



ELECTRICITY

WELCOME

Welcome to the 4-H Electricity Project! Please read through this guide carefully, as it contains information and suggestions that are important for your project. **4-H leaders can obtain a Leader Project Guide and other resources from the PEI 4-H Office.** Hopefully you, as a member, will “Learn to do by Doing” through hands-on activities that will encourage learning and enjoyment. If you have any questions, contact your District 4-H Officer or your 4-H project leader.

4-H YEAR COMPLETION

You complete a project by:

- completing the project Achievement Day requirements
- completing a communication project
- completing a community project
- completing an agriculture awareness project
- taking part in Achievement Day

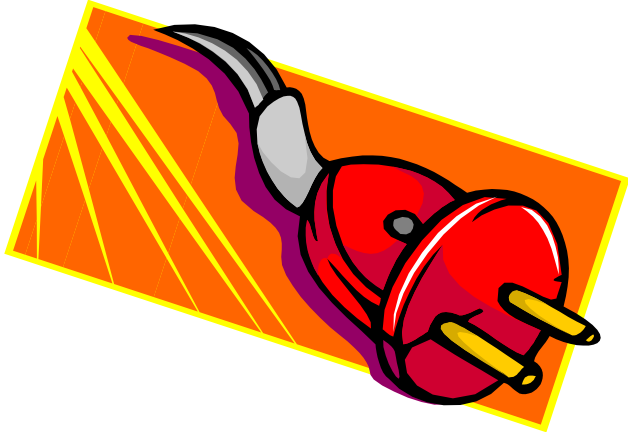
You must complete all of the listed aspects in order to show at Fairs and Exhibitions.



ACHIEVEMENT DAY REQUIREMENTS	
Electrical Gadget	40
Simple Electrical Circuit (mounted on wood)	20
A Parallel Circuit (mounted on wood)	20
A Series Circuit (mounted on wood)	<u>20</u>
	100 Marks

EXHIBITION REQUIREMENT
Electrical Gadget

BE A GOOD SPORT!
In the spirit of learn to do by doing, all those involved in 4-H are encouraged to practice good sportsmanship, use common sense at all 4-H activities and the work in any 4-H project should be the member’s own work.



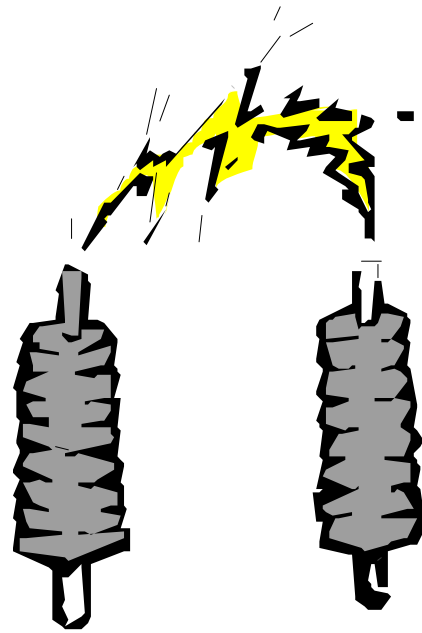
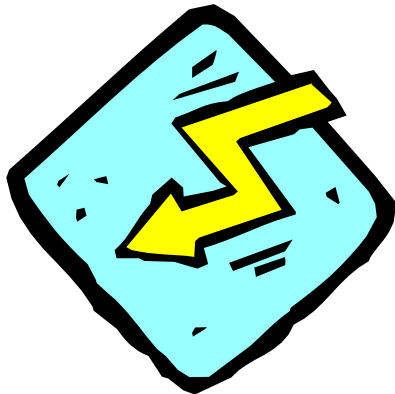
Ages for 4-H members as of January 1st of the 4-H year:
Junior: 9-11 years
Intermediate: 12-14 years
Senior: 15-21 years

Check out the PEI 4-H Web Site
www.pei4h.pe.ca

HELPFUL RESOURCES!

www.aecl.ca/kidszone
www.esfi.org
www.smud.org
www.can-do.com
www.uoguelph.ca/~antoon/circ/circuits
www.scienceproject.com
www.privateline.com/kids/projects
www.amasci.com
www.miniscience.com

A variety of books including *Make Cool Gadgets for Your Room* are available at the PEI 4-H Office which can be borrowed for a two week loan period. To book these, call 368-4833 or drop by the PEI 4-H Office at 40 Enman Crescent, Charlottetown.



