

Name _____ Date _____ Period _____

Biology Homework 1-1.2 Laboratory Safety & Scientific Process II

Use your **journal** as a reference tool in addition to the information provided below to answer the questions that follow.

State the Problem / Ask a Question

The problem should be stated in a question form. The answer should be observable.



Form a Hypothesis

A hypothesis is an educated guess. It is written in an if/then format and is a possible answer to your problem.



Design a Controlled Experiment

You should have a list of materials and a step by step procedure that anyone can follow. An experiment should be repeatable. Always have a dependent and independent variable and also a control group.

Dependent Variable – This variable relies on the experiment.

Independent Variable – This part of the experiment is changed for each trial.

Control – This is a constant that is not changed or altered.

Do the experiment

Perform the experiment as written in the procedure.

Record and Organize the Data

Gather data using data tables, charts, or graphs.

Analyze the Data

Do you see trends in your data? Does your data support your hypothesis?



Form a Conclusion

State your conclusion based on your data. Your conclusion will either support your hypothesis or lead you to another hypothesis.

1. A biology student wants to find out if music has an effect on how fast a plant grows. He designs an experiment where he plants three bean seeds in four different pots. He uses the same type of soil, waters them with the same amount of water every day, and makes sure they get the same amount of sunlight. After one week, the student measures and calculates the average height of the three plants in each pot and records the data in the table below. Use the table to answer the questions that follow.

	Plants with rap	Plants with techno	Plants with love songs	Plants with no music
Day 1	2 cm	2 cm	2 cm	2 cm
Day 2	2 cm	2 cm	3 cm	2 cm
Day 3	3 cm	3 cm	4 cm	3 cm
Day 4	4 cm	4 cm	6 cm	4 cm
Day 5	5 cm	5 cm	7 cm	5 cm

a. List the dependent variable(s) _____

b. List the independent variable(s) _____

c. List the control group _____

2. Whenever chemical substances are used in the laboratory, some waste is generated. Where is the waste disposed? Justify your answer.

3. List 3 lab safety rules. Why are these rules utilized? Justify your answer.

4. An investigation was done with an electromagnetic system made from a battery and a wire wrapped around a nail. Different sizes of nails were used. The number of paper clips that the electromagnet picked up was measured.

Match each term to the appropriate description based on the above investigation.

_____ Independent Variable

a. battery, wire, type of nail

_____ Dependent Variable

b. size of nail

_____ Control Group

c. number of paper clips picked up