

Guiding Question: What is the relationship between voltage, resistance, and current

Learning Goal: Graph data and write a CEE for Ohm's Law lab

Agenda

- 1) DSR-Voltage, resistance, current**
- 2) Graph Data/Finish Collecting data if needed**
- 3) CEE**
- 4) Circuits Interactive PART I**
- 5) Exit Ticket**

Words of the day

Direct Relationship

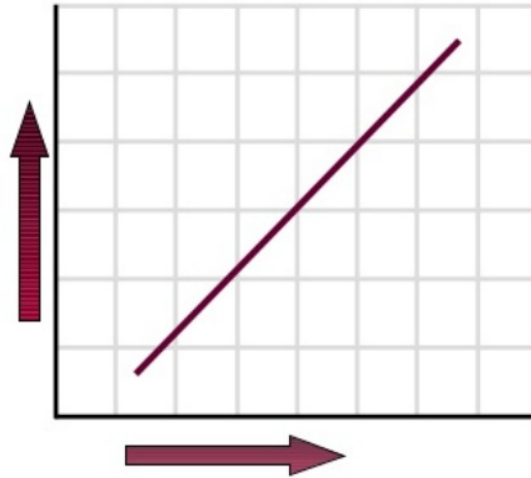
Inverse Relationship

Direct Relationship

A relationship between variables when one variable increases the other increases.

Direct and Inverse Relationships

- **Direct relationship**
- Both variables move in the same direction



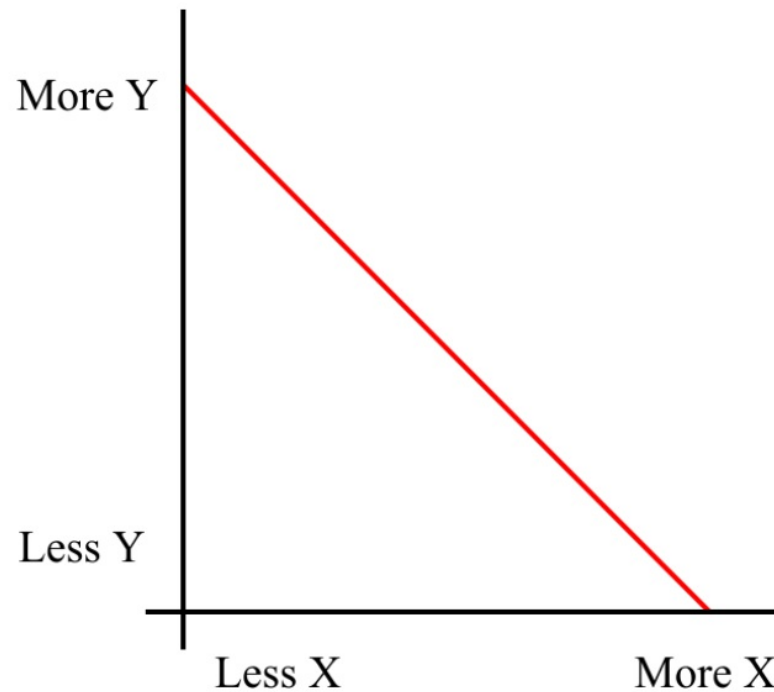
LO8

1A-3

WOD

Inverse Relationship

A relationship between variables when one variable increase the other decreases.






