

Name: _____

Due date: _____

Independent & Dependent Variables

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The independent variable is the CAUSE. [the thing you change or do differently]

The dependent variable is the EFFECT. [and gets measured]

If you say, "The distance travelled depends on the speed of the car." The dependent variable is distance travelled ... because you said it "depends on" something.

If you say, "How high my marks are depends on how long I study for." Then the dependent variable is marks and the independent variable is amount of study time.

If a doctor says that your health depends on how much exercise you get, then ...

Notes:

1. In an experiment, the *independent variable* is the variable that is varied or manipulated by the researcher, and the *dependent variable* is the response that is measured – or counted.
2. The IV is the antecedent (one you start with), whereas the DV is the consequent (what happens).
3. In experiments, the IV is the variable that is controlled and manipulated by the experimenter; whereas the DV is not manipulated, instead the DV is observed or measured for variation as a presumed result of the variation in the IV.

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Some Examples of Independent and Dependent Variables

The following is a hypothesis for a study.

1. "There will be a statistically significant difference in graduation rates of at-risk high-school seniors who participate in an intensive study program as opposed to at-risk high-school seniors who do not participate in the intensive study program." (LaFountain & Bartos, 2002, p. 57)

IV: Participation or not in intensive study program. DV: Graduation rates.

Questions: Identify the dependent (measured) and independent (deliberately changed) variables in the following examples (circle the dependent variable and underline the independent variable):

1. (Height of bean plants is recorded) daily for two weeks after putting coffee grounds from Starbucks and Tim Horton's on two different groups of plants.
 2. Guinea pigs are kept at different temperatures for 6 weeks. (Percent weight gain is recorded)
 3. The (diversity of algal species) is calculated for a coastal area before and after an oil spill. Presence or absence of oil
 4. (Light absorption by a pigment is measured) for red, blue, green, and yellow light. Colour of light
 5. Batches of seeds are soaked in salt solutions of different concentrations, and (germination is counted) for each batch.
 6. An investigator hypothesizes that the (adult weight of a dog) is higher when it has fewer littermates.
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