

b. Step 2 – Develop a Question:

SG #2

You come up with a question based on your \_\_\_\_\_.  
Scientific questions are questions about the natural \_\_\_\_\_.  
Only those questions that can be answered by  
\_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_ are  
considered scientific questions.

*Write a scientific question that could be answered in an experiment  
for each topic listed below:*

Laundry detergent –

Free throw percentage in basketball –

Candy –

c. Step 3 - Form a Hypothesis:

This is a possible \_\_\_\_\_ for a set of observations or  
answers to a scientific question. They must be \_\_\_\_\_.

How to write:

Can be a statement written in the form of IF..... THEN

Ex: If I water my plants more, then they will grow taller.

FYI: In higher level science classes you may be required to write a  
I think or I believe hypothesis statement.

You try one on your question for candy:

IF \_\_\_\_\_,  
Then \_\_\_\_\_

d. Step 4 - Experiment:

This is a plan that states \_\_\_\_\_ you will test your  
\_\_\_\_\_. It is a logical outline that guides the  
gathering of \_\_\_\_\_. It must be \_\_\_\_\_  
and should be \_\_\_\_\_ as many times as possible.  
Experiments should avoid \_\_\_\_\_ (personal opinion) as well.

## Experiment Terminology

(When you write an experiment, you need to include the following terms)

### Variables( 3 types)

#### 1.Independent Variable: (Manipulated variable)

This is the variable that is \_\_\_\_\_ changed.

It is what you are \_\_\_\_\_ in your experiment.

Only \_\_\_\_\_ at a time per experiment.

#### 2.Dependent Variable: (Responding variable)

The variable that \_\_\_\_\_ change as a result of the independent variable. This is the result or effect of \_\_\_\_\_ the independent variable. It's what you expect to happen.

For example if you add fertilizer to plants, you expect them to grow taller.

#### 3.Controlled Variables:

The variables that are the \_\_\_\_\_ in BOTH the experimental and control groups. **They don't change.**

### **Groups (2 types)**

1. Experimental Group(s): Receives the \_\_\_\_\_ variable being tested AND all the other controlled \_\_\_\_\_.

2. Control group: Receives the same controlled variables as the experimental group, EXCEPT it does NOT receive the \_\_\_\_\_ variable. Most experiments have a control group so that you know if your independent variable is actually causing the result you observe.

Read the following description of an experiment and identify the terms:

- ❖ Darryl's thought that listening to music would make taking tests easier. His parents thought it was a terrible idea, but he convinced his teacher to let him try out his hypothesis. Darryl decided to test this idea with an experiment on his class. Each Friday his language arts class took a vocabulary quiz on 25 words. With his teacher's permission, Darryl played music in the classroom while the class took the test on the first Friday. On the following Friday, the class took the test in the normal quiet music-free classroom. Both tests were conducted in the same room and at the same time of day. All students sat in their assigned seat for each quiz. Both quizzes were the same format. Darryl calculated the average score on the two vocabulary quizzes. The music group had an average score of 93. The non- music group had an average score of 89.

Independent Variable: \_\_\_\_\_  
Dependent Variable: \_\_\_\_\_  
Experimental Group: \_\_\_\_\_  
Control Group: \_\_\_\_\_  
Controlled Variables: \_\_\_\_\_

- ❖ Kay wanted to see if fertilizer helped her Venus fly trap grow taller. She set up the following experiment: She put 2 plants on a window sill and made sure they had the same type of pot and soil. She gave each plant 5 ml of water each day and kept them in the sun for 9 hours. She gave 5 grams of fertilizer to only one of the plants each week and recorded the growth for 3 weeks.

Independent Variable: \_\_\_\_\_  
Dependent Variable: \_\_\_\_\_  
Experimental Group: \_\_\_\_\_  
Control Group: \_\_\_\_\_  
Controlled Variables: \_\_\_\_\_

Sentence practice:

Identify the independent and dependent variable for the following: Ask yourself what can be changed????

1. If acid rain is in the water, then the amphibian population will decrease.

Independent Variable: \_\_\_\_\_  
**Dependent Variable:** \_\_\_\_\_

2. If plants are watered daily, then the plant's rate of growth will increase.

Independent Variable: \_\_\_\_\_  
Dependent Variable: \_\_\_\_\_

3. What effect does high temperature have on seed germination?

Independent Variable: \_\_\_\_\_  
Dependent Variable: \_\_\_\_\_

4. What effect does food color have on the amount of food fish eat?

Independent Variable: \_\_\_\_\_  
Dependent Variable: \_\_\_\_\_

5. The amount of clothing I wear depends on the temperature.

Independent Variable: \_\_\_\_\_  
Dependent Variable: \_\_\_\_\_



