Unit 4: Electrical Principles & Technologies *End of Unit Project*

You must choose 1 of these

You will do the chosen project **alone**, with a **partner**, or in a **group of 3**
depending on what has been assigned for that project

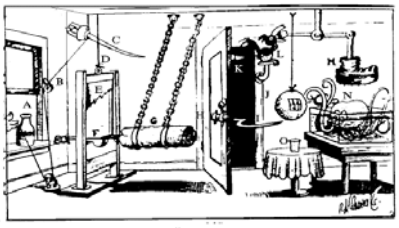
Description of Project Goals

1. To design and construct a working model (prototype) of a **Rube Goldberg Balloon Popping Device** that can successfully pop a balloon using a minimum of 5 actions. (**Required**: device must be electrically powered by **no more than 9 volts**)
2. To design a working model of a **circuit board** that tests the users understanding of circuits using the mystery circuit board.
3. To design a **Timeline of Electromagnetic Personalities**.

Background:

Rube Goldberg Balloon Popping Device (Alone, w/partner, Group of 3)

Rube Goldberg was an artist who designed devices that were useless. His devices were complicated impractical contraptions that performed a common everyday task.



Mystery Circuit Board (Alone or, w/partner)

Modern industrial, transportation, and communication systems, are made possible by electricity. Power is brought into homes to operate lights, kitchen appliances, television sets, radios, computers, etc. Imagine today's world without it! Electronics is the use of electricity to control, communicate, and process information.

Electrical Timeline (Alone)

Many scientists have contributed to the ongoing accumulation of knowledge about electricity.
http://www.ee.umd.edu/~taylor/frame1.htm
This website presents a comprehensive listing of the contributions of 42 scientists.

This project is described in detail in a previous project handout.
http://www.edquest.ca/Notes/timeline.html

Specifications:

Rube Goldberg Balloon Popping Device

Prototype must be your own design.

Testing. You will be given a **time limit** to make your device work (pop the balloon). There should be an electrical component that operates the device at some point.

Project **Report** should include:

- Design (Cartoon sketch)
- Step-by-step action sequence
- *Construction Details*
- Troubleshooting
- Electrical Principles incorporated

Mystery Circuit Board (Electrical Circuit Board)

Circuit Board must be completely enclosed and should have its own power supply (no more than 9V).

Safety: The device must remain safe at all times to prevent personal injury.
(**Note: Beware of short circuits. Make sure closed circuits don't bypass the bulb or energy receiver).

Materials: low-voltage, one-celled batteries, coated copper wire, flashlight and /or household type bulbs.

Project **Report** should include:

- Blueprint
- *Construction Details*
- Troubleshooting
- Solution – Electrical Principles involved in the design

Electrical Timeline (3D Museum, or PowerPoint)

3D Museum, or PowerPoint should include all of the Electromagnetic Personalities included on the site. Do not select this activity if you do not have Internet access. Completed project should represent each contribution with a brief summary.

Project **Report** should include:

- Chronological order of contributions
- Descriptive summary of scientists
- Symbol to represent each electrical contribution
- Self Evaluation (Time and Effort)

Evaluation:

Model
50%
(This includes your presentation)

Report: As outlined for each project
50%
(This includes your self evaluation)