The Scientific Method: How Scientists Answer Questions

The 6 steps to the Scientific Method

1. State the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Gather \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Form a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Test the Hypothesis by performing a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Analyze \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the experiment
6. Draw \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Step 1: State the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* This is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ you are trying to solve or the question \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ you are trying to answer.
* Try to narrow it down and be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Step 2: Gather \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Get as much information as you can about the problem.
* You may have to gather some information from books or from the internet in order to make a good guess, or you may just rely on what you already know.

Step 3: Form a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* This is what you \_\_\_\_\_\_\_\_\_ the answer to the problem will be.
* Write your hypothesis as an “\_\_\_\_\_” “\_\_\_\_\_” statement.
* Give an example a hypothesis: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Step 4: Test your \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Do an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to determine if your hypothesis is correct.

Step 5: Analyze the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Your data would consist of any \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ you made during the experiment.

Step 6: Draw \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is what you learned from the experiment.
* It is the \_\_\_\_\_\_\_\_\_\_\_\_ to your problem.
* Was your hypothesis correct?
  + It does not matter whether or not your hypothesis was correct. What matters is that you found the answer to your question.

What’s Next?!?

* If your hypothesis was not supported by your data, then develop a new hypothesis and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + What could you do differently?
* If your hypothesis was supported by your data, then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_.
  + How can you improve the experiment?

Controlled Experiments

* There is a right way to set up and complete an experiment. This is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ experiment.
* The best way to learn about this is to actually do an experiment. So, let’s do a controlled experiment with a helicopter.

What is a Controlled Experiment?

* A controlled experiment is where you change only one thing (the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) and keep everything else (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) the same.

Parts of an Experiment

* \_\_\_\_\_\_\_\_\_\_\_ are the things in an experiment that change or could be changed.
* An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the thing in an experiment that you change on purpose. It is also known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ variable.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the thing in an experiment that responds to the independent variable. It is also known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ variable.
* \_\_\_\_\_\_\_\_\_\_\_\_\_ are the things in an experiment that are kept the same in all trials.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the standard for comparison in an experiment. You don’t administer the independent variable to it.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the number of times an experiment is repeated for each value of the independent variable.