

Topic: Experimental Variables Worksheet

Summary: Students learn the variables of the scientific method.

Goals & Objectives: Students will be able to determine the independent, dependent, and control variables.

NGSS Standards: Scientific Practice: Planning and Carrying Out Investigations.

Time Length: 30 minutes

Materials:

Class notes or textbook or online textbook

- <https://flexbooks.ck12.org/cbook/ck-12-biology-flexbook-2.0/section/1.2/primary/lesson/science-experiments-bio/>

Procedures:

1. Students try to determine the independent, dependent, and constants, as well as control groups from made-up science experiments.
 - The independent variable is what the experimenter changes during the experiment.
 - The dependent variable is what the experimenter measures.
 - The constants are kept equal in all treatments so that any changes in the dependent variable can be attributed to the changes in the independent variable.
 - The control group is when the independent variable either is eliminated or set at a standard value.

Accommodations:

Students with an IEP can work on the first four questions. ESL students can work with, but not copy, a student fluent in English.

Editable DOCX File and Answer Key:

Available at www.ngsslifescience.com

Experimental Variables WS

For the following experiments, define the (IV) independent variable, (DV) dependent variable, (C) constants and (CG) control group.

1) The number of flowers on different breeds of bushes in a greenhouse is recorded every week for two months.

IV _____

DV _____

C _____

2) You give four sunflowers different watering's with either pure water or different concentrations of salt solutions. After a two-week period, the height is measured.

IV _____

DV _____

CG _____

3) Three redwood trees are kept at different humidity levels inside a greenhouse for 12 weeks. One tree is left outside in normal conditions. Height of the tree is measured once a week.

IV _____

DV _____

C _____

CG _____

4) Pea plant clones are given different amounts of water for a three-week period. The first pea plant receives 400 milliliters. The second pea plant receives 200 milliliters. The third pea plant receives 100 milliliters. The fourth pea plant does not receive any extra water; the plant only receives natural ways of receiving water. The heights of the pea plants are recorded daily.

IV _____

DV _____

C _____

CG _____

For the following experiments, define the (IV) independent variable, (DV) dependent variable, (C) constants and (CG) control group.

5) One tank of goldfish is fed the normal amount which is once a day, a second tank is feed twice a day, and a third tank four times a day during a six week study. The fish's body fat is recorded daily.

IV _____
DV _____
C _____
CG _____

6) You decide to clean the bathroom. You notice that the shower is covered in a strange green slime. You try to get rid of this slime by adding lemonade juice. You spray half of the shower with lemonade 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 _____
CG _____

7) You want to test which size of soccer (football) ball is easiest to juggle with your feet. You test a size 3, size 4 and a size 5 ball. You count the seconds the ball stays in the air for each of the trials. You allow yourself to use both of your feet, knees, and head to juggle the ball.

IV _____
DV _____
C _____