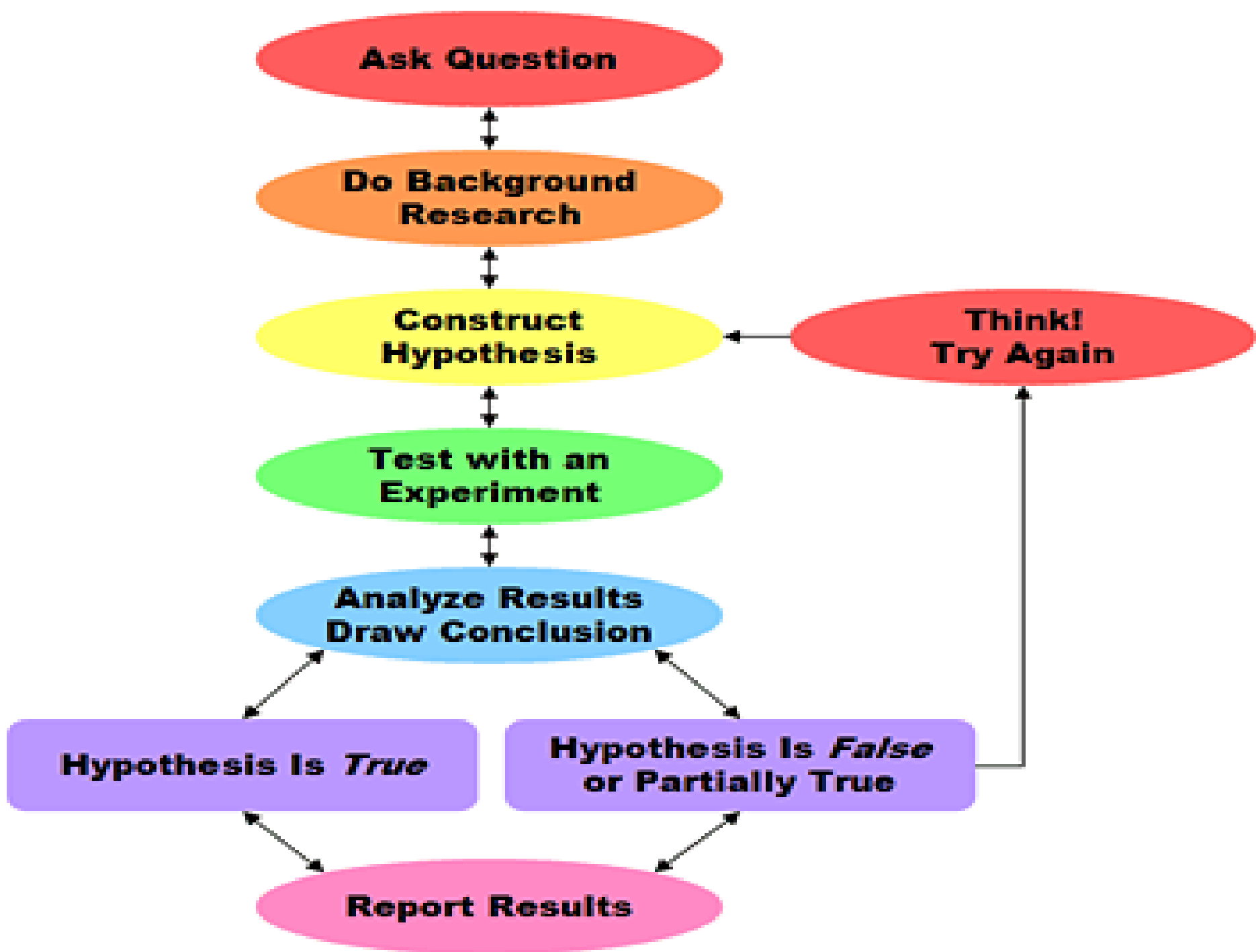


The Scientific Method

The way scientists learn and study the world around them.

It all starts with asking a question, forming a hypothesis, gaining information through experimenting, and then coming up with an educated conclusion (answer).



Ask a Question (Step 1)

Starts when you ask a question about something that you observe: How, What, When, Who, Which, Why, or Where?

Examples:

Why do dogs & cats have fur?

Why do the tornadoes form?

When does thunder and lightning occur the most?

Why do spiders spin webs?

How do different buildings stand up to earthquakes?

Do Background Research (Step 2)

In order to design an appropriate experiment, you need to **research the topic including the best techniques and equipment for investigating it.**

To help you along, **identify the key words in your question to research.**

Researching your experiment beforehand is the difference between guessing and having a hypothesis.

Where can you find information?

The internet, library (books, magazines, journals, etc...), text book etc.

Construct a Hypothesis (Step 3)

A **hypothesis** is an educated guess about how things work based on the scientist's background **research** and observations.



Test with an Experiment (Step 4)

Your experiment proves whether your hypothesis is true or false.

You should also repeat your experiments several times to make sure that the first results weren't just an accident.

Analyze Data (Step 5)

Once your experiment is complete, you **collect your measurements and analyze them to see if your hypothesis is true or false.**

How to analyze your results more proficiently?

1) Make a table

2) Chart your results through **a graph** to help find a pattern

Report Results/Conclusion (Step 6)

To complete the scientific method, you must **communicate your results to others in a final report.**

Professional scientists do almost exactly the same thing **by publishing their final report** in a scientific journal or by presenting their results on a poster at a scientific meeting.

B. Lab Report Format

1. Title
2. Name and Date
3. Aim
4. Hypothesis
5. Materials Used
6. Procedure
7. Results (Observations, Calculations)
8. Analysis & Conclusions

Problem Activity

Elastic Band Experiment

Aim:

To determine if the length to which an elastic band is stretched affects the distance travelled

Equipment to be used by each group:

Rubber Band
Yardstick (1m)
Ruler (30 cm)