A farmer grows and sells flowering plants. The best-selling plants are the ones with the most blossoms. The farmer reads an advertisement for a plant food saying that it will make plants grow faster and taller. The farmer predicts that taller plants will have more blossoms and performs this experiment to test his hypothesis.

Two groups of 10 plants each are grown in identical pots filled with equal amounts of identical soil. The amount of sunlight, the room temperature, and the amount of water are held constant for both groups. Group A is given plant food at regular intervals according to the instructions on the package. Group B is not given plant food. The farmer observes the plants after 15 weeks of growth. The results are recorded below:

<table>
<thead>
<tr>
<th>Group</th>
<th>Received Plant Food</th>
<th>Average Height (cm)</th>
<th>Average Number of Blossoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>yes</td>
<td>35</td>
<td>18.1</td>
</tr>
<tr>
<td>B</td>
<td>no</td>
<td>28</td>
<td>18.2</td>
</tr>
</tbody>
</table>

What can you conclude after looking at the data? The fertilizer helped the plants grow taller, but did not have more blooms like the farmer thought they would.

Explain if the farmer proved his hypothesis? What should he do next? No, his hypothesis was not proven. The farmer should perform the experiment again. To make the results more valid he should perform at least three trials of the same experiment with the same results.
Be prepared to identify the independent, dependent, and constant variables in a given experiment! Look over your labs, warmups, and practice pages.

Jackson’s Experiment

In an experiment, Jackson tested to see how the size of rocks affects the amount of dirt that washes away when water flows downhill.

- **What is the independent variable?** The size of the rocks changed
- **What is the dependent variable?** The amount of dirt that washes away
- **Name three constant variables.** The same amount of water, slope of the tray, amount of dirt they started with

How can Jackson make sure his results are valid? Perform the experiment at least three times with similar results.

Explain which of these experimental designs would best test if an empty wagon and a wagon full of books would roll down a ramp at the same speed?

![Experimental Designs]

Read and record the volume of liquid present in each of the graduated cylinders below. Label the meniscus on the first one.