Simple diagram of a battery

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Look closely at the cylinder-shaped battery in the picture. It has two ends: one has a part that sticks out on its top. Next to it, you can see a little plus (+) sign. This is the positive end of the battery, or cathode. The completely flat end of the battery has a minus (-) sign next to it. This is the negative end of a battery, or anode. Depending on the battery type, there is also a liquid, solid, or paste/gel, called an electrolyte. The electrolyte separates the cathode and the anode.

A battery works when the original chemicals inside it are still new and unused. When electricity starts flowing, these chemicals react with each other to become different chemicals. Once the original chemicals are all used up, the battery is dead. If you could reverse the reaction or add more of the original chemicals, you may be able to keep the reaction going.

A chemical reaction is a bit like building a little house with Legos. Once you have used up all your Lego pieces, the (re)action stops. If you want to build something new, you have two choices. You could choose to take the house apart and reuse the Legos, which is kind of how rechargeable batteries work. Or you could decide to buy more Legos, which is kind of like replacing dead batteries with new ones. Just like you would reuse your Legos to make something else, be sure to recycle your dead batteries. See Recycle That Battery! to find out how.

Everything around us is made of the smallest, basic building blocks called atoms. They make up everything from the chair you sit on, to your favorite book, to your own body! Atoms are extremely small. Even the dot over one "i" on this page is made of millions and millions of atoms.

Atoms have electrons, which are extremely tiny, negatively-charged particles. Batteries work by making these electrons move from one part of the battery to another. Batteries are made up of two parts. One part, the anode, "holds on" to its electrons very loosely. The other part is the cathode, and it has a strong pull on the electrons and holds them tightly.

Electricity is generated when electrons move from the anode (- end) to the cathode (+ end). The electrons don"t start moving until you pop the battery into a device and turn it on. Now the electrons can move from the anode to the cathode through your device. When electricity is flowing, the cathode gains the same number of electrons that the anode loses. This happens through two different types of chemical reactions. The reaction when the cathode gains electrons is called reduction. The reaction when the anode loses electrons is called oxidation.

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Without batteries, there would be no cell phones, watches, tablets, hearing aids, flashlights, electric cars or communication satellites - and the list goes on. The first battery was invented over 200 years ago, and ever since then, these ingenious devices have become indispensable in our daily lives.

In an electric circuit, batteries serve as a power source by creating a potential difference that drives the flow of electric current. As current passes through the circuit, it transfers energy to any devices connected to it. In such a circuit, the type of current that flows is direct current. In other words, the current that flows goes in one, continuous direction.

Conversely, power supplied by a power plant is accessed via the outlets in your home and is in the form of alternating current. This type of current alternates direction with a certain frequency in order to power devices.

A typical battery is composed of one or more cells that have a cathode (positive terminal) on one end and an anode (negative terminal) on the other end. Chemical reactions contained within cause a buildup of electrical charge at the terminals, producing an electric potential across the nodes via the release of chemical energy.

The chemical reactions in the battery cause electron buildup at the anode. This creates an electric potential between the cathode and anode. The electrons want to make it to the cathode in order to neutralize the charge, but they cannot do so by traveling through the electrolytic material inside the battery itself. Instead, electrons flow easily through a conducting wire connecting the anode to the cathode.