Steps of the Scientific Method

Problem/Question

Research

Hypothesis

Experiment

Analyze Data

Conclusion

Share Results

What are you trying to find out?

- Ask a Question
- A testable Question
  - can be observed
  - includes a cause & effect

Problem/Question

- Research what others have already discovered.
- Use reliable sources

Research

Make an EDUCATED guess to answer the question (problem) Always written in an "IF... THEN..." format

Example: IF cheese is refrigerated, THEN it will grow mold at a slower rate.

Hypothesis

Design & carry out an experiment that will determine if your hypothesis is valid or not.

Needed to set up experiment:

variables
materials
procedures
collecting/recording data

variables

- Independent/manipulative - the one & only factor(variable) you change
- Dependent/responding - what you measure or observed.
- controlled variables - factors that will stay the same for both test group & control group

- Materials - detailed list of everything you need to conduct the experiment
- Procedures - step by step instructions

Experiment

-Recording Data-

Quantitative Data (quantity)
numerical #'s

Qualitative Data (quality)
descriptions based on observations

Organize information into a graph

DRY on Y
dependent
responding
axis

MIX on X
manipulated
independent
axis

TAILS
title
axis
intervals
label
scales

Analyze Data

Includes the answer to the original question, If the hypothesis is supported, how the experiment could be improved or redesigned.

Conclusion

- Share with other colleagues
- Publish results

Theory- is an explanation for an observation that is supported by evidence

Law- explains what happens but not how or why ex. Newton's Law of gravity

Share Results