Procedure:

Name:

Locate the PHET “Conductivity” Simulation (either on a classroom computer or at <http://phet.colorado.edu/simulations/sims.php?sim=Conductivity> )

# Part I--Conductors

1. Check that the battery voltage menu is set to 0
2. Under the materials menu, select metal. What, if anything, happens?
3. Now, set the battery voltage to 0.5. What, if anything, happens? Illustrate with a diagram.
4. The little spheres rotating around the ring represent electrons in a wire. Look at the battery. What terminal (positive or negative) is supplying the electrons? (hint: look for the side of the battery that has a “button”. That would be the positive terminal. The opposite side is the negative terminal).
5. The battery and the wires form an electric circuit, that is, a complete path from the power source, through a wire and back to the same power source.. If an electric circuit is broken in any spot, the flow of electrons will stop.
6. Adjust the battery voltage higher and describe the effect on electron movement in the wire.
7. Adjust the battery voltage lower and describe the effect on electron movement in the wire.
8. With the battery voltage at 0.5, Shine the light. What, if anything, happens?
9. Set the battery voltage to zero
10. Complete the following statement. Metals are conductors because they will allow a current of electrons to:

# Part II-Non-Conductors

1. Check that the battery voltage menu is set to 0
2. Under the materials menu, select plastic. What, if anything, happens?
3. Now, set the battery voltage to 0.5. What, if anything, happens? Illustrate with a diagram.
4. Adjust the battery voltage higher and describe the effect on electron movement in the wire.
5. Adjust the battery voltage lower and describe the effect on electron movement in the wire.
6. With the battery voltage at 0.5, Shine the light. What, if anything, happens?
7. Set the battery voltage to zero
8. Complete the following statement. Plastics are non-conductors because

# Part II-Photoconductor

1. Check that the battery voltage menu is set to 0
2. Under the materials menu, select Photoconductor. What, if anything, happens?
3. Now, set the battery voltage to 0.5. What, if anything, happens? Illustrate with a diagram.
4. Adjust the battery voltage higher and describe the effect on electron movement in the wire.
5. Adjust the battery voltage lower and describe the effect on electron movement in the wire.
6. With the battery voltage at 0.5, Shine the light. What, if anything, happens? Illustrate with a diagram.
7. Adjust the battery voltage higher and describe the effect on electron movement in the wire.
8. Adjust the battery voltage lower and describe the effect on electron movement in the wire
9. Set the battery voltage to zero
10. Complete the following statement. Photoconductors are semi-conductors because