SCIENCE **Electromagnetism** **Unit Outline** (1/22) **Front**

I. Magnetic Properties

A. elements attracted

1. iron 2. nickel 3. cobalt

B. poles

1. strongest parts
2. in pairs (north and south)
3. Law of poles

a) like poles repel b) opposites poles attract

II. Electrical Properties: Charges

A. all matter made of positive (+) and negative (-) charges

B. law of charges

1. opposite charges attract 2. same charges repel

III. Fields: A force extending beyond the source of that force.

A. Magnetic Field: A force extending beyond magnets.

B. Electric Field: A force extending beyond both positive and negative charges

IV. Electromagnetism as energy

A. Energy: ability to change something ***or*** move something

1. magnetism, static electricity, and current electricity can all move things

SCIENCE **Electromagnetism** **Unit Outline** (1/22) **Back**

V. Current electricity

A. Materials:

1. conductors: materials through which electricity **can** flow
   a. metals b. liquids with minerals

2. insulators: materials through which electricity **cannot** flow
   a. plastic b. rubber c. glass

B. Producing current electricity (***device*** and ***energy*** that goes in)

1. turbine/generators
   a. mechanical
2. solar panels
   a. light
3. batteries
   a. chemical

VI. Electromagnetism (EM)

A. moving electrons make magnetic field (i.e. electromagnets)

B. moving magnetic field (through or across conductor) can create electric field. (i.e. electric generator)

VII. Electrical safety

A. household safety devices
   1. circuit breakers 2. fuses (older houses)

B. lightning safety
   1. indoor: paths into house [phone lines, plumbing pipes, electrical wiring]
   2. outdoor: **get inside!** (or vehicle); get low, avoid tall objects