Name _____

# The Scientific Method:  Independent vs. Dependent Variables

A _variable_ is something that changes.  In a science experiment, there will be something that you change on purpose and something that you're measuring.  These things are both variables because they are things that change.  We give them different names to identify the type of variable that they are.

The _independent variable_ is the part of the experiment that you change.  The _dependent variable_ is what you're measuring a change in.  The dependent variable changes depending on the independent variable.

Example:  You're testing different fertilizers and their effect on the height of grass.  The type of fertilizer is the independent variable.  This is what you are testing.  You will use different types of fertilizer in the experiment because you're trying to find the difference that each fertilizer might have.  The height of the grass is the dependent variable.  The height of the grass depends on the type of fertilizer used, so the height is the dependent variable.

When the results of an experiment are shown in a graph, the independent variable appears on the x-axis and the dependent variable appears on the y-axis.

Below are problems that will be solved using the scientific method.  Identify the independent and dependent variables.

| Problem | Independent Variable | Dependent Variable |
|---|---|---|
| Which breed of dog is smartest? | | |
| How does caffeine effect the heart rate of daphnia? | | |
| How does temperature effect the viscosity of fluids? | | |
| Who can read backwards faster, boys or girls? | | |
| Does weather effect the visibility of stars? | | |
| How does the size of eggs laid by a chicken change throughout its life? | | |

Name ___Key_____

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| Problem | Independent Variable | Dependent Variable |
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| Which breed of dog is smartest? | Dog breed | Smartness |
| How does caffeine effect the heart rate of daphnia? | Amount of caffeine | Heart rate |
| How does temperature effect the viscosity of fluids? | Temperature | Viscosity |
| Who can read backwards faster, boys or girls? | Boys and girls reading backwards | Time it takes to read backwards |
| Does weather effect the visibility of stars? | Weather | Number of stars visible |
| How does the size of eggs laid by a chicken change throughout its life? | Age of chicken | Size of eggs |