Biology I
Introduction to Online Resources
& Virtual Investigation #1
Biology I

Name:
Name:
Hour:
Date:

Access the Biology Class Website

Science class information and assignments can be obtained online at: http://siemianowski.weebly.com. The site provides access to a daily agenda, assignments, handouts, study guides and notes. Review the various sections of the class site. Write one thing that you can learn about Mr. S. from the class website below:

Next, go to the assignments section of siemianowski.weebly.com and click the button titled "Link to Virtual Investigation". After the animated opening, click "Ecology and Evolution" then select "The Scientific Process". You'll then have to click through the narration and the experiment. For full credit you must use complete sentences.

Biology I
The Scientific Process
Virtual Investigation

Name:
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Navigate through the virtual investigation for the scientific process on the Holt website. Answer these questions as you proceed. This should serve as a refresher on the scientific method. Remember, for full credit you must use complete sentences.

Part 1 of 10
What is the question/problem in this virtual investigation?

_____

_____

Part 5 of 10
Background information is essential to forming a good hypothesis and conducting a thoughtful experiment. For this experiment, background information on plants is helpful. What do plants need to grow?

_____

_____

There are often many ways to create an experimental group in an experiment. Some methods may be better than others, and you should consider this both in your experimental design and your error analysis when you write your conclusion. If light is a variable in this experiment, what are some ways to vary light?

_____

_____

Part 7 of 10
The hypothesis is given: The color of light will affect plant growth. Rewrite this hypothesis as and if/then statement.

_____

_____

Now rewrite the hypothesis as a null hypothesis.

_____

_____

Part 8 of 10
What is an independent variable? (You may need to revisit part 2 of 10 for definitions)

_____

_____

What is a dependent variable? (You may need to revisit part 2 of 10 for definitions)

_____

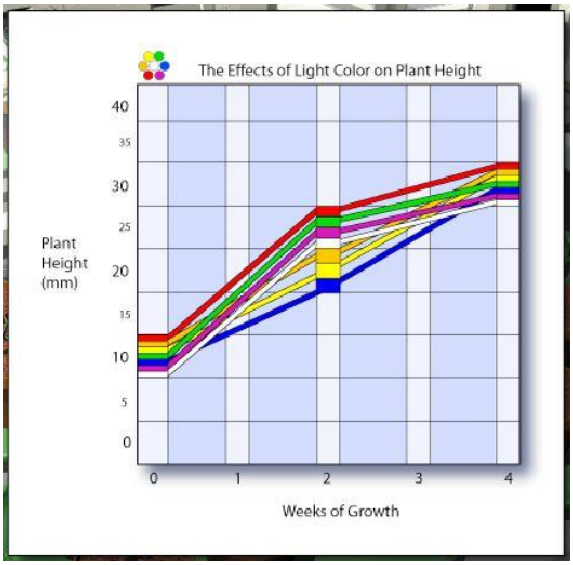
_____

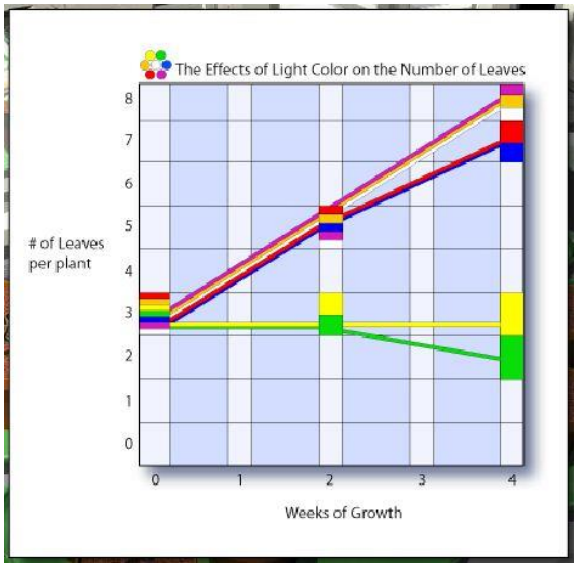
What is/are the independent variable(s) in this experiment?

What is/are the dependent variable(s) in this experiment?

What is the control group in this experiment?

Which color of light is used as a control group for this experiment? Why?





Part 9 of 10

What type of graphs are used to represent the data?

What makes this type of graph especially good for analysis?

Part 10 of 10
Write a conclusion for this experiment. Be sure to address your hypothesis and you revisit the most important data (look at the graphs).

On Your Own
(Answers not found on the website)

A good conclusion also discusses sources of error. Although error can occur from human mistakes, the most important sources of error to discuss are those related to experimental design and methods. Of particular issues are things known as ***confounding variables***. There are variables that were not part of our design, but may have affected our experiment. Describe at least one source of error that may have occurred had this experiment been carried out in a real laboratory.

Another source of error occurs when scientists try to do "too much" in one experiment and/or being too general. For instance, revisit the problem stated in part 1 of 10. Did you use the term "growth"? How is "growth" defined/shown in this experiment?

How many variables were regulated in this experiment?

Ask a better/more specific question that would lead to a simpler, more defined experiment.

Could you test the same hypothesis to evaluate this question or would you have to use multiple experiments (your answer may depend on whether or not you used a null hypothesis)?