Dependent Variable Encyclopedia Article

Dependent Variable

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Dependent Variable

A dependent **variable** is the variable which expresses the results of a function. In a normal algebraic function such as $y = 3x$ or $y = x^2 + 6$, "y" is the dependent variable. In the usual method of graphing a function, the dependent variable will be the one that is indicated as the height of the graph. The shape of the function thus indicates the behavior of the dependent variable. The use of inverse **functions** or algebraic manipulation often can easily make the dependent variable in one equation look like the **independent variable** in a different way of writing the same relationship. However, there are significant differences in how the dependent variable is treated in experimental and functional situations. The dependent variable is the one whose derivative is taken in **calculus**, for example, and the independent variable is the one with respect to which the derivative is taken. Similar actions upon functions are taken upon dependent variables with respect to independent ones.

In scientific experiments, the dependent variable is the "experimental" variable. The independent variable is the "control" variable. For example, the current sent through a circuit (the independent variable) could determine the voltage output of that circuit (the dependent variable). The dependent variable is thus the important variable for interesting, sometimes surprising, results in any experiment.