PreIBSc9 Spindlove Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**ELECTRICITY UNIT**

**8.1 ELECTRIC POTENTIAL ENERGY AND VOLTAGE**

***What do these have in common?***

* Separate positive and negative charges

***How are these different?***

* Lightning is an uncontrolled burst of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** electrical energy
* A battery can provide a steady, controlled **\_\_\_\_\_\_\_\_\_\_** of electricity.

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**Recall the two types of electricity:**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Electricity** – is a build-up of charge that *\_\_\_\_\_\_\_\_\_\_\_\_\_\_* in one place
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Electricity** – is *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* charges (usually through a wire)

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**A battery is a combination of electrochemical cells \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* + Electrochemical cells convert **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** energy into **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** energy
* In a battery, chemical energy separates the **\_\_\_\_\_**and \_\_\_\_\_\_\_charges.
* The battery **\_\_\_\_\_\_\_\_\_\_\_\_** are the end points where we make a connection. Extra electrons ***accumulate*** on one of the battery terminals, making it **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** charged. The other terminal has ***lost*** these electrons and is therefore **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** charged.

**ELECTRIC POTENTIAL**  **ENERGY**

* **\_\_\_\_\_\_\_\_\_\_\_\_** is the ability to do work.
* ****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is energy a ***moving*** object has because of its motion.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is the energy ***stored*** in an object.
* The electrical energy stored in a battery is called **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** because the electrons have a stored energy and the ability to do work after they leave the battery.

**ELECTRIC POTENTIAL DIFFERENCE**

* Recall charge is measured in **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* The amount of electric potential energy per 1 C of charge is called the ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*** or \_***\_\_\_\_\_\_\_\_\_\_\_\_\_\_*** 
  + Unit is the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,** measured with a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**COMPARING P.E. AND P.D.**

|  |  |
| --- | --- |
| A screenshot of a cell phone  Description automatically generated with low confidenceA screenshot of a cell phone  Description automatically generated with low confidence | * *You can think of the* ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*** *in a* ***battery*** *as being like the* ***height of the stairs****.* * *The* ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*** *in a battery is like the* ***mass moved up the stairs****.* * *The potential energy in the battery is due to both the potential difference (****\_\_\_\_\_\_\_\_\_\_\_\_****) and the amount of charge that has been separated (****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****).* |

**BATTERIES**

We can classify batteries into two groups:

* + **\_\_\_\_\_\_\_ cells** : in devices like flashlights, toys, and watches
  + **\_\_\_\_\_\_\_\_ cells** : in cars, motorcycles, and electric wheelchairs
* Cells consist of the following parts:
  + two **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (2 different metals)

Diagram

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* + an **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (conducting substance or acid solution)
* The acidic electrolyte attacks the zinc electrode and pulls atoms off the zinc. But the zinc atoms leave **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** behind on the electrode, and the electrode becomes **\_\_\_\_\_** charged.
* At the same time, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** pull **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** off the copper electrode. Therefore, the copper electrode has a **\_\_\_\_\_** charge. Because there is an opposite charge on each electrode, there is a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** between the two electrodes.

*Diagram

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