

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## Biology Homework 1-1.1 Laboratory Safety & Scientific Process

Use your **journal** as a reference tool in addition to the information provided below. Circle your answer choices and provide justifications for your answers.

### 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. If your clothing or hair catches fire in the lab, how should you respond?
  - a. run to the closest sink
  - b. run to the fire extinguisher
  - c. use fire blanket
  - d. wait until the fire burns out

2. Whenever skin or clothing is exposed to a significant amount of corrosive or toxic chemicals, what laboratory equipment should be used?
- goggles
  - apron
  - safety shower
  - gloves
3. Which object or material may be discarded safely with the regular trash?
- a petri dish used in an experiment on bacterial growth
  - a broken petri dish that was not used in an experiment
  - a sample of blood from an investigation of blood clotting factors
  - strong acids and bases from an experiment on blood pH
4. A hypothesis is-
- proven
  - testable
  - a question
  - none of the above
5. A student conducted an experiment in which she observed the growth of an apple tree in different weather conditions. Which of the following is the dependent variable in this situation?
- weather conditions
  - growth
  - insect diversity
  - sunlight
6. Match each term with its appropriate definition.
- |                         |  |
|-------------------------|--|
| _____ Biohazard         | a. variable in an experiment that is deliberately changed or manipulated                           |
| _____ Control           | b. equipment used when working with chemicals, fire and glassware                                  |
| _____ Dependent         | c. biological substances that pose a threat to the health of living organisms                      |
| _____ Independent       | d. measurements  |
| _____ Goggles           | e. variable that changes in response to changes the investigator makes to the manipulated variable |
| _____ Quantitative data | f. observations or descriptions that do not include measurements                                   |
| _____ Qualitative data  |  |