SCIENCE [redacted]

NAME: _____
BLOCK: _____ DATE: _____

The Scientific Method

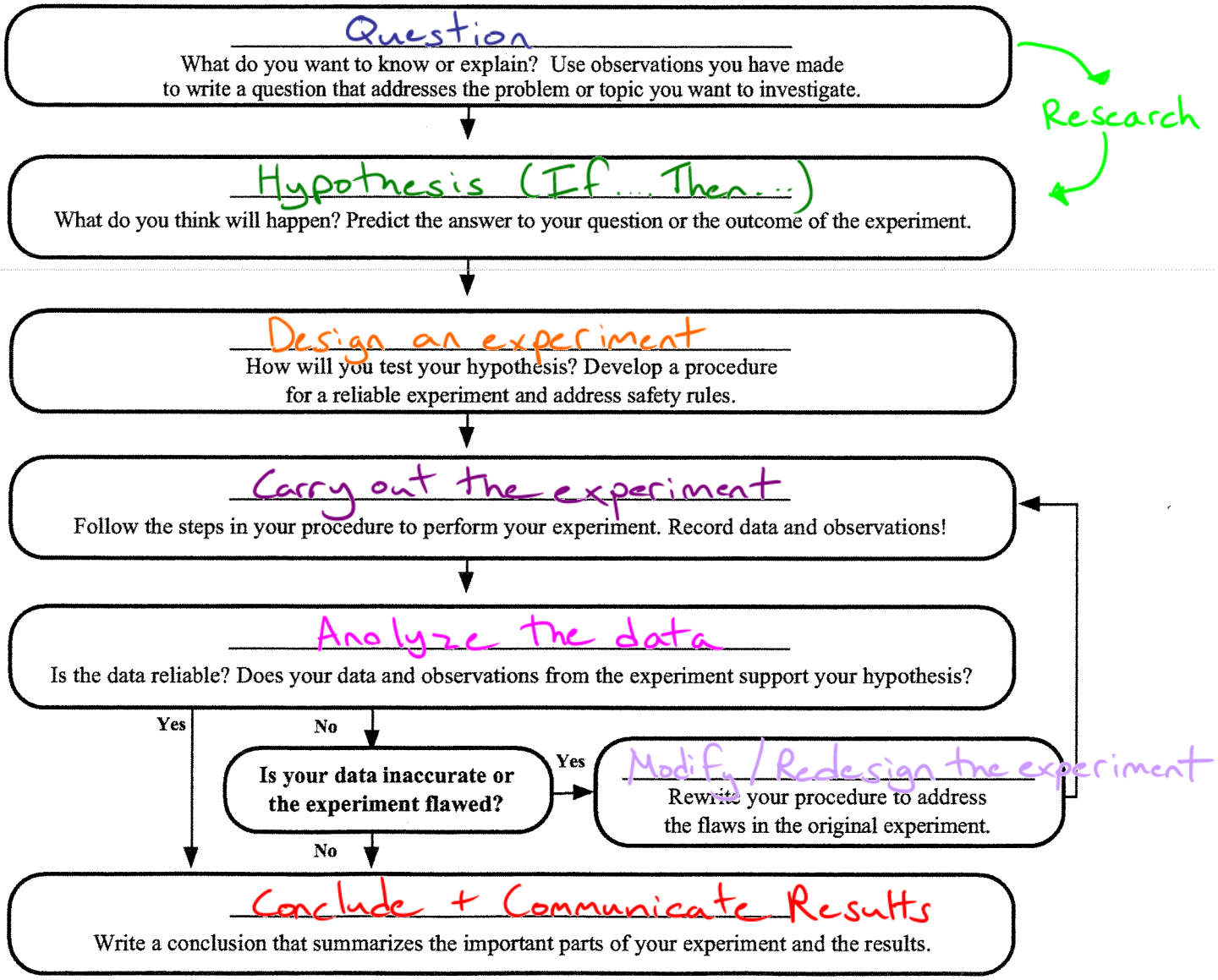
"It's how we do" – every scientist ever.

The **scientific method** is a process that scientists follow in order to answer questions about the world around us.

Big deal. **WHY** should I follow this so-called "process"?

- ☑ It ensures that your experiment will actually answer your question.
- ☑ It shows the world how you obtained your results.
- ☑ It allows other scientists to recreate your experiment to support/disprove your conclusions.
- ☑ It allows other scientists to build & extend on your research.

Okay, that makes sense. So **HOW** is it done?



Example: How does the amount of salt added affect the boiling temp. of water.

COMPONENTS OF AN EXPERIMENT

VARIABLES

Independent variable: the variable that is manipulated by the investigator, i.e. what you change to see the effect(s) on other variables.

e.x. amount of salt added

Dependent variable: The variable that changes as a result of the independent variable. It is the usually the factor being measured by the investigator.

e.x. boiling temp of water

Control: These are the variables that are kept constant in all treatments so that any results can be connected solely to the effects of the independent variable.

e.x. the amount of water

GROUPS – clinical trials!!!

Experimental Group: A.k.a. the "test group". The group that is experiencing a change to the independent variable.

Control Group: The group where the independent variable isn't changed (e.x. giving a group a placebo instead of actual medicine). The results of the control group are compared to the results of the experimental group to see if changing the independent variable has any actual (measurable) effect on the dependent variable.

Let's look at **Patty Power** on the Spongebob Experiment Handout for an example of this...