

Experimental Design

Directions: For each scenario, determine the independent and dependant variable(s) as well as some controlled variables. Also identify the control group. Do each scenario completely and check your answers with the key before going on to the next scenario. The last one is done on your own (no key). You will be turning this in.

Scenario A: Many people who are in favor of alternative medicine claim that large doses of vitamin C introduced into a vein speed up healing of surgical wounds. A researcher tested this by getting 100 people with similar surgical wounds giving 50 injections of vitamin C and 50 received a placebo injection. She then measured how many days it took for the wounds to completely heal.

The independent variable?

The dependant variable?

Controlled variables?

Control group?

Scenario B: You are the head of research and development at Leafy Lettuce, a company that makes growth solution for growing lettuce. You wanted to see if adding phosphorous to your growth solution will help lettuce grow faster. You took 100 lettuce plants and grew them in the normal growth solution. Another 100 plants had 10 mL of phosphorous added, another 100 had 20 mL added, and yet another 100 had 50 mL of phosphorous added. Each week for four weeks, 25 lettuce heads from each group were weighed.

The independent variable?

The dependant variable?

Controlled variables?

Control group?

Scenario C: A researcher was investigating the relationship between doing homework and quiz grades. She got quiz grades from a group of students who had completed all or most of the homework and quiz grades from another group who had not turned in any or very few homework assignments.

The independent variable?

The dependant variable?

Controlled variables?

Without clear hypothesis the control group cannot be determined here. However, we can still make this a controlled experiment. How?

And now it's time to design your own experiment. Your question is: Will caffeine added to the food of spiders affect their ability to spin webs?

Be sure to include:

- The hypothesis
- Your procedure
- Identify the experimental and dependant variable(s)
- Identify the control group
- An example of data that would prove your hypothesis