What is Electricity?

In simple terms, electricity can be described as free electrons (subatomic particles) moving from one atom to another inside a conductor, such as wire or an electrical cable.

Zappit Zone 1: A Simple Electric Circuit *(Achievement Day Requirement)*

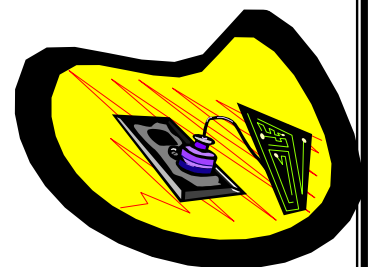
Materials Required

- 1.5 to 6 volt battery
- Light bulb and socket (size is dependent on battery size)
- Two pieces of insulated wire with 2 -3 cm of insulation stripped off the ends.

(Shopping tip: Occasionally bulbs and sockets can be difficult to find – hardware and electronic stores are good sources. Dependent on bulb and socket sizes available, battery size may need to be larger.)

1. Attach the two pieces of wire to the two battery terminals and the 2 lamp socket terminals.
2. Explain to the members how the circuit is a complete circle and that is why the bulb lights.
3. Have the members experiment with removing one of each of the four wire ends from the terminal. The bulb will go out as the circuit is broken.

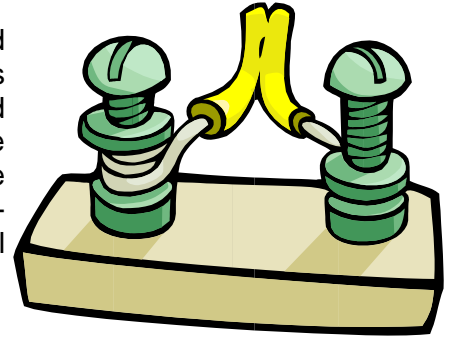
Note: This sets the stage for the next meeting when you will be building switches.



Zappit Zone 1: Parallel and Series Circuits

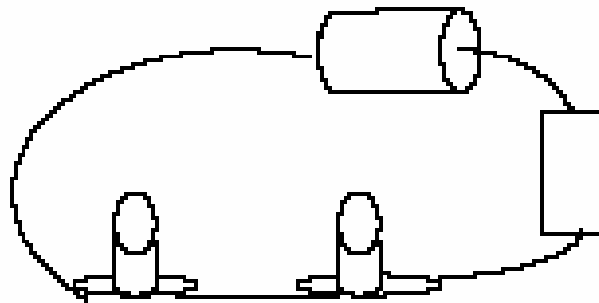
(Achievement Day Requirements)

Build a series and a parallel circuit. The members must mount it on wood to keep it stable. Feel free to make adjustments based on the supplies that you have available. Dependent on availability of supplies, age and skill of the members, and size of the group, you may wish to make individual circuit boards or small or large group circuit boards. To reduce cost, place the battery source in the middle and hook up one circuit - disconnect and then hook up the other circuit. Label the circuits as parallel and series.



