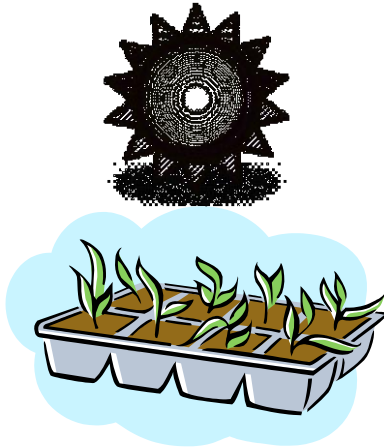


An Example of Fair Testing

An experiment that has all variables controlled except the one being tested is called a **CONTROLLED EXPERIMENT** or a **FAIR TEST**. This ensures that the results of the experiment are due to the one variable being investigated and not due to other variables.

Directions: Read the following description of an experiment and then answer the questions that follow.

A scientist wants to investigate whether plants need sunlight to grow. The hypothesis being tested is: “**Plants require sunlight to grow.**” The scientist placed one tray of sunflower seedlings in the sun and another tray of sunflower seedlings in a cupboard in the laboratory. The seedlings were watered and after 6 weeks the height of each seedling was measured.



Condition A: sunflower seedlings in the sun



Condition B: Sunflower Seedlings in a Cupboard

1. Which variable/factor is being investigated (and therefore changed)?

2. Which variables/factors are being controlled? (There are a number of them.)

a. _____

d. _____

b. _____

e. _____

c. _____

f. _____

3. Explain how you would keep two of the variables controlled (the same) during the 6 week experiment.

Variable 1: _____

Variable 2: _____

4. Another term for controlling the variables in an experiment is “fair _____”.

Identifying Variables in an Experiment

The factor or variable being investigated (or tested) is called the **INDEPENDENT** variable.

The factor or variable being measured is called the **DEPENDENT** variable (because it is dependent on the experiment).

Directions: For each of the following hypotheses, identify the independent variable, the dependent variable, and two variables that would need to be controlled (constants) in order to perform a fair test (controlled experiment).

1. Fertilizer in soil increases flower production.

Independent Variable: _____

Dependent Variable: _____

Two Controlled Variables: _____

2. Medicine A will reduce the incidence of headaches.

Independent Variable: _____

Dependent Variable: _____

Two Controlled Variables: _____

3. If zinc tablets are taken, then the number of colds per year is reduced.

Independent Variable: _____

Dependent Variable: _____

Two Controlled Variables: _____

4. If water is present, then the number of bacteria in garbage bins increases.

Independent Variable: _____

Dependent Variable: _____

Two Controlled Variables: _____

5. Girls throw softballs further than boys.

Independent Variable: _____

Dependent Variable: _____

Two Controlled Variables: _____
