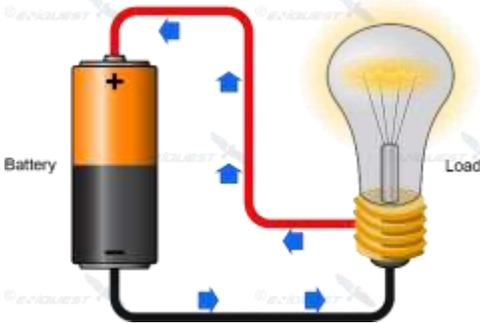


Chapter 15: Electricity and Magnetism

pages 600-653

Test on Thursday, February 4th

Static Electricity	Current Electricity
<p>charges are built up on an object and are transferred to another creating a spark or shock</p> 	<p>a steady flow of electrons that travel along a pathway (wire) to create continuous electricity</p> 

Conductors and Insulators

Conductors – allow electrons to travel through them; a path for electrons



Silver



Copper



Iron



Aluminum

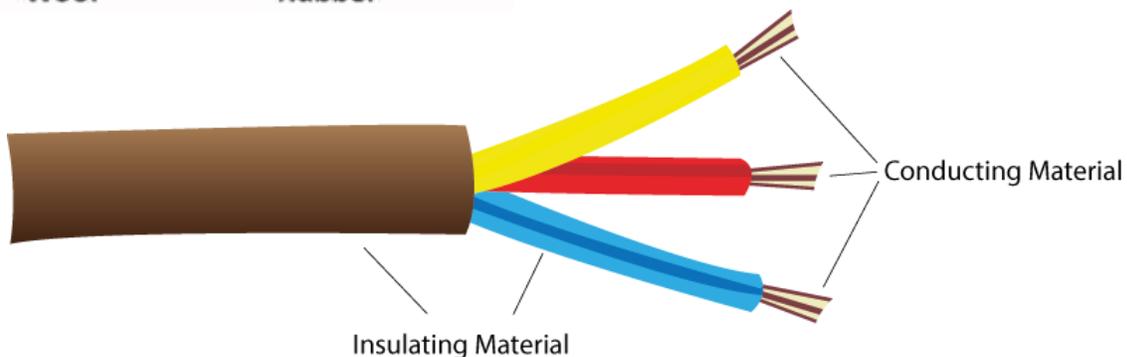
Insulators – do NOT allow electrons to travel through them; keep electrons in



Wool



Rubber

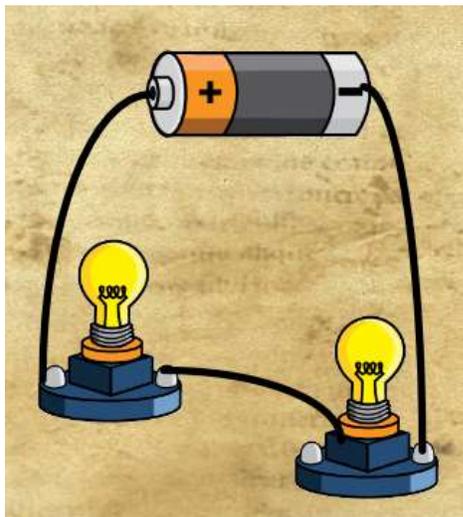


Series Circuit

In a **series circuit**, electricity has only one path to follow. All parts are connected. Electrons are flowing from the negative end of the battery to the positive end.

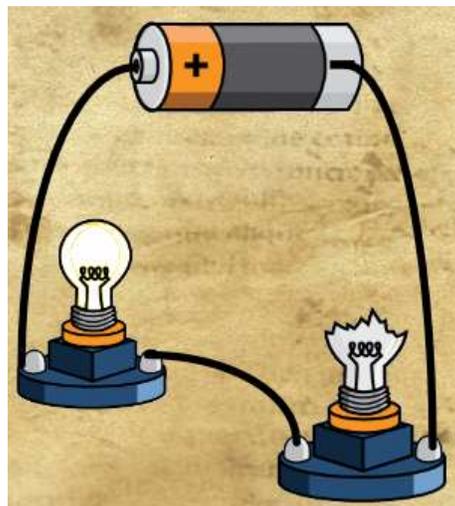
Example 1

In this series circuit, the path is closed and all light bulbs are placed. The path is complete so the electrons can complete the circuit.



