

Biology
Scientific Method
Lab
Dr. Stafford

Name _____

Class period _____

An important part of any science course is the process of science. Scientists come up with a question or problem, make a prediction (hypothesis), and have to go through an approved series of steps to prove or disprove their hypothesis. This is the way new discoveries are made each day in science. The process is called the “Scientific Method”.

The results are based on observations and measurements made based on what can be seen and explained by “natural” rules and laws. The data is organized in tables and then graphed to show trends and results. You have been taught about the Scientific Method and introduced to the following terms:

- independent variable
- dependent variable
- constants
- controls
- levels of the experiment

Using this information about the Scientific Method, devise an experiment using the following supplies:

1. Two different kinds of dirt
2. Plain tap water, distilled water, or water with Miracle Gro in it.
3. Different kinds of seeds
4. Different sources of light

1. What observation or question do you have about the germination and growth of plants.

2. Do some basic research about your question about plants. Sources can include the internet, textbook, qualified professionals, or other legitimate sources.

3. State your hypothesis for this experiment.

4. What is the purpose of an experiment?

5. Select one independent variable for this experiment.

6. Select your dependent variable for this experiment detailing what you are going to measure and the units of measurement. Tell how often and for how long you will take measurements.

7. What is your control for this experiment? What is the purpose of a control?

8. List the steps of the experiment. Be sure to make the steps are clear enough so that someone else can duplicate your experiment.

9. List five (5) constants for this experiment.
 - a.

 - b.

 - c.

 - d.

 - e.

10. Make a data table on the back of the graph paper or on a sheet of paper. Be sure to title and label the data table.

11. Make a line graph of the data. Be sure to include the following:
 - a. Give the graph a title.
 - b. Label the x and y axis.
 - c. Be sure to include units of measurements

12. Using the results of the line graph, state the trend that it shows for your results. Which plant grew the most and how can you tell from the line on the graph?

13. Conclusion – Does the experimental results support your hypothesis or not? Explain your results based on your observations and research you did before the experiment.

14. What is your next step?

15. What would be the next step for you, the “scientist”?