

Monday

- Bring Speed bags to school
- Energy Transfer and Transformation #s 1-5
- Electrical Energy Transformation #s 1-5

Tuesday

- Conductors and Insulators: Exploration (HW)
- Heat Flow #s 1-5

Wednesday

- Balloon & Sweater Static Electricity Lab
Open Lab and explore the controls, we will complete lab in class

Thursday

- No HW

**NO HOMEWORK !!
ENJOY YOUR WEEKEND :)**

Reminders

- Work on STEM Catapult Presentations and Packet
- Finish any Missing IXLs
- Speed Bag Benchmark Assessments will be reviewed in class.

Topic 5 Practice Quizlet
Topic 5 Vocab Quizlet

Energy Transfer and Transformation

LEARNING GOAL: The student will understand that electrical energy can be transformed into heat, light, and sound energy, as well as the energy of motion. The student will understand that the flow of electricity requires a closed circuit.

MULTIPLE CHOICE:

1. What kind of energy does a battery have that is transferred into electrical energy?
 - A. electrical
 - B. mechanical
 - C. sound
 - D. chemical
2. Which of the following could be placed between the connectors and allow electricity to pass through? In other words, which would conduct electricity?
 - A. rubber band
 - B. copper coin
 - C. cotton ball
 - D. plastic button
3. Melanie made an electric circuit. She used a battery, wires, and a bulb. When she completed the circuit the bulb lit up.
What form of energy was flowing through the light bulb?
 - A. potential energy
 - B. solar energy
 - C. electrical energy
 - D. wind energy
4. Max wanted to know if a light bulb heats up when it is lit. He decided to do an experiment. He got a thermometer and a lamp. He recorded the air temperature near the unlit bulb. Then he turned on the lamp. He carefully held the thermometer near the bulb.
Which of the following will **most likely** happen to the air temperature near the lit bulb?
 - A. The heat from the lit bulb will lower the air temperature.
 - B. The heat from the lit bulb will raise the air temperature.
 - C. The temperature will stay the same.
 - D. The thermometer will get too hot and break.
5. While you are studying, the light bulb in your desk lamp burns out. Why do you have to wait a few minutes before you change the light bulb?
 - A. You need a study break.
 - B. There is still electricity in the bulb.
 - C. The light bulb has expanded.
 - D. The light bulb is very hot.

Electrical Energy Transformations

LEARNING GOAL: The student will investigate and explain that electrical energy can be transformed into heat, light, and sound energy, as well as the energy of motion.

MULTIPLE CHOICE:

1. Mei is studying the appliances in her home. All of the appliances convert electrical energy into other forms of energy. Which of the following shows an appliance that transforms electrical energy into energy of motion?
 - A. A Blender
 - B. A Toaster
 - C. A clothing iron
 - D. An electric keyboard
2. Which energy transformation occurs when a fan is plugged into a wall?
 - A. heat energy into motion energy
 - B. electrical energy into sound energy
 - C. energy of motion into sound energy
 - D. electrical energy into energy of motion
3. Darrell made toast for breakfast by putting a slice of bread into the toaster and turning it on. Which energy transformation did he use to make a piece of toast?
 - A. heat energy into electrical energy
 - B. electrical energy into heat energy
 - C. light energy into electrical energy
 - D. electrical energy into light energy
4. A light bulb converts electrical energy into which of the following?
 - A. light only
 - B. heat only
 - C. heat and light
 - D. light and motion
5. Many appliances in your home and school use electrical energy. Which of these appliances is intended to convert electrical energy into sound energy?
 - A. printer
 - B. refrigerator
 - C. electric heater
 - D. music amplifier

Heat Flow

LEARNING GOAL: The student will recognize that heat flows from a hot object to a cold object and that heat flow may cause materials to change temperature.

MULTIPLE CHOICE:

1. One form of energy is heat. Heat always flows between objects. What happens to the object into which the heat flows?
 - A. Its temperature falls.
 - B. Its temperature rises.
 - C. It changes from a liquid into a solid.
 - D. It changes from a gas into a liquid.
2. Andrew observed the change of temperature of an object. Its temperature went from 40°C to 20°C (104°F to 68°F). What is Andrew's **most likely** conclusion about the object?
 - A. It is melting.
 - B. It is getting larger.
 - C. It is changing its color.
 - D. It is losing energy as heat.
3. Lisa stirs some hot, apple cider with a metal spoon.

Which sentence explains what happens to the spoon?

- A. Heat from the hot liquid will warm the spoon until the spoon is hotter than the liquid.
 - B. Heat from the hot liquid will warm the spoon until they are both the same temperature.
 - C. Heat from the hot liquid will warm the spoon, but the liquid will remain hotter than the spoon.
 - D. Heat from the hot liquid will not have any effect on a metal spoon, so the spoon will remain cool.
4. On a sunny day, Yolanda fills a small backyard pool with water. As time passes, the water warms. Which statement explains this effect?
 - A. The sun heats the water through gravity.
 - B. The sun heats the water through radiation.
 - C. The sun heats the water through convection.
 - D. The sun heats the water through conduction.
 5. Devon writes a summary of a lesson about heat. Which statement should Devon include in her summary?
 - A. Heat always moves from cold objects to warm objects.
 - B. Heat is transferred only by the radiant energy of the sun.
 - C. Heat is a measure of the hotness or coldness of an object.
 - D. Heat is the transfer of energy between objects of different temperatures.

