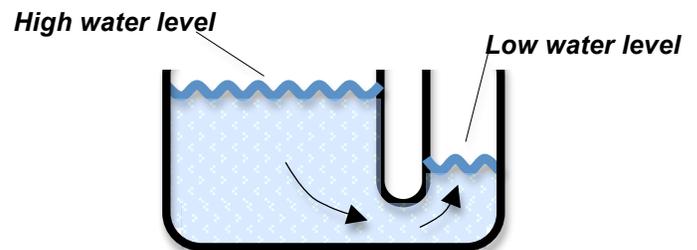


Part 1: What is Potential Difference?

Use your knowledge of charge and what you learned with the Electrophorus to answer the following questions with your lab group:

1. How do like and unlike charges behave around each other. Use the terms **attraction** and **repulsion** in your answers.
2. Why did the Electrophorus light the neon bulb or what caused the charge to flow from the Electrophorus to the bulb?
3. Why did the bulb only stay lit for a few moments? Would charging the Electrophorus more allow the bulb to stay lit longer?
4. Water flows from higher elevations to low elevations. How is this similar to charge flowing from the Electrophorus to the neon bulb?



5. If you could pump water from the side of the tank with the lower water level back to the side with the higher level, there would be a constant difference in elevation and water would continuously flow. How is this similar to a battery that provides a constant difference in charge and can power a bulb for a very long time?
6. The term **Potential Difference** (also called voltage) is used to describe the difference in charge that causes electricity to flow (also called current). Using the terms potential difference and current to describe how a charged Electrophorus caused a neon bulb to light up for a short period of time.

Part 2: Making a Simple Circuit

We knew that electric **current** is just the flow of charge (electrons) and we know that **potential difference** (difference in charges) causes the charge to flow. Your lab group will apply this knowledge in circuit formation.

Question 1: How can we form a circuit to keep a bulb continuously light?

Materials: Bulb, 2 wires, D-cell battery, and battery holder

Plan: Please draw a sketch of your plan. *Use the following symbols to represent the different parts of your circuit:*

Battery - 

Bulb - 

Wire - 

Did it work? If not... please return to the planning stage and try again. If it did, please move on!

Question 2: What objects around the room will allow enough current to flow from the battery to the bulb to light the bulb? *(In other words, what objects are conductors can be used in place of one of the wires?) Hint: **What objects allow for electrons (current) to flow easily!***

Data Chart: (Please try at least 6 different objects)

Conclusion:

Question 3: How many ways can you connect two bulbs to the battery and will there any difference in the light output in the different configurations?

You will need to record brightness on a rating of 1-5, with 5 being the brightest.

Hypothesis and Rationale:

Materials: 2 bulbs, D-cell battery, battery holder and 4 connecting wires

Plan: Please draw sketches of your plans. Use the symbols from question 1.

Data Chart:

Conclusion:

Extra Credit: How many ways can you connect three bulbs and two batteries and will there any difference in the light output in the different configurations?

You will need to record brightness on a rating of 1-5, with 5 being the brightest.

Materials: 3 bulbs, 2 D-cell batteries, 2 battery holders, and 10 connecting wires

Plan: Please draw sketches of your plans. Use the symbols from question 1.

Data Chart:

Conclusion: