

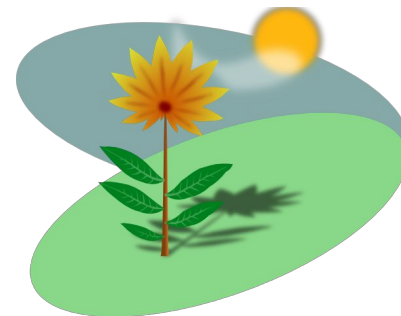
Cause & Effect Stations

PS 2.2.1 - Justify dependent and independent variables in an experiment.

PS 2.2.3 - Justify a testable hypothesis for an experiment.

For this next activity, you will work through four stations, each one with an experiment for you to observe. At each station, define the scientific question the experiment is designed to answer, identify and justify the independent and dependent variables, and write a hypothesis for that question.

Remember! A good hypothesis defines how the independent variable affects the dependent variable. The D.V. depends on the I.V.



Station 1: light intensity vs. plant height

What is a scientific question that can be answered by this experiment?

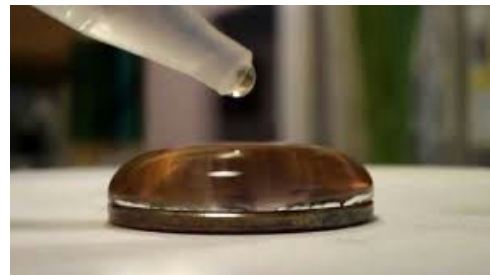
The independent variable in this experiment is the **amount of light**. **Why** is this the independent variable?

The dependent variable in this experiment is the **height of the plant**. **Why** is this the dependent variable?

A possible hypothesis for this experiment is: **If** a plant receives more light, **then** it will grow taller **because** light is needed for photosynthesis to occur. **Justify** why this hypothesis works for this experiment.

Station 2: Drops of water vs. coin type

What is the scientific question that can be answered by this experiment?



The independent variable in this experiment is the **size of the coin**. **Why** is this the independent variable?

The dependent variable in this experiment is the **amount of water the coin holds**. **Why** is this the dependent variable?

A possible hypothesis for this experiment is: **If** a coin is bigger, **then** it will hold more water **because** there is more room for the water to cover the coin. **Justify** why this hypothesis works for this experiment.



Station 3: Temperature of water vs. food coloring movement

What is the scientific question that can be answered by this experiment?

The independent variable in this experiment is the **temperature of the water**. **Why** is this the independent variable?

The dependent variable in this experiment is the **movement of the food coloring**. **Why** is this the dependent variable?

A possible hypothesis for this experiment is: **If** the water is warmer, **then** the food coloring will move throughout the beaker faster **because** the water molecules are moving faster. **Justify** why this hypothesis works for this experiment.

Station 4: ice cube melting speed vs. salt content



What is the scientific question that can be answered by this experiment?

The independent variable in this experiment is the **amount of salt in the water**. **Why** is this the independent variable?

The dependent variable in this experiment is the **speed the ice cube melts**. **Why** is this the dependent variable?

A possible hypothesis for this experiment is: **If** there is more salt, **then** the ice will melt faster **because** salt lowers the freezing point of water. **Justify** why this hypothesis works for this experiment.

Exit Slip!

(2.3.1, 2.3.3)

Write your own scientific question to test! Be creative! Think of a question you've always wanted to know the answer to (as long as it can be tested by science).

Question:

Your Hypothesis:

Independent Variable: _____ . Dependent Variable: _____ .

Justify the variables identified above: _____ .