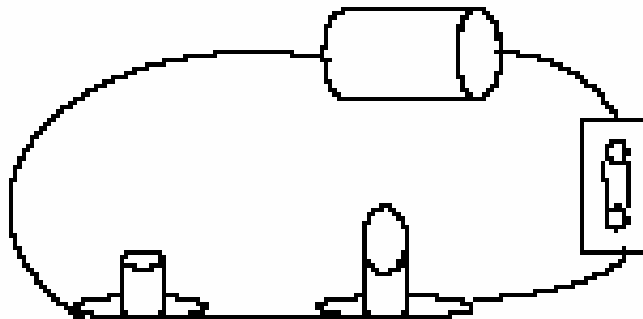
Materials required

- Battery
- Wire
- Lights
- Light holders
- Switch
- Mounting board
- Fasteners (to secure items to board)



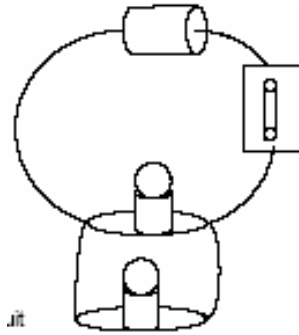
Series Circuit

1. Disconnect the wire from the negative end of the battery.
2. Connect this wire to the second light bulb holder.
3. With a 4th wire, connect the other end of the second light bulb holder to the negative end of the battery.

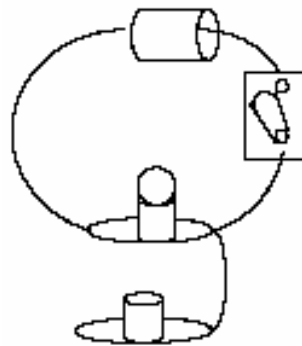


4. Put the second light bulb into the empty holder.
5. Turn the switch to the on position.

Parallel Circuit



1. Turn the switch to the off position.
2. Connect a 4th wire to one end of the light bulb holder that was used for the closed circuit. This creates 2 wires connected at the same place on the light bulb holder.
3. Connect the 4th wire to the second light bulb holder.



4. Connect a 5th wire the same way you did with the 4th wire. Connect one light bulb holder to the other.
5. Put the second light bulb into its holder.
6. Move the switch to the on position.

Zappit Zone 2: Build an Electrical Gadget *(Achievement Day Requirement)*

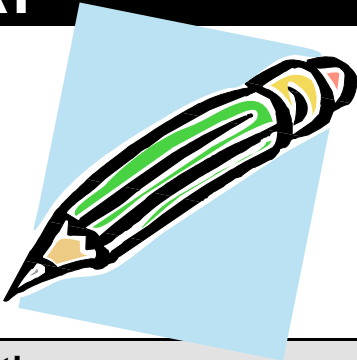
The members have decided what they will make. Now it is time to build the electrical gadget. Remember safety comes first and that project leaders should check all electrical items produced before they are used.

Electric Gadget Ideas...

Sunglasses with windshield wipers
Remote control car
Umbrella with lights
Fan hat for those hot days of summer
Plastic pop bottle motor
Electric Bell
Electromagnet

PROJECT MEETINGS DIARY

Most projects will require at least six to eight project meetings to complete the project.



Meeting Date	Location	Time	At this meeting, we...

Community and Agriculture Awareness Projects

COMMUNITY PROJECT

Each year you are encouraged to provide a service to your community as a 4-H member. This introduces you to the responsibilities of citizenship. You must participate in your club's plan for a community project and you should have a role to play. Describe your involvement with your club's community project this year.



Our Community Project was _____

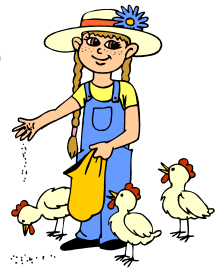
I helped by _____

It was beneficial because _____

I learned _____

AGRICULTURE AWARENESS PROJECT

Agriculture is one of PEI's main industries. You are expected to participate with your club to complete a project (or provide a service) which helps your club or others become aware of the importance of agriculture in our lives. As in the community project, you should actively participate.



Our Agricultural Awareness Project was _____

I helped by _____

It was beneficial because _____

I learned _____