Name: _____ Date: _____

PHYSICS: ELECTRICITY & MAGNETISM
Activity: PHET Circuits: Conductors & Insulators

Activity 1: Conductor or Insulator?

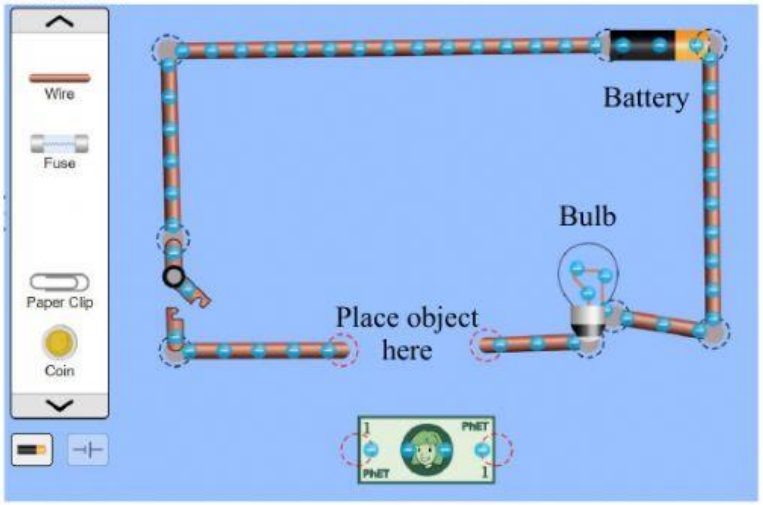
Go to the PHET Circuits website:
https://phet.colorado.edu/en/simulation/circuit-construction-kit-dc

- Conductors will allow electricity to flow fast through them.
- Insulators will not allow electricity to flow through them.
- Semiconductors will allow electricity to flow, but very slowly. Semiconductors tend to have a very high internal resistance.

Instructions

1. Make a simple using a battery (voltage source), a light bulb (an appliance/resistor), wires to make the circuit, and each object in the chart below.

2. Insert the object into the circuit. If the light bulb is illuminated brightly, the material is a conductor. If the light bulb is not illuminated, the material is an insulator. If the light bulb is illuminated dimly, the material is a semiconductor (a resistor).

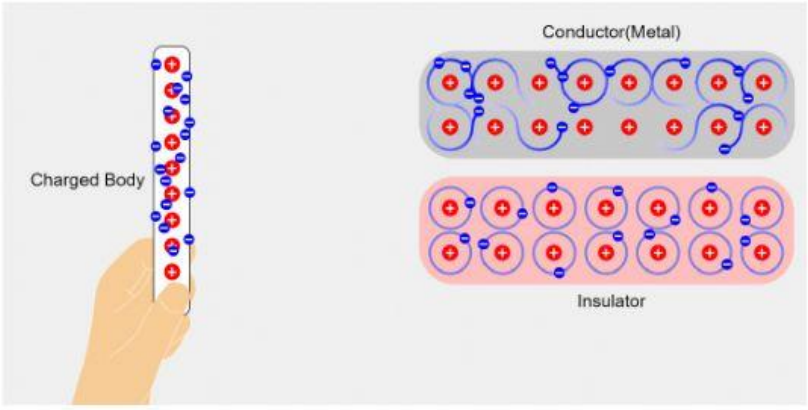


Object	Conductor, Semiconductor, or insulator?	Object	Conductor, Semiconductor, or insulator?
Resistor		Eraser	
Dollar Bill		Pencil	
Paper Clip		Hand	
Coin		Dog	

LIVEWORKSHEETS

Activity 2: Visualizing Conductors and Insulators

Go to the JavaLab website:
https://javalab.org/en/conductor_and_insulator_en/



1. Set the metal body to be "charged with negative (-)". The metal body on the left will be loaded with more negative charges (-).
2. Move the charged body to the right closer to the Conductor (upper) and Insulator (bottom). Observe the motion of the valence electrons and movement of the electrons in the Conductor and the Insulator.
3. Move the charged body to the left away from the Conductor and the Insulator. Observe the motion of the valence electrons and movement of the electrons.

A. Explain how the valence electrons around atoms in a conductor move?	
B. Explain how the valence electrons around atoms in an insulator move?	
C. When a negatively-charged body is brought near the conductor, what happened to the valence electrons around the atoms?	
D. When a negatively-charged body is brought near the insulator, what happened to the valence electrons around the atoms?	

LIVEWORKSHEETS