

6th Unit 4

Dates of Instruction: January 8 – January 29, 2020

Unit Assessment date: January 29, 2020

Electromagnetic Forces

Vocabulary	
Term	Definition
Attractive force	A force that pulls two objects together. This happens when opposite charges or poles interact. (ex: positive charge and negative charge)
Electric Charge	Charged particles that are either positive or negative.
Electric Current	The continuous flow or path of negative electric charges.
Electric Field	The field of force that surrounds a charged particle.
Electrical Force	The attraction or repulsion created by electric charges.
Electromagnet	A type of magnet that is created by an electric current.
Field	The area of space that can be affected by a force. The force extends throughout this entire space.
Force	A push or a pull.
Magnetic Field	The field of force that extends from the North or South Pole of a magnet.
Magnetic Force	The attraction or repulsion created by magnetic poles.
Magnetic Pole	Opposite ends of a magnet; North and South.
Non-contact force	A push or a pull that can act on another object without having to touch that object.
Repulsive force	A force that pushes two objects apart. This happens when like or similar charges or poles interact. (ex: North pole and north pole)

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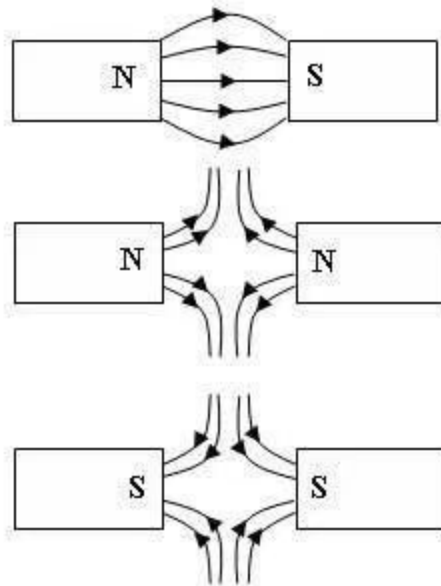
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Key Ideas

Magnetic Forces

- Some materials are magnetic and can be pushed or pulled by other magnets
- Magnetic forces can be attractive or repulsive
- Magnetic forces have polar charges- North and South
- Like poles will repel each other (North-North, South-South)
- Opposite poles will attract each other (North and South)
- Magnetic forces are non-contact, objects do not need to be touching to feel the pull or push of a magnetic force.
- Magnetic forces are explained by force fields that contain energy and can transfer energy through space.

Magnetic forces extending energy through space creating attractive or repulsive forces.



- The size of the magnetic force depends on the distance between the interacting objects. The closer the objects, the greater the magnetic force.
- The size of magnetic forces depends on the magnitudes of the charges, currents or magnetic strength between the two objects. The greater the magnitude, current, or strength, the greater the force.

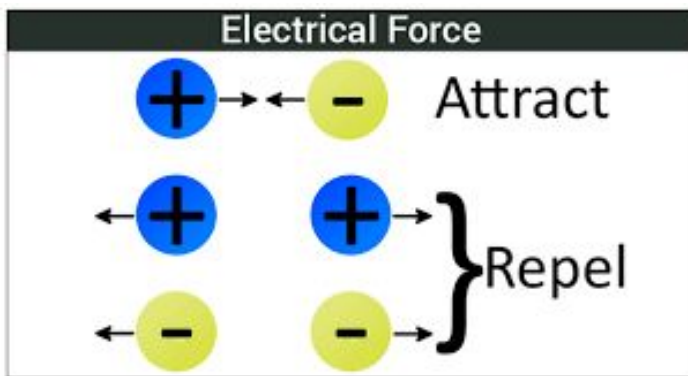
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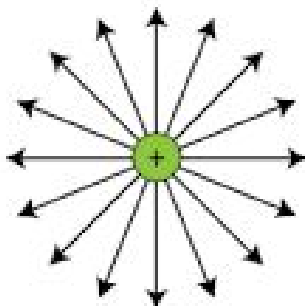
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Electrical Forces

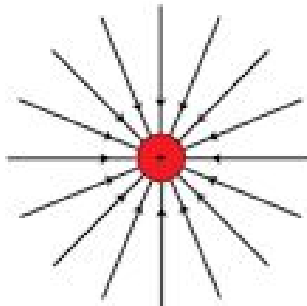
- Electrical energy is a form of energy that can be transferred
- Electric forces can be attractive or repulsive
- Electrical forces have polar charges (positive and negative)
- Like charges repel each other
- Opposite charges attract each other.
- Electrical forces are non-contact, objects do not need to be touching to feel the pull or push of a magnetic force.
- Forces can be used to transfer energy from one object to another
- Electrical forces are explained by force fields that contain energy and can transfer energy through space.
- The size of the electrical force depends on the distance between the interacting objects. The closer objects are, the stronger the electrical force.
- The size of electrical forces depends on the magnitudes of the charges. The greater the magnitude, the stronger the electrical force.



Electric Fields of Individual Charged Particles (Point Charges):



Electric field lines of a positive point charge



Electric field lines of a negative point charge

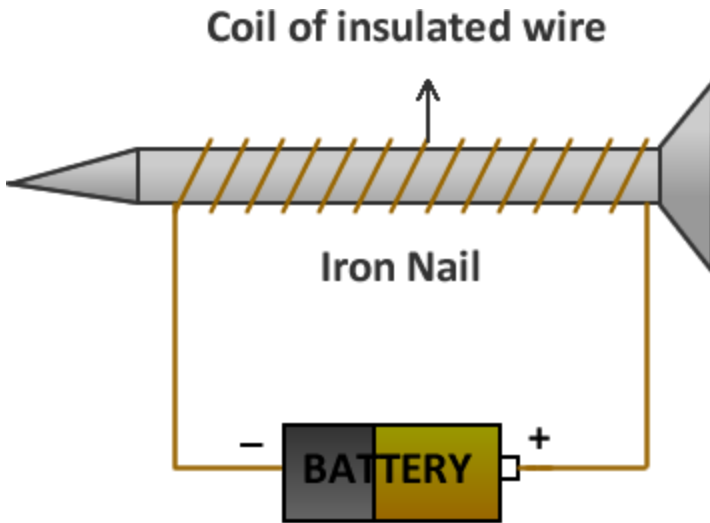
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Electromagnets

- An electromagnet uses electrical forces to create a magnetic field (electric forces traveling through the wire cause the iron nail to become magnetic)
- Increasing the number of turns of the wire on an electromagnet increases the strength of the magnetic field created.
- Increasing the strength of the battery, increases the strength of the magnetic field created.



SIMPLE ELECTROMAGNET