

The Scientific Method

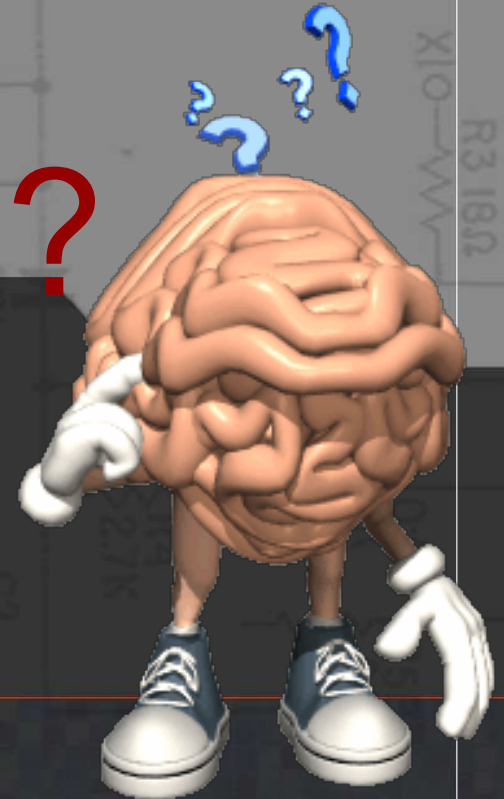
Bell Work:

How do you use the scientific method each day? Give examples.....





What is Science?





What is Science?

Science is a process that uses observations and investigations to gain knowledge about events in nature.





Major Categories of Science

- Life Science – deals with living things
- Earth Science – Earth and space
- Physical Science – deals with matter and energy
- Scientific study may overlap one or more categories!



Science Explains Nature

Scientific explanations help you understand what is going on in the **natural** world.

- Sometimes explanations must be modified if **new** technology or **new** information is discovered



- Scientists learn new information by performing investigations.

- Example: How do you know if you have allergies?

Allergies

- Observations
- Experiments
- Modeling





What is the Scientific Method?

The Scientific Method is an organized set of investigational procedures

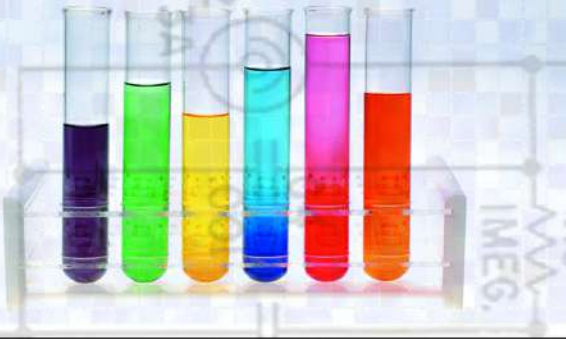




1. State the Problem

- Why?
- How?
- Should be stated in a clear and concise manner

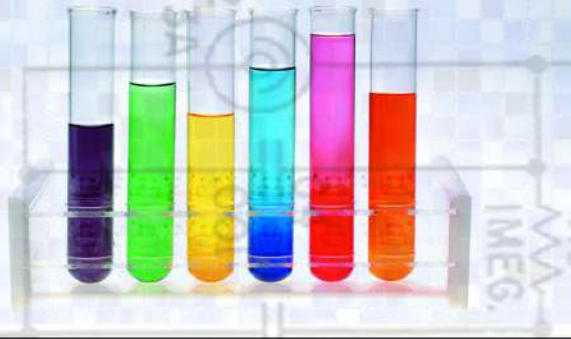




2. Gather Information

- You must learn as much as possible about background of the problem before you can begin
 - Your own research
 - Research from other scientists