DSR Today



6. Data

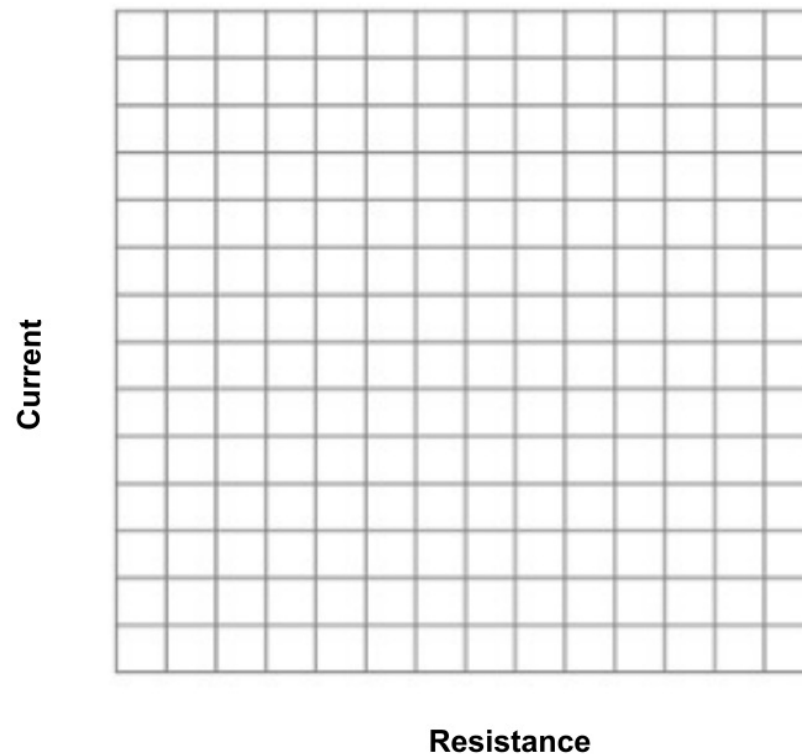
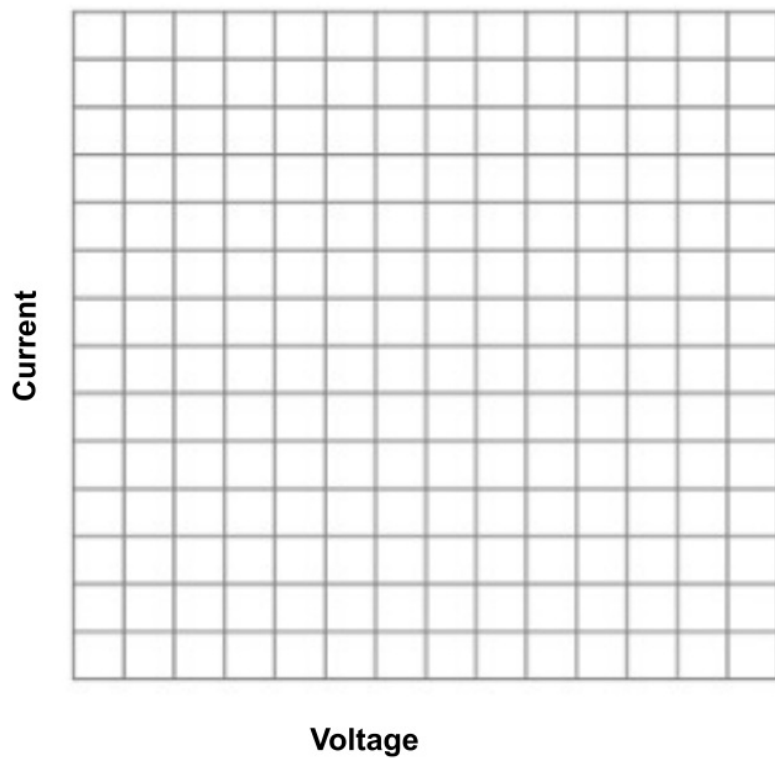
y **x for graph 1**

| | Circuit Diagram | What did you change? | Current  | Voltage Battery  | Resistance  |
|------------|-----------------|----------------------|---|---|---|
| Voltage | | | | | Do Not Graph |
| | | | | | |
| | | | | | |
| Resistance | | | | Do Not Graph | |
| | | | | | |
| | | | | | |

x for graph 2

7. Graph

Make 2 graphs



Draw a best fit line

8. Conclusion

Claim: Answer BOTH experiment questions

Evidence: Use NUMBERS from your data to support your claim

Explanation: Using what you know about resistors, current, and voltage explain why you got the relationships (Inverse or direct) for each of the experiment questions.

