

## Experimental Variables Worksheet

**Instructions:** For the following experiments, identify the independent variable (IV), the dependent variable (DV), the control variables (CV) and the control group (CG).

1. A botanist is conducting an experiment to see if different species of flowering shrubs produces a different number of flowers. The number of flowers on different species of shrubs is recorded every week for two months.

IV \_\_\_\_\_

DV \_\_\_\_\_

CV \_\_\_\_\_

2. A gardener is conducting an experiment to see if salt concentration has an effect on the growth of sunflowers. They give one sunflower pure water and three sunflowers receive water containing different concentrations of salt solutions. After a two week period the height of the flowers is measure.

IV \_\_\_\_\_

DV \_\_\_\_\_

CG \_\_\_\_\_

3. An experiment is being conducted to see if the amount of humidity a redwood tree receives affects its growth. Three trees are kept inside a greenhouse at three different humidity levels and one tree is left outside in normal conditions. The height of each tree is measured once a week.

IV \_\_\_\_\_

DV \_\_\_\_\_

CV \_\_\_\_\_

CG \_\_\_\_\_

4. A gardener is conducting an experiment to see if the amount of water a pea plant receives affects its ability to produce pea pods. Pea plant clones are given different amounts of water for a three week period. Plant one receives 400 ml, plant two receives 200 ml, plant three receives 100 ml and plant four is not given any extra water (only receives rain water). The numbers of pea pods on each plant are counted daily.

IV \_\_\_\_\_

DV \_\_\_\_\_

CV \_\_\_\_\_

CG \_\_\_\_\_

5. One tank of gold fish is fed 10 g of food once/day. A second tank of goldfish is fed 10 g of food twice/day and a third tank of goldfish is fed 10g of food four times/day. The body fat of the fish in each tank is recorded daily.

IV \_\_\_\_\_

DV \_\_\_\_\_

CV \_\_\_\_\_

CG \_\_\_\_\_

6. You decide to clean the bathroom. You notice that the shower is covered in a strange green slime. You decide to try to get rid of this slime by adding lemon juice. You spray half of the shower with lemon juice and spray the other half of the shower with water. After 3 days of “treatment”, there is no change in the appearance of the green slime on either side of the shower.

IV \_\_\_\_\_  
DV \_\_\_\_\_  
CV \_\_\_\_\_  
CG \_\_\_\_\_

7. Six mouse clones participate in a maze experiment. Two have been given smart water to drink, two were given koolaid, and two were given regular tap water.

IV \_\_\_\_\_  
DV \_\_\_\_\_  
CV \_\_\_\_\_  
CG \_\_\_\_\_

You won't believe what happened in school today!! I got a D in Biology. My Biology teacher assigned a project to conduct a controlled experiment of our choice. I chose to test which type of laundry detergent was more effective at removing stains: Tide or Wisk. Here is a description of my experiment. I got an old white T-shirt and a pair of jeans. I put a ketchup stain on the T-shirt and then slid on the lawn to get a grass stain on the jeans. Then, I put one scoopful of powdered Wisk on the ketchup stained T-shirt and two capfuls of liquid Tide on the grass stained pants. I threw the jeans in the washing machine in cold water for 10 minutes. Then, I washed the T-shirt in warm water for 6 minutes (since it's smaller). Then, I put both the T-shirt and jeans in the dryer for 10 minutes. When I removed the clothes, the grass stain was lighter than the ketchup stain so I concluded that Tide was the better detergent.

8. Apparently, my teacher did not like my experiment. He said that it was not “controlled”. What did I do wrong???

9&10. Describe at least 2 mistakes I made in conducting this experiment.

Jesse has the hiccups. His mother tells him to hold his breath, and his father tells him to watch a scary movie. Jesse holds his breath while watching a scary movie, and his hiccups go away. He runs to his parents and tells them they are both right.

11. Do you agree with Jesse's conclusion? Why or why not?

12. How should this experiment have been designed?