Title: Conductors and Insulators

Objectives:

- Students will investigate which household items can be used to complete a circuit.
- Student will be able to identify and define conductors and insulators.

Instructions:

Complete this document by completing data tables and answering questions.

Step 1: Click this link: [Circuit Construction Kit: DC \(HTML5\)](#)

Exploration Phase: (HOMEWORK)

1. Make a circuit using only one wire, one battery, and one lightbulb. As shown in this image:



Did the lightbulb light up?

Yes

No

2. Now add a second wire connecting the other end of the battery to the lightbulb.

Did the lightbulb light up? Yes No

3. Why do you think the lightbulb lit up when the circuit was completed?

Explanation Phase: (CLASSWORK)

Aim: Students will investigate which household items can be used to complete a circuit.

Did you know D batteries only put out 1.5 volts. Set the battery voltage to 1.5v.

Use the following items to create a closed circuit then fill in the chart below.

Item	Light bulb turned on	Light bulb did not turn on
Paper clip		
pencil		
dog		
hand		
dollar		
coin		
eraser		

Questions:

1. Which items can be used to complete a circuit to light up the bulb?

2. What do all the items that lit up the bulb have in common?

3. Do you think you can light up the bulb with any items in your home? Why? (pick 2)

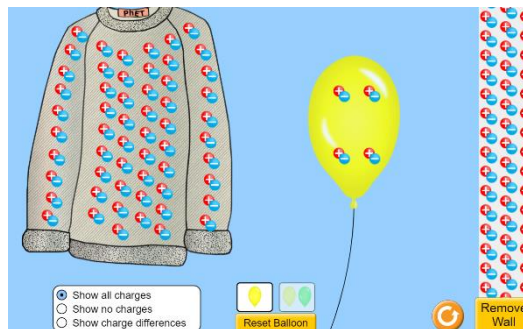
Copy & Paste Link (link can be found on HW title page as well)

Balloons and Static Electricity PhET

https://phet.colorado.edu/sims/html/balloons-and-static-electricity/latest/balloons-and-static-electricity_all.html

The PhET balloon lab is a very simple lab that allows you to view how charges are attained and interactions between charges.

Since this is a model, it over simplifies what actually occurs to study charge transfer and interaction.



- The positive charges come from the protons held in the nucleus of atoms.
- The negative charges relate to the electrons outside of the nucleus, some of which can be separated from the nucleus of an atom.

Some electrons will be free to move and transfer between objects when surfaces are rubbed together (Charging By Friction). During charging by friction the material with the greatest affinity, or attraction to its electrons, will gain additional electrons and take on a negative charge. When this occurs, the material that lost the electrons takes on an equal but positive charge. Charge was not created nor destroyed, just transferred from one object to another.


Another interaction you will see in this model is induction. During induction a charged object will either attract or repel electrons away from it inducing the opposite charge on the surface of a second object.

During this simulation the rubber balloon/s and wool sweater can be charged by friction. The balloon can then interact with the sweater or the wall.

Charging by Friction

Follow the Questions below and fill in the blank.

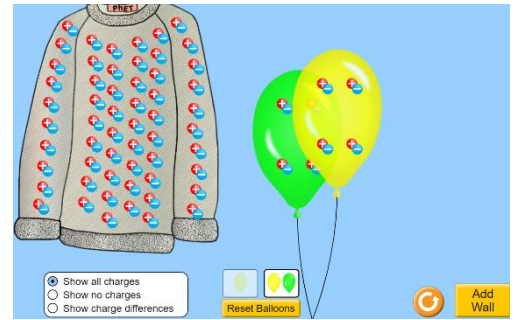
1. Rub the balloon against the sweater. When you do this the balloon and sweater get charged by _____
2. The sweater becomes _____ charged
3. The balloon becomes _____ charged
4. Does the sweater or balloon have a greater affinity for electrons? affinity = attraction (in chemistry)
5. Take the charged balloon away from the sweater and release it. What happens and why?

Reset the animation 

Now add a second balloon and get rid of the wall as seen here.


Rub each balloon on the sweater making each gain some of the electrons and both have a negative overall charge.

Take one negative balloon away from the sweater, and bring the other negative balloon close to it.



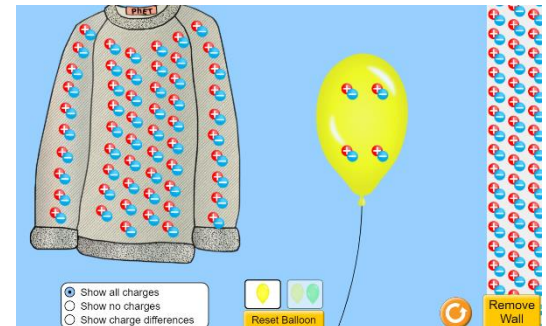
6. What kind of interaction do the balloons have to each other and why?

Lastly lets study induction

Reset the animation  so you have only one balloon, sweater, and wall.

Charge up the one balloon on the sweater gaining all electrons and a negative charge.

7. What happens to the electrons in the wall when you bring the negative balloon close to the wall but not touching it yet?



8. Keep the balloon close to the wall and release it. What happens and why?