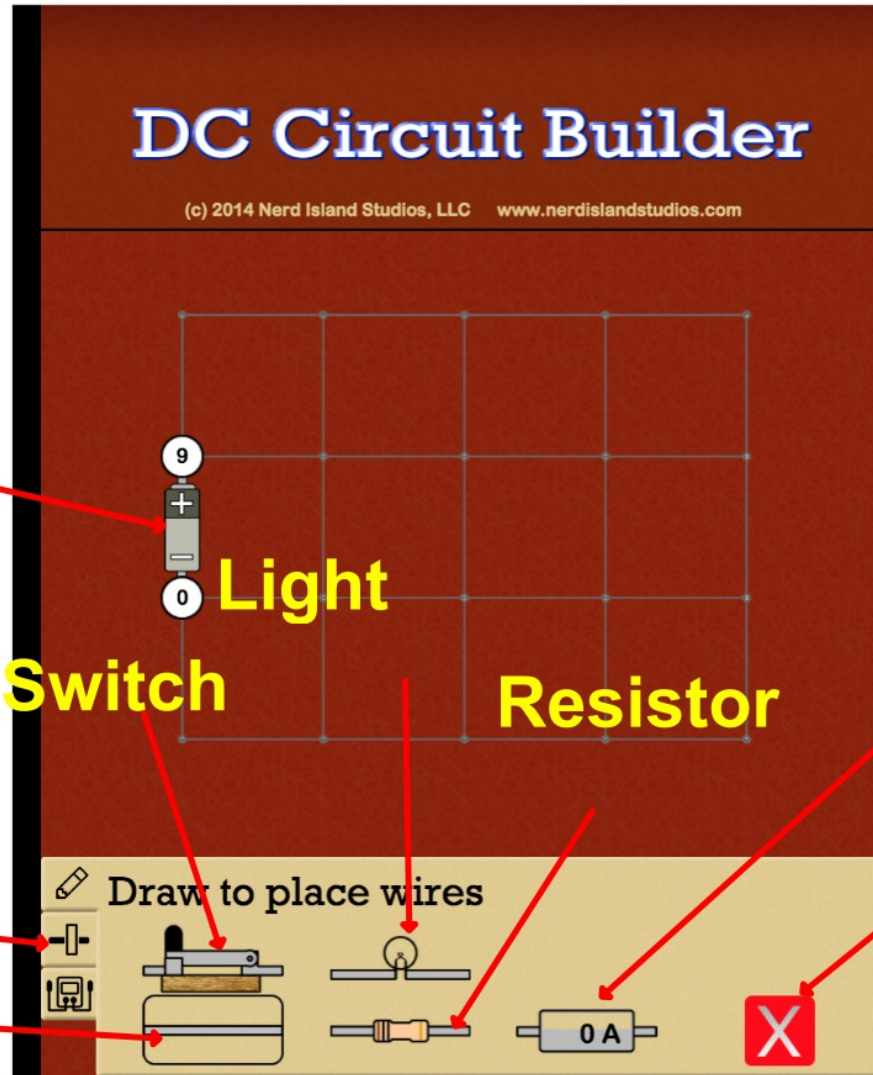
Errors: What mistakes are there because of the tools we used. NOT HUMAN mistakes.

Further Investigations: What do you want to do next with regards to electricity?

Exit Ticket Ohm's Law Lab

1. What happens to the value of the current when voltage is increased?
2. Is the relationship between current and voltage a direct or inverse relationship?
3. What happens to the value of current when resistance is increased?
4. Is the relationship between current and resistance a direct or inverse relationship?

Open Circuit Builder Interactive from Conceptual Physics Website



Your battery

Light
Switch

Resistor

Get a current Value

Change the voltage
Wire


Erase a part

Use the DC Circuit Builder to complete

Circuits iPad Interactive PART 1

Go to <http://simbucket.com/circuitbuilder/>

1. Make a Series Circuit with at least 2 light bulbs using the tools. Tap on the part you want to add then tap on a line to place it on the circuit board. The battery is already placed for you. DRAW YOUR CIRCUIT HERE using the symbols for circuit diagrams.

2. Tap on the battery tab  to change the voltage of the battery. Complete the table below for 1 of your light bulbs.

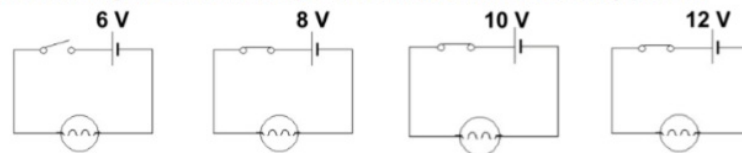
a.

| Voltage of Battery | Estimated Area of bulb #1 | Estimated area of bulb #2 |
|--------------------|---------------------------|---------------------------|
| 9 V | | |
| | | |
| | | |

b. Make a claim about the relationship between voltage of the battery and the brightness of a light bulb.

c. In a series circuit the brightness of light bulbs is the same/different (Circle one).


3. Use the diagrams below and what you learned in #2 to answer the following questions.



- Which bulb is the brightest?
- Which bulb is the dimmest?
- Which bulb is not on?

4. The numbers on the diagram show the VOLTAGE at each point in the circuit, what happens to the voltage after the current goes through the first light bulb?

5. Replace the wires before and after the current goes through the lightbulbs with an ammeter

. How is the value of the current affected by the lightbulbs?

6. **CONCLUSION** In a series circuit the current DOES/DOES NOT change but the VOLTAGE DOES/DOES NOT change when going through a light bulb or resistor.