



Chapter Two: The Scientific Process

- **2.1 Inquiry and the Scientific Method**
- **2.2 Experiments and Variables**
- **2.3 The Nature of Science and Technology**



Section 2.2 Learning Goals

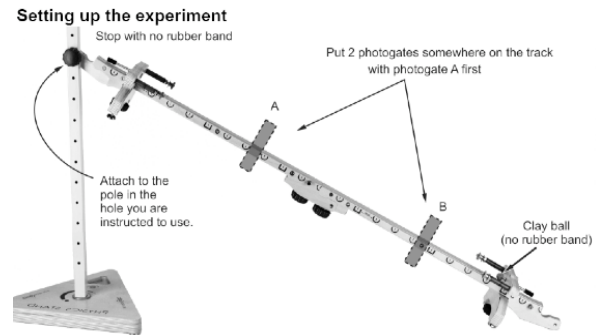
- **Define experiment.**
- **Contrast experimental and control variables.**
- **Discuss how experiments are carried out and the importance of communicating results.**

Investigation 2B

Experiments and Variables

■ **Key Question:**

How do you design a valid experiment?





2.2 Experiments and variables

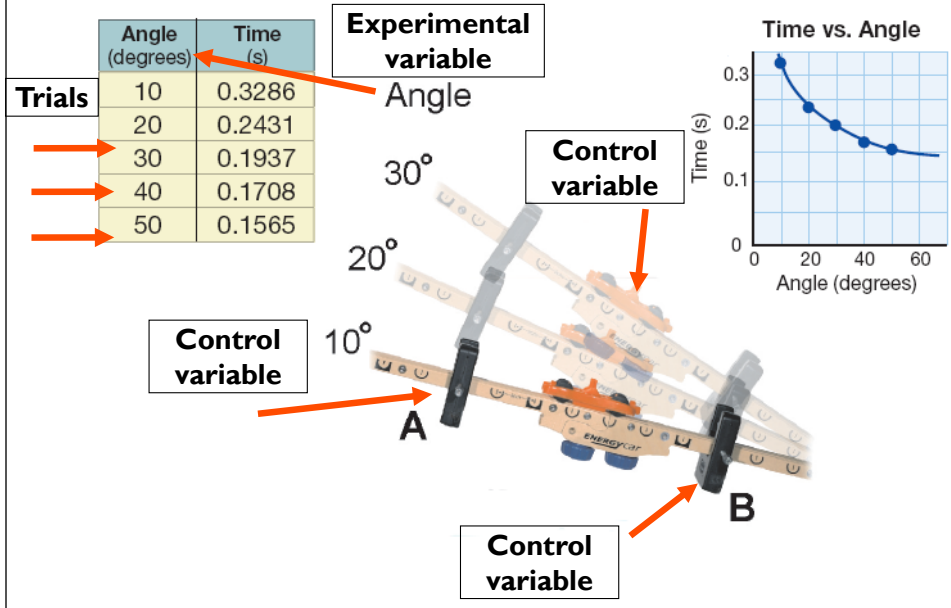
- An experiment is a situation specifically set up to investigate something.
- The goal of any experiment is to understand the relationship between variables.
- In a simple ideal experiment only one variable is changed at a time.



2.2 Experiments and variables

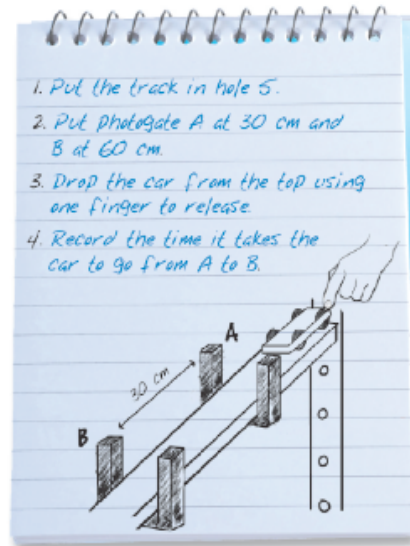
- The variable you change in an experiment is called the **experimental variable**.
- The variables you keep the same are called **control variables**.
- Each time you run the experiment is called a **trial**.
- See if you can identify each component in this experiment...

Car and Track Angles





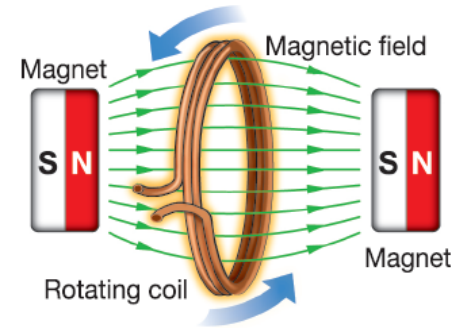
2.2 Experimental techniques



- **Your experimental technique is how you actually do the experiment.**
- **The procedure is a collection of all the techniques you use to do an experiment.**

2.2 Experiments then and now

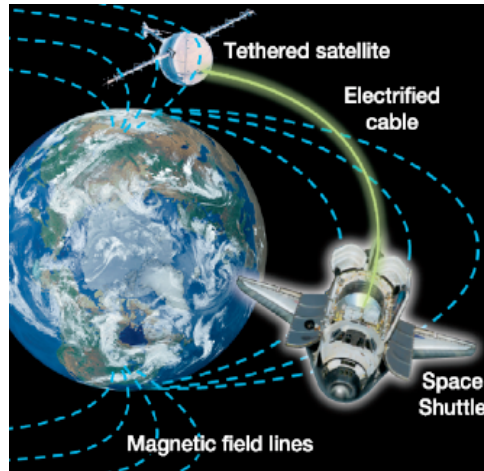
- **Michael Faraday, a British scientist, made some important discoveries while experimenting with electricity and magnets.**
- **Faraday's original question was "How are electricity and magnetism related?"**



Electric current is created when a coil rotates in a magnetic field.



2.2 Experiments then and now



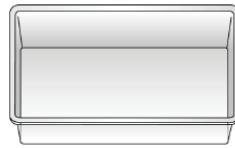
- Earth is like a giant magnet.
- In 1996, NASA conducted a modern version of Faraday's electromagnetism experiments using a tethered satellite.

Investigation 2C

Wave Speed

■ **Key Question:**

What is the relationship between water depth and wave speed?



GeoBox