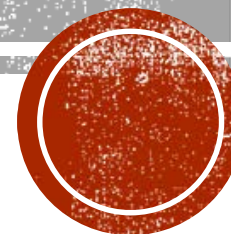


DISCOVERY STATIONS



Gelsthorpe, BSWP 2017

STATION 1: STATIC

Objective: Discover the ways that charges interact with each other through static electricity.

Materials: hole punches, plastic ruler, piece of wool, balloons, and a plasma ball.

Procedure 1:

1. Place a handful of hole punches on the table.
2. Take the plastic ruler and rub it with a piece of wool.
3. Bring the ruler close to the pieces of paper.
4. Observe the effect the ruler has on the scraps of paper.

Write your observations and answer your analysis questions.

Procedure 2:

1. Blow up 2 balloons.
2. Rub each balloon in your hair for about 30-45 seconds.
3. Place the balloons on the wall



STATION 2: CIRCUITS - SERIES

Objective: Discover how to build a series circuit; investigate how a circuits components interacts together.

Materials: 2 aluminum foil strips, 2 lead wires, 1.5 V D-cell, 2 light bulbs, tape, ruler, scissors

Procedure:

1. Place a piece of paper on the lab table. Cut 2 strips of aluminum foil that are each 1 cm x 10 cm.
2. Tape the end of one lead wire to the positive terminal of the D-cell. Tape the end of the second lead wire to the negative terminal of the D-cell. Use tape to attach the aluminum foil strips to the paper.
3. Poke the free end of one lead wire through the top aluminum strip and tape it in place. Poke the free end of the second lead wire through the bottom aluminum strip and tape it in place.

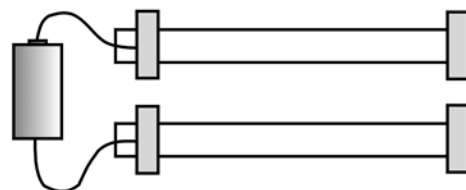


Figure 1

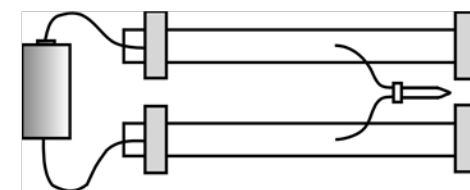


Figure 2



CIRCUITS - SERIES

1. Press the exposed end of one lead wire from the light bulb onto the top aluminum strip. Press the other lead wire from the light bulb onto the bottom aluminum strip.
2. *Record your observations of the light on your investigation sheet. Note its brightness.*
3. Cut a 1-cm gap toward the right end of the bottom strip and tape down the ends. *Record your observations of the light.*
4. Insert the second light across the gap in the bottom strip. Press one lead wire onto end segment of the strip.
5. *Record your observations of both lights. Note if the brightness of Light 1 has changed. Compare the current brightness of both lights.*
6. *Record your prediction of what will happen to Light 2 if Light 1 is removed. Remove Light 1 and record your observations.*

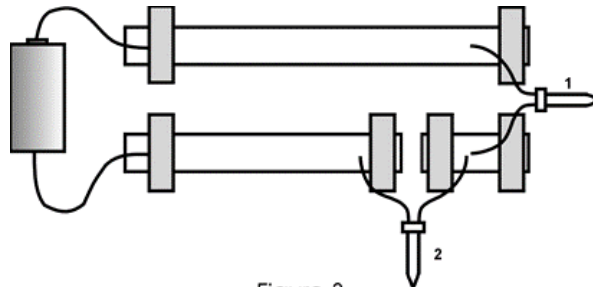


Figure 3



STATION 3: CIRCUITS - PARALLEL

Objective: Discover how to build a parallel circuit; investigate how a circuit's components interact together.

Materials: 2 aluminum foil strips, 2 lead wires, 1.5 V D-cell, 2 light bulbs, tape, ruler, scissors

Procedure:

1. Place a piece of paper on the lab table. Cut 2 strips of aluminum foil that are each 1 cm x 10 cm.
2. Tape the end of one lead wire to the positive terminal of the D-cell. Tape the end of the second lead wire to the negative terminal of the D-cell. Use tape to attach the aluminum foil strips to the paper.
3. Poke the free end of one lead wire through the top aluminum strip and tape it in place. Poke the free end of the second lead wire through the bottom aluminum strip and tape it in place.

