



Science Virtual Learning

6th Grade Science:

Constants and Controls

May 7, 2020



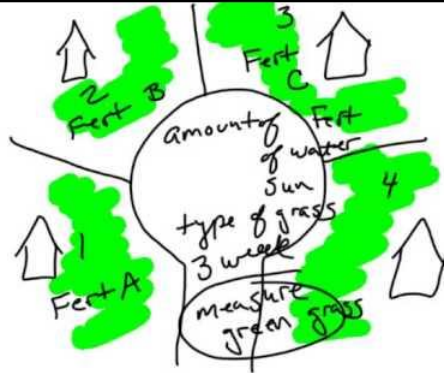
6th Grade Science
Lesson: May 7, 2020

Objectives/Learning Targets:

Students will be able to identify the controls and constants in an experiment.

Warm Up

Watch the [video](#) and answer the questions below as you watch.



1. What is the difference between a control and a constant?
2. Why do these variables need to be included in an experiment?



Warm Up - Answer Key

Watch the [video](#) and answer the following questions below.

1. What is the difference between a control and a constant?
Constants- stay the same during the experiment. A controlled variable is the standard that is used for comparison (what is normal).
2. Why do these variables need to be included in an experiment?
Constants are included so that there are not too many changing variables. (Those are the variables that did not change in the experiment such as the amount of fertilizer, water, sun and type of grass). Controls are used to compare to the change to see if the experiment is accurate. (In this experiment house #4 was the control, which was compared to house #2 which has the greenest grass to make sure that it was the fertilizer that made the grass green.)

Background Information

When it comes to conducting a scientific experiment there are three components that are very important. They are variables, constants, and controls. Let’s take a look at each:

- **Variables** - These are the aspects of the experiment that change. There are two types of variables: dependent and independent.
- **Constants** - These are the conditions that will remain the same during your experiment.
- **Controls** - This is a group that you are exposing to “normal” conditions. In your experimental group, you are changing an independent variable, but in the control group you are making no such change. That way you can compare your experimental group and control group and know that the results you are seeing are actually caused by the change in the independent variable.

Constant vs Control

Comparison Table

Characteristics	Constant	Control
Variation	Does not change	It changes but could be kept constant throughout the experiment
Primary interest	Is the variable of primary interest	Is not the variable of primary interest, hence can be controlled or eliminated



Practice

Mr. Krabbs wants to make Bikini Bottoms a nicer place to live. He has created a new sauce that he thinks will reduce the production of body gas associated with eating krabby patties from the Krusty Krab. He recruits 100 customers with a history of gas problems. He has 50 of them (Group A) eat krabby patties with the new sauce. The other 50 (Group B) eat krabby patties with sauce that looks just like new sauce but is really just mixture of mayonnaise and food coloring. Both groups were told that they were getting the sauce that would reduce gas production. Two hours after eating the krabby patties, 30 customers in group A reported having fewer gas problems and 8 customers in group B reported having fewer gas problems.

- Which people are in the control group?
- What is the independent variable?
- What is the dependent variable?
- What should Mr. Krabbs' conclusion be?



Practice - Answer Key

Mr. Krabbs wants to make Bikini Bottoms a nicer place to live. He has created a new sauce that he thinks will reduce the production of body gas associated with eating krabby patties from the Krusty Krab. He recruits 100 customers with a history of gas problems. He has 50 of them (Group A) eat krabby patties with the new sauce. The other 50 (Group B) eat krabby patties with sauce that looks just like new sauce but is really just mixture of mayonnaise and food coloring. Both groups were told that they were getting the sauce that would reduce gas production. Two hours after eating the krabby patties, 30 customers in group A reported having fewer gas problems and 8 customers in group B reported having fewer gas problems.

- Which people are in the control group? *Group B*
- What is the independent variable? *New sauce*
- What is the dependent variable? *Amount of gas*
- What should Mr. Krabbs' conclusion be? *The new sauce appears to work as it reduced the amount of gas produced in 60% of the people tested.*



Practice 2

Identify the variables in the following experiments:

1. Two groups of students were tested to compare their speed completing math problems. Each group was given the same problems. One group used calculators and the other group did not use calculators.

- Independent Variable:
- Dependent Variable:
- Control:
- Constant:

2. A student wanted to test how the mass of a paper airplane affected the distance it would fly. Paper clips were added before each test flight. As each paper clip was added, the plane was tested to determine how far it would fly.

- Independent Variable:
- Dependent Variable:
- Control:
- Constant:

Check your answers on the next slide!



Practice 2 - Answer Key

Identify the variables in the following experiments:

- Independent Variable: Use of calculators
- Dependent Variable: How fast the student was at solving the problem
- Control: Group not using the calculators
- Constant: Same math problems

- Independent Variable: Mass of plane
- Dependent Variable: Distance the plane flies
- Control: Plane without paper clips
- Constant: Type of paper, how the plane was thrown



Additional Practice

1. IXL- [Identify Control & Experimental Groups](#)

Remember you do not need to log in. Just complete the 5 free practice questions.

2. Complete the experiment- controls and variables [worksheet](#), then check your [answers](#).

3. Quiz yourself over all the parts of the Scientific Method while playing this [Gimkit](#). Click “View Correct Answer” if you get it wrong!