**Circuits**

Complete the lab below with a partner. Start by visiting the site below to answer the following questions. Once you’re done answering the questions on the first page, check with your teachers before starting the lab.

<https://www.brainpop.com/science/energy/electriccircuits/>

What is a circuit?

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Complete the following table.

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|  | Example | Symbol |
| Power Source |  |  |
| Conductor |  |  |
| Insulator |  |  |
| Load |  |  |
| Switch |  |  |

What is a series circuit?

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What is a parallel circuit?

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Draw an open circuit (one where electricity cannot flow through because a switch is open) using the symbols above.

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**Investigation 1 – Basic Circuit**

**Task 1**

* **Materials -** AA battery (1.5 volts), two wires, 1 bulb
* **Task -** Using the materials listed above, light the bulb.
* **Draw –** Draw the circuit you’ve created.

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**Task 2
Materials -** AA battery (1.5 volts), 1 wire, 1 light bulb.
**Task -** Using the materials listed above, light the bulb. How many different ways can you light the bulb using only the battery, 1 wire, and the bulb?
**Draw -** Sketch the different arrangements used to light the bulb.

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**Task 3
Materials -** AA battery (1.5 volts), 1 wire, 1 light bulb, 1 switch.
**Task -** Using the materials listed above, create a circuit that can be opened and closed using the switch.
**Draw -** Sketch the circuit below.

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**Investigation 2 - Series Circuit**

* **Materials -** 9 volt battery, 9 volt battery connector, 2 light bulbs, and 1 wire
* **Task -** Using the materials listed above, light the bulbs in a way that if you unscrew one bulb, the other bulb goes out.
* **Draw –** Draw the series circuit that you’ve created.

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**Investigation 3 - Parallel Circuit**

* **Materials -** 9 volt battery, 9 volt battery connector, 2 light bulbs, and 2 wires
* **Task -** Using the materials listed above, light both bulbs in a way that if you unscrew one bulb, the other bulb stays lit.
* **Draw –** Draw the parallel circuit that you’ve constructed.

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**Investigation 4 – Super Circuits**

How many light bulbs can you light with one 1.5V battery? Draw the circuit that you’ve constructed below.

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Can you light more bulbs with two 1.5V batteries? Try to create a “super circuit” using 1.5V batteries and multiple light bulbs. Sketch your creation below.

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