

Experimental Design- Explore

Name _____ Date _____ Period _____

Carefully read the paragraph below. Answer the following questions in complete sentences.

During gym class Sally noticed that her friend Melissa always ran faster than her. Sally knew that they exercised equally, so she wondered what could cause Melissa to run so fast. Sally began to compare herself and Melissa to see what could cause the difference in speeds. She noticed that Melissa was taller and wondered if height affected speed. Sally predicted that taller people were able to run faster, but wanted to check her prediction. She asked her gym teacher if she could test her idea because the class was all girls and she thought this would help her get accurate results. Sally measured all of her classmates' height in centimeters and recorded it in her chart. Each classmate then ran one mile while Sally timed them with a stopwatch and recorded the data in seconds. She then began to review her data and look for the answer to her question.

1. What question is Sally trying to answer?

2. What made her want to answer this question?

3. What is being measured or observed in this experiment?

4. Are the observations recorded in words or numbers?

5. What factor does Sally think might cause the measurement to change?

6. What parts of the experiment were kept the same throughout?

7. Is there a standard of comparison in this experiment (something she compared everyone to)?

8. How many times was the experiment completed?

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Read the paragraph and answer the questions.

Chris wanted to test the effect of diet pills on how tall the tomato plants in his garden would grow. He took two pots, filled them with dirt from the same bag, and planted four tomato plants in each. He watered one planter with tap water, and he watered the other planter with tap water mixed with dissolved diet pills. The plants were in the same location to ensure they got the same amount of sunlight, and the water was measured so that each pot received the same amount of water. He measured their height at the end of each week for eight weeks, and averaged the height of the four plants in each pot. He then graphed the results to show how the diet pills affected the height of the plants.

1. What is the independent variable of this experiment?

2. What is the dependent variable of this experiment?

3. What is the control?

4. List the constants in this experiment.

5. How many trials were ran for this experiment?

6. Write a hypothesis for this experiment in the If/Then style.

Virtual Lab - Dependent and Independent Variables

Introduction: In this lab, you will use a simulation to further your understanding of independent and dependent variables. You will be studying the level of European Corn Borer infestation in various environments.

Open the Simulator at: biol.co/sci-ecb
 (alternately, use google to search for "mhhe virtual labs")

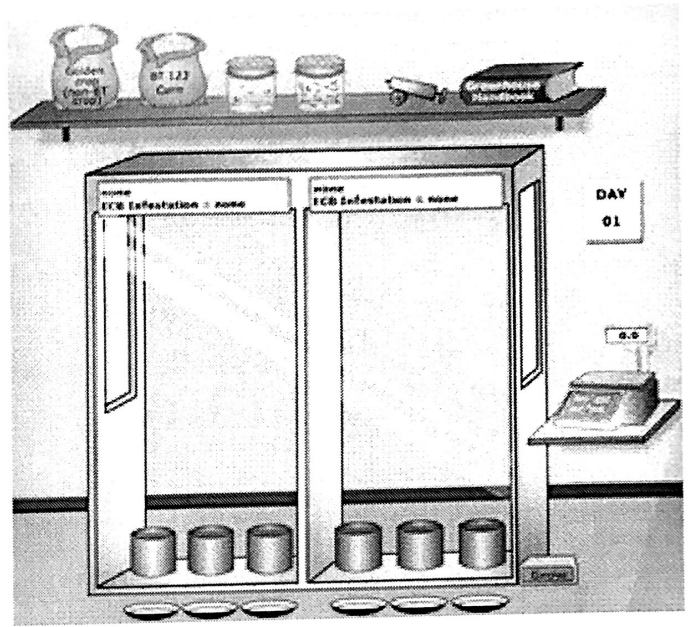
1. Read the introduction. You will change the independent variable, then you will observe and measure the dependent variable. In this experiment, what will **always** be the dependent variable?

2. Explain what is meant by the term "yield" with regard to this experiment. What factors can affect a corn's yield?

3. Open the Greenhouse Handbook and scan to find information about Bt corn. What makes Bt corn different from the other variety? What is the purpose of creating Bt corn?

4. What are some questions or worries that people might have about transgenic plants?

5. Read the instructions for setting up your chambers. Here you can make some decisions about what level of ECB infestation you will start with. Record your measurements in the data table.



Corn Variety	Level of ECB infestation	Pot 1 Yield	Pot 2 Yield	Pot 3 Yield	Average

6. Describe the effects of the ECB infestations you used. Were all corn varieties equally effective at controlling the ECB? How do you know?

7. Did the level of ECB infestation change your results?