

## Independent and Dependent Variables

For each item below, specify the independent and dependent variables, as well as constants.

1. A study was done to find if different tire treads affect the braking distance of a car.

I: \_\_\_\_\_ D: \_\_\_\_\_ C: \_\_\_\_\_

2. The time it takes to run a mile depends on the person's running speed.

I: \_\_\_\_\_ D: \_\_\_\_\_ C: \_\_\_\_\_

3. The height of bean plants depends on the amount of water they receive.

I: \_\_\_\_\_ D: \_\_\_\_\_ C: \_\_\_\_\_

4. The higher the temperature of the air in the oven, the faster a cake will bake.

I: \_\_\_\_\_ D: \_\_\_\_\_ C: \_\_\_\_\_

5. Lemon trees receiving the most water produced the most lemons.

I: \_\_\_\_\_ D: \_\_\_\_\_ C: \_\_\_\_\_

6. An investigation found that more bushels of potatoes were produced when the soil was fertilized more.

I: \_\_\_\_\_ D: \_\_\_\_\_ C: \_\_\_\_\_

7. Students measured the temperature of the water at different depths in Lake Skywalker and found that the temperature varied.

I: \_\_\_\_\_ D: \_\_\_\_\_ C: \_\_\_\_\_

8. The amount of pollution produced by cars was measured for cars using gasoline containing different amounts of lead.

I: \_\_\_\_\_ D: \_\_\_\_\_ C: \_\_\_\_\_

9. Four groups of rats are first massed and then fed identical diets except for the amount of vitamin A they receive. Each group gets a different amount. After 3 weeks on the diet, the rats' masses are measured again to see if there has been a decrease.

I: \_\_\_\_\_ D: \_\_\_\_\_ C: \_\_\_\_\_

For each experiment below, specify the independent variable, dependent variable, control group and any constants.

1. 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 \_\_\_\_\_

2. Two groups of students were tested to compare their speed working math problems. Each group was given the same problems. One group used calculators and the other group computed without calculators.

Independent variable \_\_\_\_\_

Dependent variable \_\_\_\_\_

Control \_\_\_\_\_

Constant \_\_\_\_\_

3. Students of different ages were given the same puzzle to assemble. The puzzle assembly time was measured.

Independent variable \_\_\_\_\_

Dependent variable \_\_\_\_\_

Constant \_\_\_\_\_

There can be several controlled variables. If an experiment is to be useful, only one variable at a time can be manipulated intentionally. All other variables must be controlled throughout all parts of the experiment. If more than one variable is altered (changed), the results of an experiment cannot be interpreted with any validity.

4. An experiment was performed to determine how the amount of coffee grounds could affect the taste of coffee. The same kind of coffee, the same percolator, the same amount and type of water, the same perking time, and the same electrical sources were used.

Independent variable \_\_\_\_\_

Dependent variable \_\_\_\_\_

Constants (3) \_\_\_\_\_