Example 2

In this series circuit, the one light bulb is broken. Since there is only 1 path for the electrons to follow, they cannot complete the circuit so NONE of the lights will work.

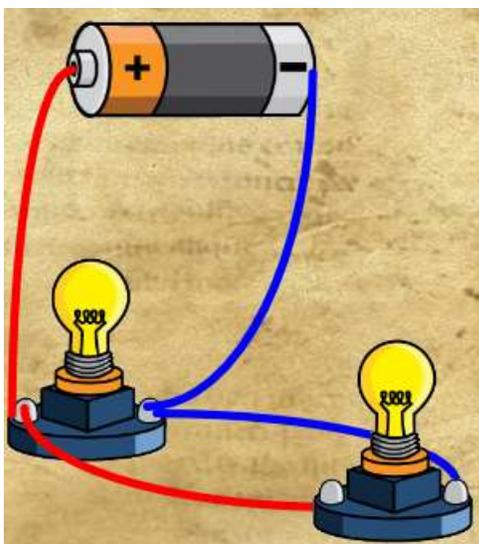


Parallel Circuit

In a **parallel circuit**, electricity has MORE than one path to follow. All parts are connected. Electrons are flowing from the negative end of the battery to the positive end.

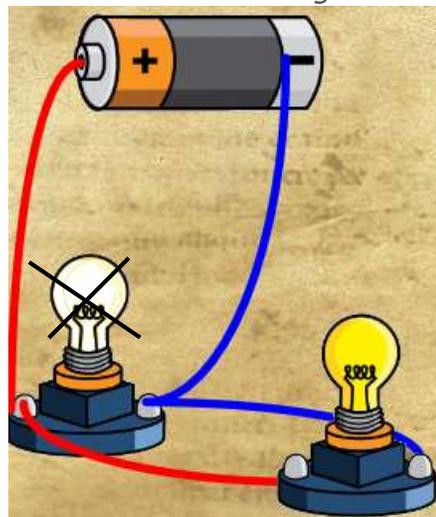
Example 1

In this series circuit, the path is closed and all light bulbs are placed. The path is complete so the electrons can complete the circuit.



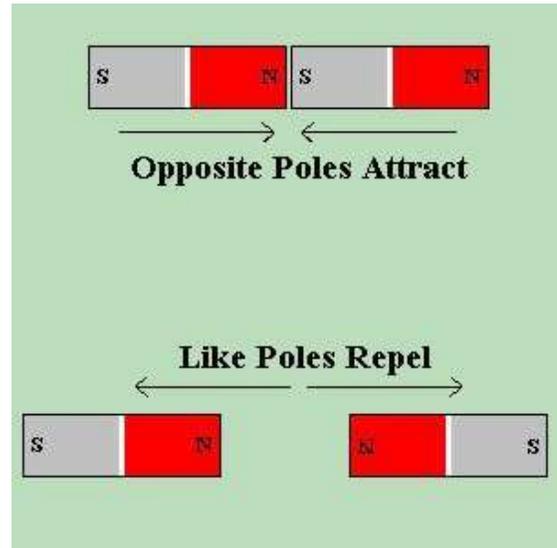
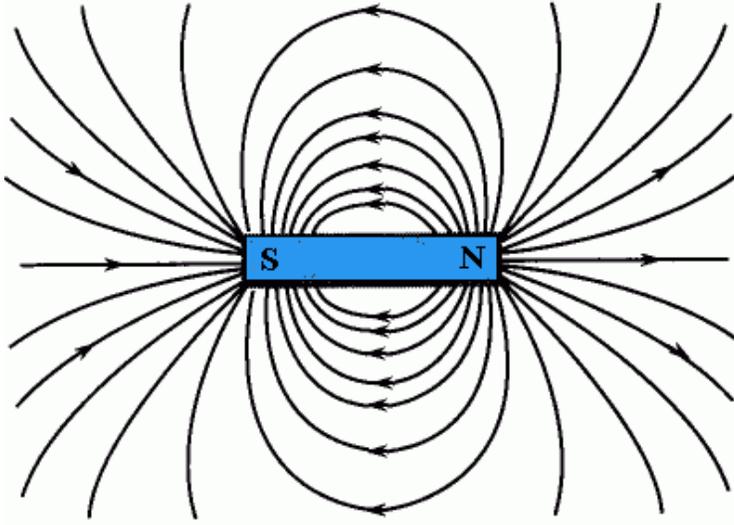
Example 2

In this series circuit, the one light bulb is broken. Since there is only 1 path for the electrons to follow, they cannot complete the circuit so NONE of the lights will work.



