

Name: _____ Date: _____ Period: _____

How do we incorporate good experimental design in investigations?

- A good experiment is an experiment that tests what you want to test and _____ for everything else.
- A good experiment allows you to draw conclusions about _____ relationships.
- Good _____ provides enough information to allow others to repeat your experiment to verify your results.

Experimental Design

- A _____ is written to express what is trying to be answered by the experiment.
 - It is written in the form of: _____ (one observed trait)
_____ (a second observed trait)?
 - Research questions only focus on the two traits, or _____, that will be compared by the experiment
 - Variables are factors or conditions that can _____ in an experiment.
 - They may affect the _____ of an experiment.

Types of Variables

- _____ or _____ variable
 - The thing that is _____ by the experimenter
- _____ or _____ variable
 - The thing that will be _____ to determine the _____ among variables

***The research question is written in the form of: How does (_____) affect (_____)?

- _____ variables
 - The things that must be _____ in order to accurately determine the relationship between the dependent and independent variable.

Operational Definition

- The descriptions of how the variables will be _____ are called _____
 - Operational definitions tell what type of _____ or instruments are used to take the measurements and what _____ the variables are measured in.
 - Including operational definitions in experimental design allows for _____ by other scientists

Hypothesis

- An educated guess of how the manipulated variable will affect the responding variable is called a _____
 - A hypothesis must be _____
 - A hypothesis is written in the form: _____ (manipulated increases) _____ responding (increases/decreases).

Multiple Trials

- To better ensure accuracy, _____ of the experiment should be conducted before data is analyzed.
- For each trial, the _____ variable should be changed throughout the complete range before the _____ begins.
- Completing trials in this manner reduces the chances of _____ results.

Conclusions

- A _____ is a judgment based on the results of an experiment.
 - It is written to parallel the hypothesis and takes the form: As the " _____ " INCREASED THE " _____ " (increased/decreased).
 - If you were correct in your hypothesis then we say: "The experiment _____ the hypothesis."
 - If you were incorrect in your hypothesis then we say: "The experiment _____ the hypothesis."