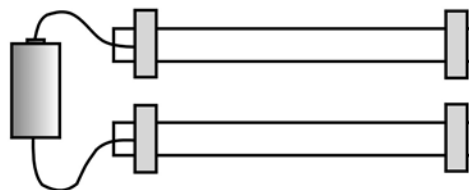


Figure 1

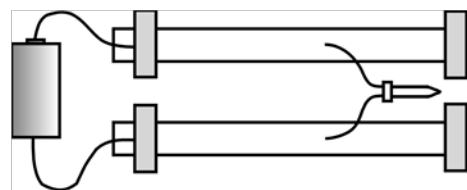


Figure 2

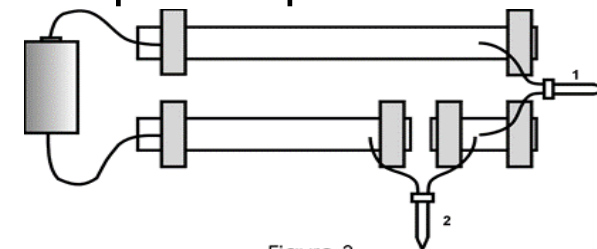


Figure 3

CIRCUITS-PARALLEL

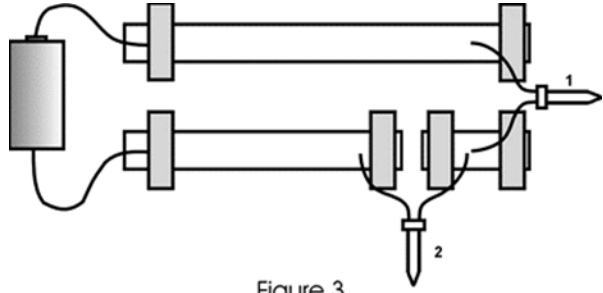


Figure 3

Make your circuit look like Figure 3 before moving on to the next step.

1. Move Light 1 so that it connects the top strip to the left segment of the bottom strip. Attach Light 2 in the same manner as shown in Figure 4.
2. *Record your observations of both lights. Note their brightness.*
3. *Record your prediction of what will happen if Light 1 is removed. Remove Light 1 and record your observations.*
4. *Replace Light 1 and record your observations of both lights. Note any change in brightness.*
5. *Record your prediction of what will happen if Light 2 is removed. Remove Light 2 and record your observations.*

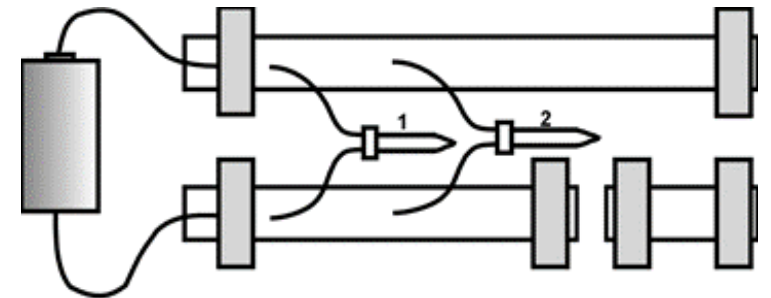


Figure 4

Answer analysis questions and complete your observations.

STATION 4: OHM'S LAW

Objective: Discover how to calculate the different components of a circuit.

Materials: wire with alligator clips, bulbs with bulb holders, 9 volt battery, and a calculator

Procedures:

Battery is 9 volts; Bulbs are 1.5 ohm's of resistance each

1. Create a series circuit with 1 bulb, 2 bulbs, and 3 bulbs.
2. Fill out the chart in your investigation sheet, calculating the total current of each type of circuit you create.
3. Draw and label a diagram of each circuit on your investigation sheet.

Answer analysis questions and fill out chart.












STATION 5: INSULATORS & CONDUCTORS

Objective: Students will classify objects as conductors, insulators, or semiconductors.

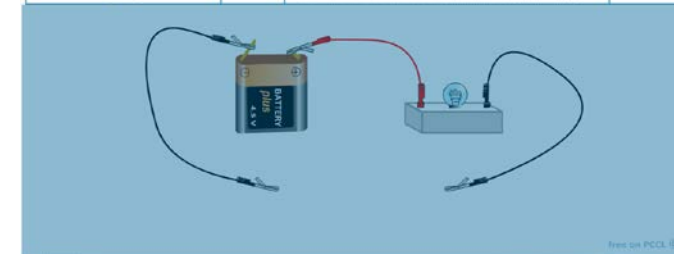
Materials: battery with holder, 3 insulated wires, 1 light bulb with holder, objects to test (wrench, water, saltwater, copper wire, glass, pencil (wood), lead (graphite), aluminum ruler, and plastic ruler)

Procedures:

1. Set up your circuit so you can test each object. See diagram below.
2. Fill out your data table, so you can document your results after each test.
3. Test each object to see if the object will light up the bulb (complete the circuit with each object).

	alloy		copper
	water		glass
			wood
			graphite
	Salt water (brine)		aluminum
			plastic

Fill out the chart and answer the analysis questions.



STATION 6: MAGNETISM

Objective: Discover how magnets interact with each other and other objects.

Materials: bar magnets, iron filings, neodymium disc magnets, and various metal objects.

Procedures:

1. This is a playing station. Play with the objects provided to you. Use your imagination and test the limits of the magnets provided to you.

Things to remember:

- ✓ Magnets do harm electronics so keep your cell phones away from the magnets.
- ✓ Please clean up after yourself.

Write your observations and answer your analysis questions.



STATION 7: ELECTROMAGNETS

Objectives: To show the relationship between an electric current and the magnetic field associated with it. To make and use an electromagnet. To apply the principles learned in the unit and create a simple rotating motor to use later in your culminating project.

Materials: Supplies for each group: 4 ceramic magnets, 1 – #30 Magnet wire 200ft, 1 bulb – 1.5 V, 1 cardboard strip - 8 cm x 30.4 cm, 1 large nail – 8 cm in length, sand paper, and tape.

Procedures:

Follow the procedures on your investigation sheet. You will be using this generator later, so make sure you keep it with you.



STATION 8: WRITING SUMMARIES

- Only if needed.

