Physics 100 Name: A 3/4

Unit 2: Electricity

Notes, part 2: Textbook Chapter 18.1, 18.3 Conductors & Insulators, Electric Field, Etc.

Conductors and Insulators

1. conductors allow electrons to easily move through them. List some examples.
   Metals, water (salty)
2. insulator do not allow electrons to move through them. List some examples.
   rubber, glass, wood, plastic
3. Protons cannot (can/cannot) flow through solid conductors.
4. **Ground**: a large, neutral source of charge (like the Earth). The ground can serve two purposes...

   "The ground" can... serve as a place for extra electrons to go (from a negative charged object)

   "The ground" can... be a source of electrons that can flow into a positive object, making it neutral.
5. What happens to an object when the object is "grounded?"
   It's charge becomes neutral.
6. What other objects, other than the Earth, could be used to ground something?
   A big conductor (metal car, pole, etc)

7. What is an electric field?

A place where an electric charge is pushed or pulled.

8. What creates an electric field?

Another electric charge (or many electric charges) nearby

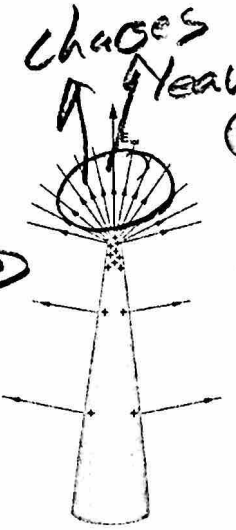
9. **Electric Field Hockey (pHet Simulation)**

   1. Find and run the simulation.
   2. Click the "Field" and "Trace" buttons.
   3. Try to win levels 1 and 2.
   4. What happens when you turn off "puck is positive," so that the puck becomes negative?

10. Interesting (and important) facts:

Fact #1: Charges "leak away" from surfaces of charged conductors that are

pointy.



This explains why lightning rods are added to buildings:

The rods prevent charges from building up, so there is no lightning strike.

This also explains why the surface of a Van de Graaff generator is smooth, not pointy

Fact #2: The electric field inside a conductor is zero. This is why one of the safest places to be during a lightning storm is

in a metal cage (for example, a car)