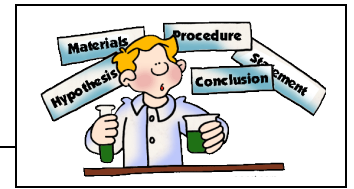


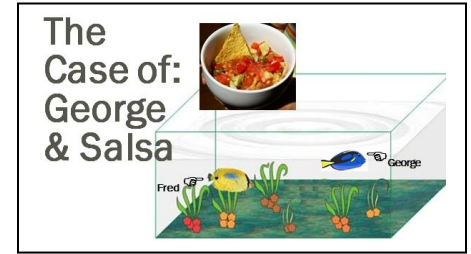
Weeks 3 & 4* – SCIENCE NOTE PAGE

Scientific Method & Experimental Design



The Scientific Method:

1. **Identify the problem** to be solved. (written in the form of a question [ends with a ?])
2. **Make observations** about the problem and/or conduct research to review what other scientists have done.
3. **State the hypothesis** by predicting what you think the answer to your question will be. (written as a statement you will prove true or false [ends with a .])
4. **Test the hypothesis**, in other words: *set up an experiment*:
 - *materials*—gather and record everything you need to do the experiment
 - *procedure*—follow specific steps to carry out your experiment
 - *experiment*—test your hypothesis according to the procedure
5. **Collect data** by describing what happened during the experiment.
6. **Analyze the data/results** of, or what happened during, the experiment.
7. **Form conclusions** and write the answer to the original problem.
8. Write and present your research.



Experimental Design:

Hypothesis (___) – a statement you can prove _____ (3 words) based upon the results of your experiment; ends with a period! Some use an “if/then” statement, but NOT all hypotheses are written that way.

Equation to write FORM a hypothesis: **H = IV + DV** (the + is a verb)

Example: _____

Independent Variable (___) – the variable that is being _____ (1 word) – that is it is changed/ manipulated by the _____ (1 word), sometimes called the “manipulated” variable.

Example: _____

Dependent Variable (___) – the _____ (1 word) response to the independent variable; **the DATA**; sometimes called the “responding” variable.

Example: _____

Constants - _____ (1 word) other possible **variables** (*parts of the experiment that could change*) that are kept the _____ (1 word) or constant throughout the experiment; so you are ONLY testing the independent variable

Example: _____

Control – a set-up of the experiment that does NOT get the _____ (2 words); **NO** ___ (2 letters) OR “normal”

Example: _____

Replicates – to increase the statistical significance of the experiment, it is _____ (1 word) at least 5 (or more) times; *more than one set of data!*

Example: _____

* This NOTE PAGE will be used throughout the year! **Make sure you keep it “handy”** 😊