Formulate a Hypothesis (Educated Guess): _____
_____.

Example: If soil temperatures rise, then plant growth will increase.

4. Experiment: _____. Include a detailed materials list. The outcome must be measurable (quantifiable).

5. Collect and Analyze Results: Modify the procedure if needed. _____
_____.

6. Conclusion: Include a statement that accepts or rejects the hypothesis and why. Refer to your data in your explanation.

Make recommendations for further study and possible improvements to the procedure.

7. Repeat Experiment

Results and Data

**** If your results DO NOT fit your Hypothesis _____
_____ and retry your experiment.

Hypothesis

The hypothesis is an educated guess about the relationship between the independent and dependent variables.

Note: Hypothesis are written as _____ Statements

Independent Variable

The independent, or manipulated variable, _____. It usually includes time (dates, minutes, hours), depth (feet, meters), temperature (Celsius).

This variable is _____

Dependent Variable

The dependent, or responding variable, _____. It is the result of what happens because of the independent variable.

Example: How many oxygen bubbles are produced by a plant located five meters below the surface of the water? The oxygen bubbles are dependent on the depth of the water.

This variable is _____

Graphing

When graphing your data from an experiment always place the _____ on the X axis (horizontal) and the _____ on the Y axis (vertical).

Valid Experiment

- In order for a scientific experiment to be valid it can only have _____
- This variable is the _____.
- All other parts of the experiment must remain the _____
- Any experiment that has more than 1 variable cannot prove anything and _____

Control Group

- In a scientific experiment, the control is the group that serves as the standard of comparison.
- The control group is exposed to the same conditions as the experimental group, except for the variable being tested.
- _____

Constants

The constants in an experiment are all the factors that the experimenter attempts to keep the same.