

Ohm's LawOhm's Law PHET Lab

This lab uses the **Ohm's Law** simulation from PhET Interactive Simulations at the University of Colorado Boulder, under the CC-BY 4.0 license.

https://phet.colorado.edu/sims/html/ohms-law/latest/ohms-law_en.html

Learning Goals

1. As you change the value of the battery voltage, how does this change the current through the circuit and the resistance of the resistor? If the current or resistance remains constant, why do you think that is? The current increases as the voltage and the current are consistent. The resistance of the resistor remains constant unless changed and when it is changed then the current decreases.
2. As you change the value of the resistance of the resistor, how does this change the current through the circuit and the battery voltage? If the current or voltage remains constant, why do you think? The resistance changes as the current changes. If it changes then it decreases.
3. Use understanding to make predictions about a circuit with lights and batteries. I predict that the more voltage that there is, the higher the current becomes as well as the current keeps the resistance depending on the light bulbs and batteries in the circuit.

Develop your understanding:

1. Open [Ohm's Law](#), then explore to develop your own ideas about how resistance, current, and battery voltage are related..

Describe your observations about current voltage and resistance with captured images from the simulation.

a. Increasing voltage causes the circuit's current to flow more while there is constant resistance.

b. Decreasing voltage reduces the circuit's current at constant resistance.

C. Current is reduced by increasing resistance at constant voltage.

d. As resistance decreases, current rises at constant voltage..

Demonstrate your understanding:

2. If you increase/decrease the value of the battery voltage:

How does the current through the circuit change? (answer, explain, evidence)

The current increases as the value of the battery voltage increases. An increase from a voltage of 5.5 V to 9.0 V increases the current from 9.0 mA to 18 mA.

a. How does the resistance of the resistor change? (answer, explain, evidence)

The resistance of the resistor remains the same no matter how the battery voltage changes.

3. If you increase/decrease the resistance of the resistor: if you increase the resistance the current becomes slower, if you decrease the resistance it will become faster

a. How does the current through the circuit change? (answer, explain, evidence)

The current will increase as the resistance decreases and decreases as the resistance increases.

b. How does the voltage of the battery change? (answer, explain, evidence)

The voltage of the battery is not affected by the fluctuation of the resistance. As the resistance increases and decreases, the voltage remains the same.