


# Scientific Method & Inquiry

## Scientific method

- Set of steps to solve a problem
- No particular order, science just happens
- Does not always involve all of the steps




## “Steps” of Scientific Method

- State the problem
- Hypothesis
- Design/Conduct experiment
- Analyze data
- Conclusion
- Revise hypothesis/re-test if necessary

\*Remember, science does not always happen in this set of steps

## Experimentation

- Variables – parts of an experiment:
  - #1-independent variable
  - #2-dependent variable
  - #3-controls/control group



## Three types of Variables

Independent – the variable that is being tested (aka *manipulated variable*)

Dependent – the variable that changes as a result of the independent (*what you get*)


Control(s) – factors that are not changed throughout the experiment (*used for comparison*)

## Data

Information collected during an experiment

There are two types:

- Quantitative – deals with numbers (expressed in charts & graphs)
- Qualitative – deals with descriptions (words)



## Precision vs Accuracy

- Data can either be **precise or accurate**
- Precise – refers to data that shows little variation. **Ex: 2.3, 2.2, 2.2**
- Accuracy – refers to how close a measured value is to the accepted value.

**Ex: the density of water is 1.0 g/mL**  
an accurate density measurement  
would be the same number or very close.

## Conclusions

- based on data collected
- does not have to agree with hypothesis
- never concrete – only accepted until it is disproved