

Name _____ Date _____ Period _____

Biology Homework 1-1.3 Scientific Process

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.

For each problem, identify the independent and dependent variables. Also write a hypothesis in an if/then format.

1. Problem: How does studying affect the grade on an exam?

Independent Variable _____ Dependent Variable _____

Hypothesis _____

2. Problem: How does the brightness of light affect the rate of photosynthesis?

Independent Variable _____ Dependent Variable _____

Hypothesis _____

Read the following experiments and identify the independent variable, dependent variable, and control group.

3. You water three sunflower plants with salt water. Each plant receives a different concentration of salt solution. A fourth plant receives pure water. After a two-week period, the height is measured.

Independent Variable _____

Dependent Variable _____

Control Group _____

4. One tank (tank 1) of gold fish is fed the normal amount of food once a day. A second tank (tank 2) is fed twice a day. A third tank (tank 3) is fed four times a day during a six week study. The weights of the fish are recorded daily.

Independent Variable _____

Dependent Variable _____

Control Group _____