**Scientific Method: How Scientists Find Answers to Questions**

**The Six Steps of the Scientific Method**

**Step 1: Ask a** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **or state the** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

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

**Step 2: Gather** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* Get as much information as you can about the problem by researching books or using the internet.

**Step 3: Form a** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* This is what you think the answer to the question will be.
* Use the information you gathered, or you may just rely on what you already know.

**Step 4:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **your hypothesis.**

* Do an experiment to determine if your hypothesis is correct.
* We will talk about how to do an experiment later.

**Step 5:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **the results.**

* The results are what happened in the experiment.
* Your results would be any measurements or other observations you made during the experiment.

**Step 6: Draw a** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* A conclusion is what you learned from the experiment.
* It is the answer to your question.
* You now know if your hypothesis was correct.

One important thing to remember is that it doesn’t matter if your hypothesis was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. You found the answer to your question. That’s the important thing! If you found out that your hypothesis was incorrect, you may form a new hypothesis and do another experiment.

Now, back to Step 3 - Testing your Hypothesis. This means you need to conduct an experiment.

**Controlled Experiments**

* There is a right way to set up and complete an experiment. This is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ experiment.

**Parts of a Controlled Experiment**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the things in an experiment that change or could be changed.
* An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ variable is the thing in an experiment that you change on purpose. It is also known as the manipulated variable.

Ex: the direction of the blades of the helicopter

* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ variable is the thing in an experiment that responds to the independent variable. It is also known as the responding variable.

Ex: the direction the helicopter spins as it falls

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the things in an experiment that are kept the same in all trials.

Ex: the size of the helicopter; the height from which it is dropped; the material the helicopter is made of

* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the standard for comparison in an experiment. You don’t administer the independent variable to it.

Ex: the original helicopter, before the direction of the blades was reversed

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ trials are the number of times an experiment is repeated for each value of the independent variable.

Ex: dropping the helicopter 5 times each way means there are 5 trials

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