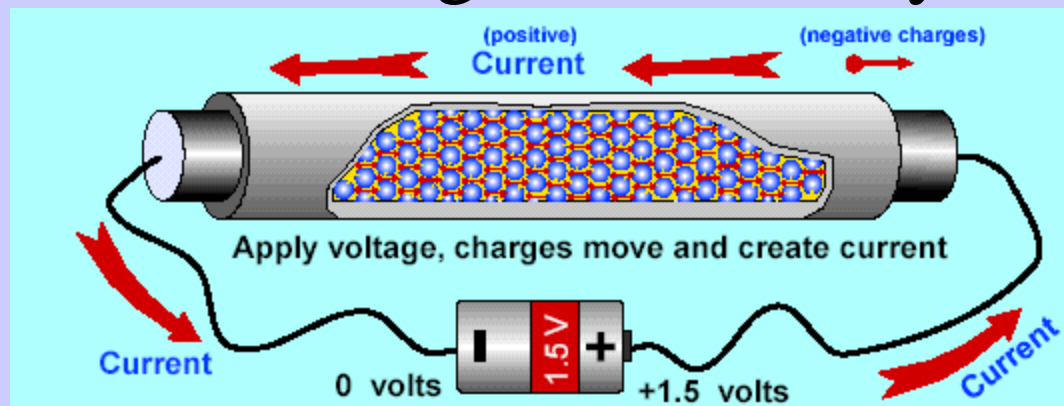


Chp 7.3

Resistance

Current Flow

- When you look at a wire, you can't see current. The particles that carry charge are electrons
- Batteries do not provide most of the charges that flow. The charges are already in the wire.



Conductivity

- An electrical conductor is a material, like most metals, that allow current to travel
- An electrical insulator is a material, like plastic or glass, that do not allow charges to flow
- A semiconductor are between conductors and insulators. Most computer chips are semiconductors

Resistance

Moving electron



Atom in an insulator

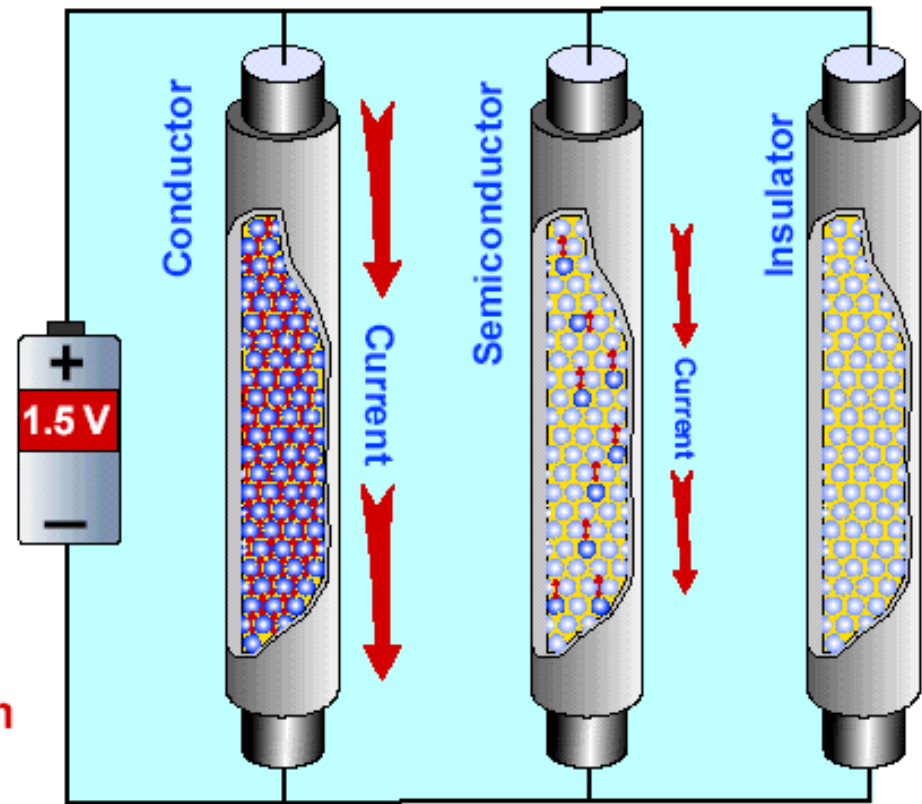


Bound electron




Atom in a conductor

Moving electron



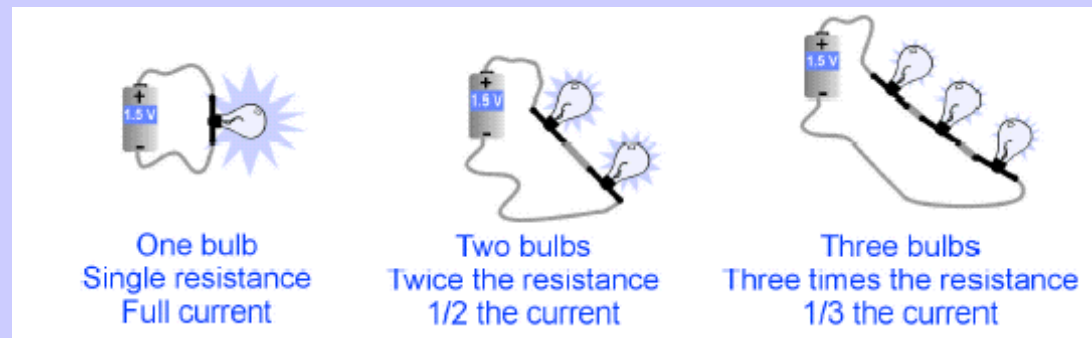
Conductivity

- Electrical conductivity is the property of material to allow charge to flow.
- Materials with high conductivity, like metals, allow charge to flow.
- Materials with low conductivity, like plastic, block charge from flowing.

Electrical conductivity	Category	Material
<p style="text-align: center;">High</p>  <p style="text-align: center;">Low</p>	conductors	silver copper gold aluminum tungsten iron
	semiconductors	carbon silicon germanium
	insulators	air rubber paper Teflon plastics (varies by type) glass mica

Resistance

- The resistance of an object measures how easily charges flow through
- High resistance means it is difficult for current to flow (high resistance = low current)
- Devices that use electrical energy have resistance.



Resistance

- The unit for resistance is called ohm (Ω)
- There are three factors that affect the resistance of a copper wire: length, diameter, temperature.
 - The thicker the wire (bigger the diameter) the easier current can flow
 - The longer the wire the harder for current to flow
 - The higher the temperature the harder for current to flow