THIS IS FOR REFERENCE ONLY.
PLEASE USE THE HARD COPY PACKET.

Electricity Web Quest

Name: _____ Period: _____

Introduction

At 2am on a stormy night in May, the electricity suddenly goes out. The house begins to become muggy, and you throw off all of your covers. Then you realize that you may not be able to wake up in the morning if the electricity does not come back on soon because your alarm clock does not work without electricity. What are you going to do about breakfast? How will you cook a Blueberry Pop Tart without electricity? Your shower will also be cold in the morning without electricity.
It is easy to forget how much we rely on electricity until we do not have the use of it. What can you learn from studying electricity? Where does electricity come from? How does electricity make your alarm clock, toaster, and water heater work? That is what you will find in this Web Quest.

Task

You have decided to find out how electricity works, so maybe you can come up with a way to get the power back on when the electricity goes out. In order to do this, you must understand how electricity works by completing some research.
At the end of your fact finding, you will become an expert ready to show off what you know with others.

What You Already Know

1. Let's start by brainstorming what we already know about electricity. Create a list of 4-6 things that you know about electricity and circuits.

- _____
- _____
- _____
- _____
- _____
- _____

Simple Circuits

Click on the link for Simple Circuits Link. Then use the pages to answer the following questions.
2. What does a complete circuit need to make electrical devices work?

_____
_____

3. Name two other electrical components that a circuit can have besides a battery and wires.

- _____ - _____

4. True or False: A circuit will work if it has a break in it? _____
5. In the space below, draw the electrical symbol for a battery and a switch.

Battery: **Switch**:

6. Adding more batteries to a simple circuit will make the bulb _____.
7. Adding more bulbs to a simple circuit will make the bulbs _____.
8. Lengthening the wires on a simple circuit will make the bulb _____.

Think Like an Electrician

Use the pHet Circuits Simulation to try and build the following circuits.

See how many you can build using the fewest number of connecting wires.

9. **Circuit #1**: Make a light bulb light brightly using 4 cells. Once completed, add an on/off switch. **Make a sketch below:**

10. **Circuit #2**: Make 3 light bulbs light brightly with all 3 with the same brightness (same current, measures the same number of amps). Once completed, add a switch that turns on/off only 2 of the bulbs. **Make a sketch below:**

11. **Circuit #3**: Make a circuit with one main on/off switch that will turn on/off 3 bulbs, each with a different brightness.
Once completed, insert ammeters beside each bulb.
Do they show the same current or different? _____. **Make a sketch below:**

12. **Circuit #4**: Make a circuit with: **6 light bulbs** total of equal resistance, **1 bulb** is brighter than the rest, **2 bulbs** are equal in brightness but dimmer than the last 3 bulbs, and **3 bulbs** of equal brightness but dimmer than the rest.

Make a sketch below:

How It All Works

Watch the following videos (HERE and HERE) and go to the following LINK:

13. Below is a circuit diagram. List what each part of the diagram represents

Diagram a Circuit

14. Activity- Building a Circuit**:** Read through this activity carefully, paying close attention to the symbols that are used. You can also use these websites: Changing Circuits and Electrical Symbols. After you have completed the above activities, practice your future in electronics by using the symbols you have learned about to *create a diagram of a simple circuit* in the space below. The circuit will be for a light, a motor, or buzzer.

Your diagram must include the following information:

- Proper **symbols** including power source. (DO NOT USE PICTURES, USE SYMBOLS)
  - Series , Conductor, Circuit , Electron , Cell , Current
- **Arrows** to show the direction of the current.
- **A key** that explains each symbol (do not use symbols that you do not use in your diagram key)

Draw your diagram here:

[TURN OVER]

Reflection

15. What is an example where using a series circuit would be most beneficial?

_____

_____

16. What is an example where using a parallel circuit would be most beneficial?

_____

_____

17. How can different types of circuits be useful to us?

_____

_____