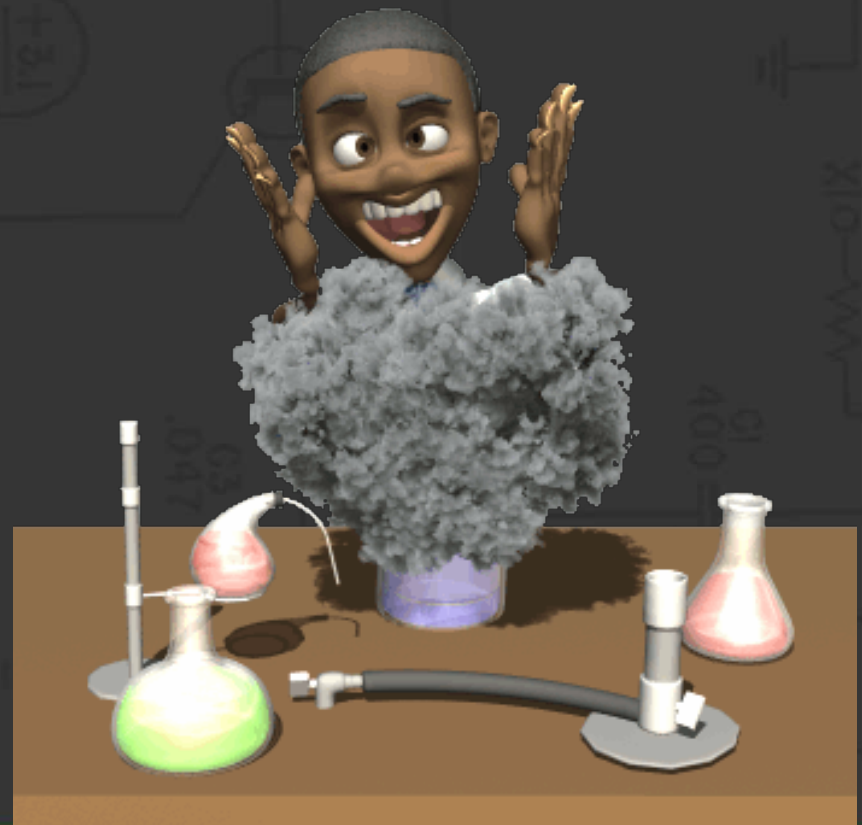
3. Form a Hypothesis

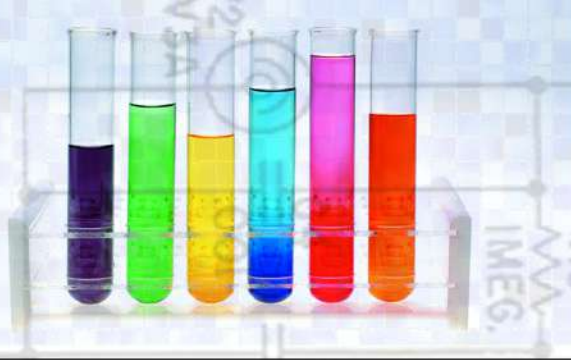
- A possible explanations for the problem
- **Educated guess**
 - It is based on knowledge and observation
 - It provides a direction to the experimental process
 - It can be **proved or disproved**
 - **If THEN** statement should be made.



4. Materials

- Include all **items** that are needed for the experiment





5. List the Procedure

- List the step-by-step explanation of the experimental process
 - Step 1: Get 2 slices of bread
 - Step 2: Put mustard on the top slice
 - Step 3: Place a hamburger patty on the bread
 - Step 4: Put cheese on the patty
 - Step 5: Add 2 pickles
 - Step 6: Eat!!



6. List the Results



- The results should be **written** in the form of observations
- Analyze the data from the experiment
- **Organize the data**
 - Paragraph form
 - Tables
 - Graphs





7. Drawing a Conclusion

- The conclusion is drawn by looking at the **results** and comparing them with the problem
- Was your hypothesis correct?
- WHY or WHY NOT?
- Explain!!!



Review: The Scientific Method

1. State the Problem
2. Gather Information
3. Form a Hypothesis
4. List the Materials
5. List the Procedure
6. Analyze the Results
7. Conclusion: Was your hypothesis correct? Why or Why not?

