Each group should have the following:

- A 9V battery
- Alligator clips
- Wiring
- Multimeter, in case you want to check your math
- Resistors of varying ratings
- Four LEDs – remember to connect the flat side of the LED to the negative battery terminal (the anode)!

**The Object:**

Part 1 (as a class): Using only one resistor, supply enough resistance to the circuit so that you don’t burn out the LED when attached to the 9V battery, but also so that you allow enough current to light the LED. Try either 100Ω or 680Ω, then try 100kΩ and see what happens!

Part 2 (on your own!): Now try lighting multiple LEDs with your battery and resistor. In order to get all 4 LEDs lit, you may need to use a different resistor.

**Helpful Hints:**

Do not hook the battery directly up to your LED – you will burn the light out!

To determine the resistance needed to still light the LED while not burning it out, try generating the circuit on paper first. Start with a simple circuit, and then add on additional LEDs. Check your math (to ensure you have enough voltage to light the LED) using Ohm’s law, noting that the battery supplies 9V, and a typical LED uses 2V and requires about 10mA of current.

Remember that \( V = IR \)

The symbol for an LED in circuitry is:

**The Winner:** The group with the highest number of lit LEDs wins. You must use at least one resistor in your circuit to be considered. In the event of a tie, the group with the highest resistor value wins!