Circuits & Ohm's Law: Dynamic Electricity & Electrical Engineering

https://www.youtube.com/watch?v=aIhk9eKOLzQ

1. What were some of the mistakes being made by the students in the video?

-Incomplete or open circuit (breaks or gaps)
-Not connecting the battery properly
-Completing the circuit with their hands and shocking themselves

2. a) How could we make the light bulb shine brighter?

-Use a much shorter wire
-Cool down the wire
-Use a higher Voltage battery
-Use a thicker wire
-Use a a different material (More Conductive)

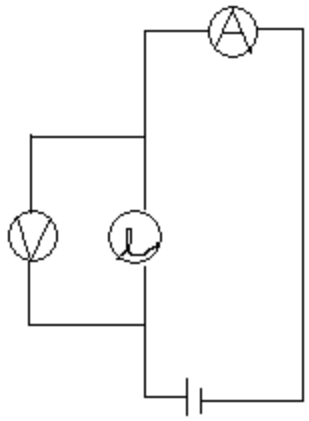
b) How could we make the light bulb shine less brightly?

-Use a much longer wire
-Heat the wire up
-Add a Resistor to the Circuit
-Use a lower Voltage battery
-Use a thinner wire
-Use a wire made of a different material (less Conductive)

3. If the battery has a voltage of 1.5V and the total resistance of the circuit is 5Ω, what do we expect the current intensity to be?

V= I x R	Formula: Voltage = Current x Resistance	
I= V/R	Rearrange to solve for current	
I= 1.5V / 5 Ω	Input values	
I= 0.3 A	Solve for I,	The current intensity would be 0.3 amperes

4. The simple circuit from the video involved a battery and a light bulb connected in series. Draw this circuit with a voltmeter positioned to read the voltage across the light bulb and an ammeter positioned to read the current.



5. a) In the video, chemical energy from the battery was transformed into electrical energy and then into light by the light bulb.
   What type of energy transformations are happening in each of the following situations?

Device	Transformation
Bluetooth Headset	Electrical → Mechanical or Sound
Space Heater	Electrical → Thermal or Heat
Solar Panels	Radiant or Light → Electrical

   b) Give an example of a device where the following energy transformations occur.

Transformation	Device
Mechanical → Electrical	Wind Turbine, Hydro Dam
Chemical → Electrical	Battery, Coal Power Plant
Electrical → Thermal	Oven, Toaster, Baseboard Heater

6. Not all circuits are connected in series; parallel circuits are an alternate way to connect devices in an electrical circuit. What are the advantages and disadvantages of a parallel circuit compared to a series circuit?

Advantages	Disadvantages
-More current to each branch -If one branch is damaged the others can still work -Controls can act on each branch separately	-More complicated to construct -Greater chance of crossed wires or short circuits