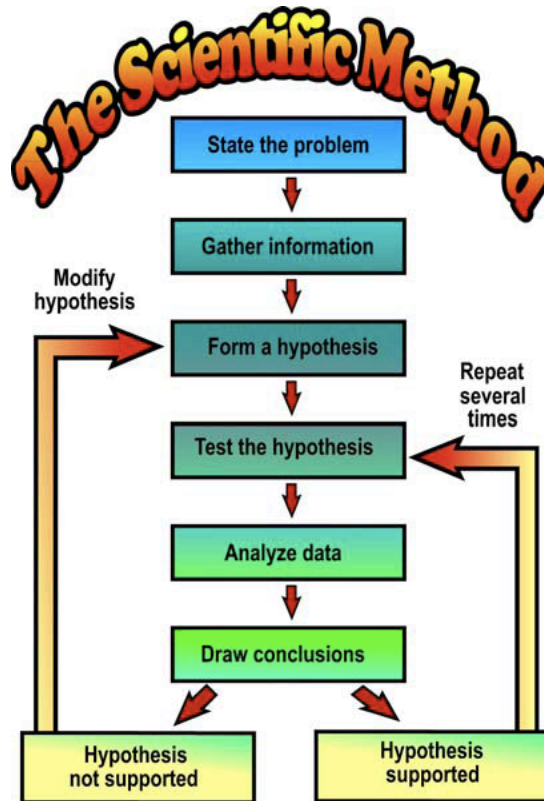


## The Scientific Method

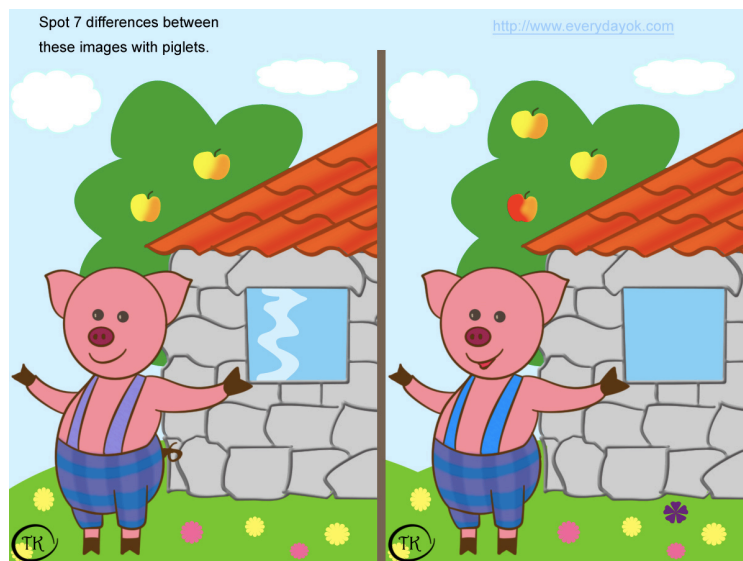
The Following diagram is used when designing an experiment or solving a problem.



### ***Observing:***

Quantitative Observations: Measurable. **THINK #'S**

Qualitative Observations: Observations which cannot be measured include colour, taste, clarity, and state of matter. **THINK QUALITIES**



## **Variables:**

**It is important for your experiment to be a fair test.**

You conduct a fair test by making sure that you change only one variable at a time while keeping all other conditions the same. This type of experiment is called a **Controlled Experiment**.

The variable that is deliberately changed is called the **manipulated** variable or **independent** variable.

The variable that is observed and that changes in response to the manipulated variable is called the **responding** variable or **dependent** variable.

Example: Did the fertilizer work? How do you know?



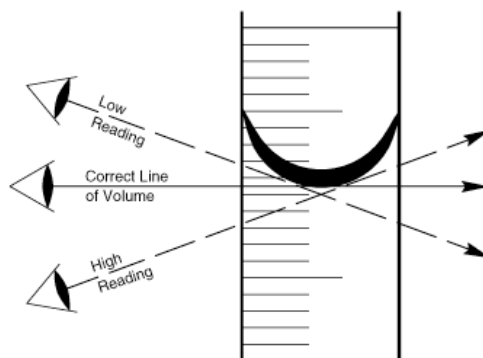
## **Measuring:**

Measuring is the most important part of doing science. The most common units are length, mass, volume, temperature.

Units for Measuring length: mm, cm, m, km

Units of Volume: L, mL, cm<sup>3</sup>

when measuring the volume of a liquid, you use a graduated cylinder or beaker. You have to look at the meniscus. The meniscus is the curvature of the beaker level of water.



## **Communicating:**

Scientists present their data in charts, tables, or graphs and in written reports. We will talk more about this part later.

## Lets Experiment

Read the experiment described below; think about it and then answer the questions below and on the reverse side of this page.

### Problem

When did you last have a glass of soda pop? You may have noticed that there are many little bubbles in it. What do those bubbles do? They rise to the top, tickling your nose when you drink it! Those bubbles will even lift lentils. But how will a mix of soda pop and water change the ways the raisins behave?

Questions:

1. Provide a title for this

experiment: \_\_\_\_\_  
\_\_\_\_\_

2. What is the purpose of this experiment?

\_\_\_\_\_  
\_\_\_\_\_

3. Make a prediction which liquid portion will have the most impact on the lentils: \_\_\_\_\_.

4. What reason can you give to support your prediction?

\_\_\_\_\_

5. Write a hypothesis for this experiment using IF.....Then.....format.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. Identify as many controls for this experiment as you can.

\_\_\_\_\_

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7. Identify the variable being tested in this experiment. \_\_\_\_\_.

8. Observation



9. According to your analysis what can you conclude?

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10. Can you be 100% sure of your conclusion? Why or Why not?

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11. Identify steps that should occur next.

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