**Science 9 – Current (Current Electricity Notes 2)**

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| **What is Current?**Current is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ through a circuit.**Chart, box and whisker chart  Description automatically generated**An electrochemical cell (battery) uses chemical reactions to move electrons. This creates a “potential difference” between two ends of the battery:* Positive terminal is positively charged
* Negative terminal is negatively charged and has an excess of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

When a circuit connects the two terminals, current flows through the wire. * Electrons are repelled by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ terminal and are attracted by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ terminal.
* Electrons cannot move through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, but they can definitely move through a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!
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| **Calculating Current**Shape  Description automatically generatedCurrent (**I**) is the amount of charge (**Q**) that passes a point in a circuit every second (**t**): $$I=$$* **I:** is the symbol for \_\_\_\_\_\_\_\_\_, measured in **Amperes** (A)
* **Q**: is the symbol for charge, measured in **\_\_\_\_\_\_\_\_\_\_\_\_\_** (C)
* **t**: is time, measured in **seconds (s)**
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| **Example #1**What is the current in a wire if 25 C of charge passes by a point in 5 seconds? | **Example #2**If the current in a wire is measured to be 12 A, how much charge passes by a point in the circuit every minute? |
| **Example #3**A current of 64 mA is equivalent to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ A. | **Example #3**A current of 0.0028 A is equivalent to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mA. |

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| **Measuring Current**Current is measured by a device called an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. * Symbol in circuit diagrams:

Typical amounts of current: * + In a light bulb is 1A
	+ In a TV is 4A
	+ In a car starter is 500 A
 | Chart, box and whisker chart  Description automatically generated*Complete this circuit diagram by adding a light bulb and an ammeter.*  |

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| **Series and Parallel Circuits**In a circuit, devices (such as light bulbs or batteries) can be placed in two different ways. |
| **SERIES*** When devices are placed in series, the current goes through a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ through all devices.
* In this circuit, there is only **one path** and the \_\_\_\_\_\_\_\_\_\_\_\_\_ goes through the two light bulbs in the series.

Diagram, engineering drawing  Description automatically generated | **PARALLEL*** When devices are placed in parallel, there are 2 or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that the current can take
* Current \_\_\_\_\_\_\_\_\_\_\_\_: some electrons go through one device, and some go through the other(s).

Diagram  Description automatically generated |
| Decide whether each circuit is **S**eries, **P**arallel, or a **C**ombination of the two. |

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| **Calculating Current in SERIES*** **Current** (I)
	+ Measured in Amperes (A)
	+ When you place an Ammeter in SERIES (SIDE BY SIDE) the current \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

001 - Copy (2).jpg* **Series**:

$$I\_{Total}=$$ | **Calculating Current in PARALLEL*** **Current** (I)
	+ Measured in Amperes (A)
	+ When you place an Ammeter in PARALLEL (OPPPOSITE FROM EACHOTHER), you \_\_\_\_\_\_ the current to find a total.
* 001 - Copy (2) - Copy.jpg**Parallel**:

$$I\_{Total}=$$ |
| 001 - Copy (2) - Copy.jpg**Example #4**Find the total current for the following circuit. |
| **Example #5**001 - Copy (2).jpgFind the total current for the following circuit.  |
| **Example #6**How long does it take 40 C of charge to pass by a point if the current in the circuit is 0.76 A ? |