

**Topic:** Identifying 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.

**Standards:** CA Investigation and Experimentation: *d.* Formulate explanations by using logic and evidence.

**Time Length:** 30 minutes

**Materials:**

- Ball Point Pen
- Handout

**Procedures:**

1. Students try to determine the independent, dependent, standardizing variables and control groups from made up science experiments.
  - The independent is what the experimenter changes during the experiment.
  - The dependent variable is what the experimenter measures.
  - The standardizing variables are things that are kept equal in all treatments, so that any changes in the dependent variable can be attributed to the changes the independent variable.
  - The control group is when the independent variable either is eliminated or is 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. Introduce ESL students to the academic vocabulary (solution, concentration, humidity, slime, juggle) before they begin.

**Evaluation:**

Each question is worth 2 points. This assignment is worth a total of 16 points.

## Identifying Variables Worksheet

For the following experiments, define the (IV) independent variable, (DV) dependent variable, (SV) standardizing variables and (CG) control group.

1) Different rose bushes are grown in a greenhouse for two months. The number of flowers on each bush is counted at the end of the experiment.

IV \_\_\_\_\_

DV \_\_\_\_\_

SV \_\_\_\_\_

2) You water three sunflower plants with salt water. Each plant receives a different concentration of salt solutions. A fourth plant receives pure water. 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. The heights of the trees are measured once a week.

IV \_\_\_\_\_

DV \_\_\_\_\_

SV \_\_\_\_\_

CG \_\_\_\_\_

4) Pea plant clones are giving different amounts of water for a three-week period. The first pea plant receives 400 milliliters a day. The second pea plant receives 200 milliliters a day. The third pea plant receives 100 milliliters a day. 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 \_\_\_\_\_

SV \_\_\_\_\_

CG \_\_\_\_\_

5) One tank of gold fish is fed the normal amount of food once a day. A second tank is fed twice a day. A third tank is fed four times a day during a six week study. The fish's weight is recorded daily.

IV \_\_\_\_\_

DV \_\_\_\_\_

SV \_\_\_\_\_

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 spraying equal amounts 3 times a day, there is no change in the appearance of the green slime on either side of the shower.

IV \_\_\_\_\_

DV \_\_\_\_\_

CG \_\_\_\_\_

7) You decide to clean your bedroom. You notice that your floor is covered with clothes. You try to get rid of the clothes by throwing them into the air. You throw clothes from 1/3 of the room into the closet and a second 1/3 of the room straight up in the air. The last 1/3 of the room you leave the clothes on the floor. After 30 minutes of "cleaning," the floor of the room is now visible.

IV \_\_\_\_\_

DV \_\_\_\_\_

CG \_\_\_\_\_

8) 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 \_\_\_\_\_

SV \_\_\_\_\_