

Electricity Unit Outline (1/17)

I. Charges

- A. all matter made of positive and negative charges
- B. charges equal, but opposite: + and - cancel (neutral—no charge)
- C. objects usually have same number + as - (they're neutral)
- D. laws of charges
 - 1. opposite charges attract
 - 2. same charges repel
 - 3. *neutral objects attract to either charge (not truly a law...)
- E. electric fields: force surrounding both positive and negative charges
[Closer to field and more extra charges present = stronger field]

II. Properties of current electricity

- A. current: charges flow steadily (static **not** steady)
- B. circuit: complete path for electricity to flow
- C. types of materials
 - 1. conductors: materials electricity can flow through
 - a. metals
 - b. liquids with minerals (electrolytes)
 - 2. insulators: materials electricity cannot flow through
 - a. plastic
 - b. rubber
 - c. glass

III. EM (electromagnetism)

- A. moving electrons make magnetic field (i.e. electromagnets)
- B. moving magnetic field (through/across conductor) can create electric current (i.e. electric generators)

IV. Electrical safety

- A household safety devices
 - 1. circuit breakers
 - 2. fuses (older homes)
- B. Lightning Safety
 - 1. **indoors**: paths for lightning into house
 - a. telephone lines
 - b. electrical wiring
 - c. plumbing pipes
 - 2. **outside safety**
 - a. get in car/vehicle (charges stay on outside surface)
 - b. as low as possible, crouching on feet, heels touching
 - 3. avoid tall, lone objects and spread away from friends