

Identifying Variables in an Investigation

Name _____

A) An important skill when conducting investigations or analyzing someone else's investigation is to be able to identify the variables being tested.

A **variable** is something that can vary or change. What are the 2 variables in the statements below? Write them on the lines provided.

1. The time it takes to run a kilometer depends on the amount of daily exercise a person gets.

2. The higher the temperature of water, the faster an egg will cook.

3. An investigation was conducted to see if keeping the lights on for different amounts of time each day affects the number of eggs chickens laid.

4. The high the wind speed the larger the waves will be on Lake Michigan.

5. The longer the pendulum on a grandfather clock the slower the clock keeps time.

B) If a variable is purposely changed, it is called an **independent** variable. It could also be called a **manipulated** variable. What is the independent variable in the statements below? Write it on the line provided.

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

2. Lemon trees receiving the most water produce the largest lemons.

3. The amount of algae growth in lakes seems to be directly related to the number of bags of phosphate fertilizer sold by local merchants.

4. An investigation was performed to see if corn seeds would sprout at different times depending on the temperature of the water they are placed in.

5. The more plants put in a 6 inch flower pot the slower the plants grow.

C) Each investigation has at least two variables, an independent variable that you can change and a **dependent** variable the changes as a result to changing the independent variable. For example:

The more water you put on the grass, the taller it will grow.

The independent variable you change is the amount of water. The result of more water is that the grass grows taller, the grass depends on the water. Which is the independent variable and which is the dependent variable in the following examples? Write them in the spaces provided.

1. More bushels of potatoes will be produced if the soil is fertilized more.

Independent variable _____

Dependent variable _____

There's more - Over Please

2. Five groups of rats are fed identical diets except for the amount of Vitamin A that they receive. Each group gets a different amount. After three weeks on the diet, the rats are weighed to see if the amount of Vitamin A received has affected their weight.

Independent variable _____

Dependent variable _____

3. An experiment was done with six groups of children to see if scores on their weekly spelling tests were affected by the number of minutes of spelling practice they had each day.

Independent variable _____

Dependent variable _____

4. The number of nails picked up by an electromagnet increases when more batteries are placed in the Circuit.

Independent variable _____

Dependent variable _____

5. Students in a science class conducted an investigation in which a flashlight was pointed at a screen. They wished to find out if the distance from the light to the screen had any effect on the diameter of the illuminated area.

Independent variable _____

Dependent variable _____

D) Most investigations will ask you to transfer your data onto a graph to make a picture of your data. Each point represents a pair of data. By convention, the *independent variable is graphed on the X axis* (horizontal) and the *dependent variable is graphed on the Y axis* (vertical). Revisit the examples below and tell which variable is placed on the X axis and which is placed on the Y axis. Write your answers in the spaces provided.



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

X axis _____

Y axis _____

2. Lemon trees receiving the most water produce the largest lemons.

X axis _____

Y axis _____

3. The amount of algae growth in lakes seems to be directly related to the number of bags of phosphate fertilizer sold by local merchants.

X axis _____

Y axis _____

4. An investigation was performed to see if corn seeds would sprout at different times depending on the temperature of the water they are placed in.

X axis _____

Y axis _____

5. The more plants put in a 6 inch flower pot the slower the plants grow.

X axis _____

Y axis _____