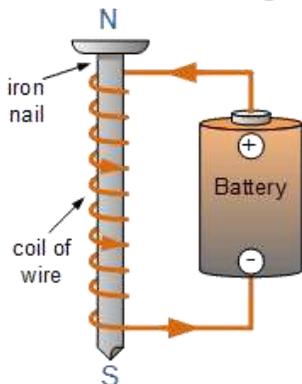
Chapter 15: Electricity and Magnetism

Magnetic Poles and Fields



A magnet has a North (N) and South (S) pole. This is the area (poles) where the strength of the magnet is the **strongest**. The area around the magnet where there is a magnetic force is called the magnetic field.

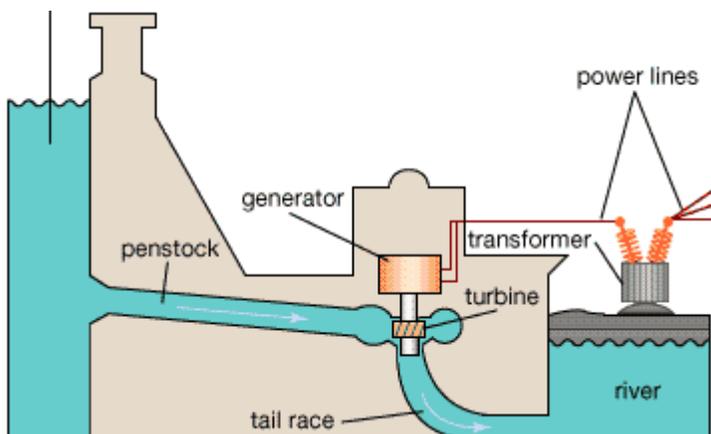
Electromagnet



An electromagnet is a temporary magnet that is created when a wire is wrapped around iron and then connected to an energy source. The **MORE** coils or the **LARGER** the energy source, the stronger the electromagnet.

If a switch is turned off, the electromagnet no longer is magnetic. If a switch is on, the electromagnet can no attract metals.

Generator & Motor



A generator uses **MOTION** from the turbine to create electricity.



An electric motor uses electricity to create motion!

Renewable and Nonrenewable Energy

Nonrenewable

These resources are limited and take a very long time to create more.

Examples: oil, coal, natural gas (fossil fuels), topsoil

Renewable

These resources will never run out and can be reused or created quickly.

Examples: sun, wind, water, wood

All these things are **NATURAL** resources!

Disadvantages of RENEWABLE RESOURCES

1. It is expensive to build new power plants
2. It does not make as much energy as fossil fuels
3. Some people find the new power plants unattractive



Disadvantages of NONRENEWABLE RESOURCES

1. Fossil fuels will eventually run out
2. Burning these resources produce a lot of pollution
3. The pollution is extremely harmful to the environment



Renewable Energy Sources

<p>Hydroelectric Energy</p> <p>Energy from moving water changed into electricity.</p> A photograph of a dam with water flowing through its spillways.	<p>Biomass</p> <p>Energy from plants or animals that is burnt to create electricity.</p> An illustration of a yellow gas pump nozzle next to a yellow ear of corn.	<p>Geothermal Energy</p> <p>Energy from the heat of the Earth changed into electricity.</p> An illustration of the Earth with a glowing orange and red interior representing heat.	<p>Wind Energy</p> <p>Energy from the moving air changed into electricity.</p> An illustration of three wind turbines on a green hill.	<p>Solar Energy</p> <p>Energy from the sun changed into electricity.</p> <p>steam OR solar cells</p> An illustration of a blue solar panel on a green surface with a sun in the background.
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