Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour: \_\_\_\_\_\_\_\_\_

**Independent and Dependent Variables Worksheet**

**Definitions:** The Independent variable is the condition you change. It is also called the manipulated variable. The

Dependent variable is the condition that reacts. The dependent variable is also called the responding variable.

Put a circle around the Independent variable and underline the Dependent variable.

1. The hungrier a cat gets, the louder he meows.

2. As the room gets darker, the harder it is to see colors.

3. Is the growth of a plant affected by acid rain?

4. Does surface area of a sponge affect the speed of evaporation?

5. Does the weight of a car affect it’s gas mileage?

6. Does one brand of nail polish dry faster than another?

7. Is the number of puppies affected by the age of the mother?

8. Is memory retention affected by the noise level of a room?

9. Does a person’s age affect his/her reaction time?

10. A rabbits fur grows longer as weather gets colder.

**Fill – in with a dependent variable:**

1. Does the weight of a bike affect \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Does the temperature of water affect \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. What are the effects of motor oil on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Does the amount of sleep you get affect \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. What are the effects of heat on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Identify the variables**

1. Does the age of a runner affect her time to run the 400 meter dash?

Independent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dependent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Does the amount of sleep a student gets affect a test score the next day?

Independent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dependent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Does the amount of vinegar affect how fast the milk curdles?

Independent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dependent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Notes- Independent/Dependent Variables**

**Variable- Something that is changed.**

In scientific experiments there are two variables- One that you control and one that is the result.

**Independent Variable- “The Cause”**

* The one thing that is changed in an experiment
* This variable makes one test “independent” of another test
* On a graph it is on the x-axis(along the bottom)

**Dependent Variable- “The Effect”**

* The result of the experiment
* What is measured
* This “depends” on what you changed
* On a graph, it is on the y-axis(along the vertical side)

**\*\*\*\*\*\*The independent variable causes the dependent variable to change\*\*\*\*\*\***

**Example:** The amount of time you study will make a positive difference on your next test score.

* Two things are changed: 1. Time spent studying 2. Score on next test.
* The time studying causes the score on the next test to change.

This is correct, because we know the longer you study for a test, the higher your grade will be

**IV: time studying** **DV: score on next test**

**Directions: Use the information above to answer the following questions…**

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

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ causes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to change.

IV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. An investigation was done to see if keeping the lights on for different amount of time each day affected the

number of eggs the chicken lay.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ causes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to change.

IV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. The time it takes to run a mile depends of the amount of exercise a person gets.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ causes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to change.

IV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Grass will grow taller if it is watered and fertilized more.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ causes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to change.

IV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. An investigation was performed to see if corn seeds would sprout at different times depending on the

temperature of the air in which they were placed.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ causes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to change.

IV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. The amount of algae growth in lakes seems to be directly related to the number of sacks of fertilizer sold.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ causes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to change.

IV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

lead.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ causes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to change.

IV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. Students in science class carried out an investigation in which a flashlight was pointed at a screen. They wanted

to find out if the distance from the light to the screen had any affect on the size of the illuminated area.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ causes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to change.

IV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. The score on the final test depended on the number of study questions the student completed.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ causes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to change.

IV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. A study was done with white rats to see of the number of offspring born with birth defects was related to the

number of minutes of exposure to x-rays by the mother rats.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ causes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to change.

IV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. Five groups of rates are fed identical diets except for the amount of vitamin A that they receive. Each group gets

a different amount. After 3 weeks on the diet, the rats are weighed to see if the amount of vitamin A received

has affected their weight.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ causes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to change.

IV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. The state agriculture department has been counting the number of foxes in Brown county. Will the number of

foxes have any affect on the rabbit population?

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ causes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to change.

IV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DV:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**For each experiment below, identify the independent variable, the dependent variable and the control.**

1. Groups of 6th, 7th and 8th grade students were given the same puzzle to work. They were timed to see how long it took each group to complete the puzzle.

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

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

Control \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

They collected the following data: 6th grade – 10 minutes, 7th grade- 8 minutes, 8th grade – 7 minutes.

 **Make a data table to show the recorded data. Be sure to include a title.**

2. An experiment was done to see which colored sand would heat up the most when placed in the sun. The sand samples were white, red, green, and black. All samples were the same amount, placed in identical containers, left in the sun the same amount of time, and the temperature was measured with the same thermometer.

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

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

Controls \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

They collected the following data: White Sand- 15.5⁰C, Red Sand- 18.3⁰C, Green Sand 16.6⁰C, Black Sand 24⁰C

**Make a data table to show the recorded data. Be sure to include a title.**