Science Virtual Learning

# 4th Grade
# Electric Circuits

April 9, 2020

4th Grade Science
Lesson 14: April 9, 2020

**Learning Target:**
Students will tell the difference between insulators and conductors.

Students will understand electric energy as it relates to circuits.

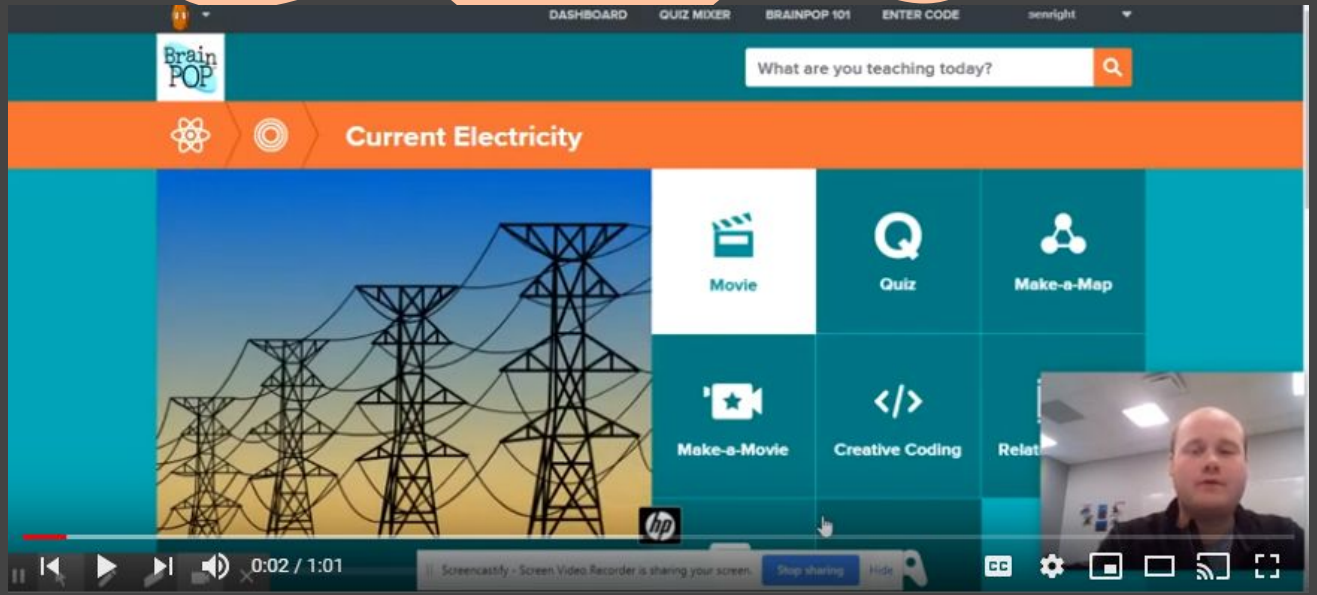
# Background Knowledge:

**Review these important vocabulary words before beginning your lesson.**

**Energy:** the ability to do work
**Electrical Energy:** a form of energy resulting from the flow of electric charge
**Electricity:** a form of energy resulting from the existence of charged particles (such as electrons or protons)
**Electric Current:** a flow of electricity through a conductor
**Circuit:** a path through which electric current can flow

# Let's Get Started!

Watch this Video from our fabulous 4th Grade teachers. Then proceed to the next slide to click on the BrainPop video.

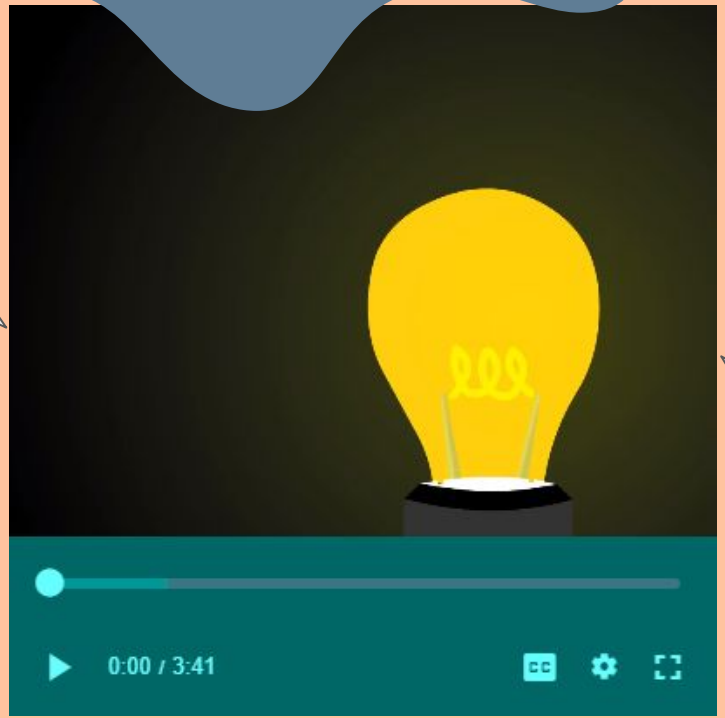


# BrainPop Video: Electric Circuits

Click on the picture to start watching the BrainPop video about Electric Circuits. Think about these questions as you watch and listen.

What are electrons?

What is a current?




Why is static electricity not useful as a power source?

Give one example of an insulator and a conductor.

# Did you find all of the answers to your questions?

If not, go back to the video to look for your answers.

Static electricity is an instant source of electricity, such as lightning and shocking someone.

**REMEMBER!**

A conductor is a material that allows electrons to flow through.

An insulator is a material that prevents electrons from flowing though.

# Check Your Thinking!

**Look below to check if your answers were correct!**

**1. What are electrons?**

Electrons are negatively charged particles in an atom..

**2. What is a current?**

A current is a steady flow of electricity.

**3. Why is static electricity not useful as a power source?**

Static electricity is not a useful source of power because all of the energy is released all at once instead in a steady flow of electricity.

**4. Give one example of an insulator and a conductor.**

Conductors: copper, gold, silver
Insulators: rubber, plastic

# REMEMBER!

Static electricity is an instant source of electricity, such as lightning and shocking someone.

A conductor is a material that allows electrons to flow through.

An insulator is a material that prevents electrons from flowing though.

# Vocabulary Practice:

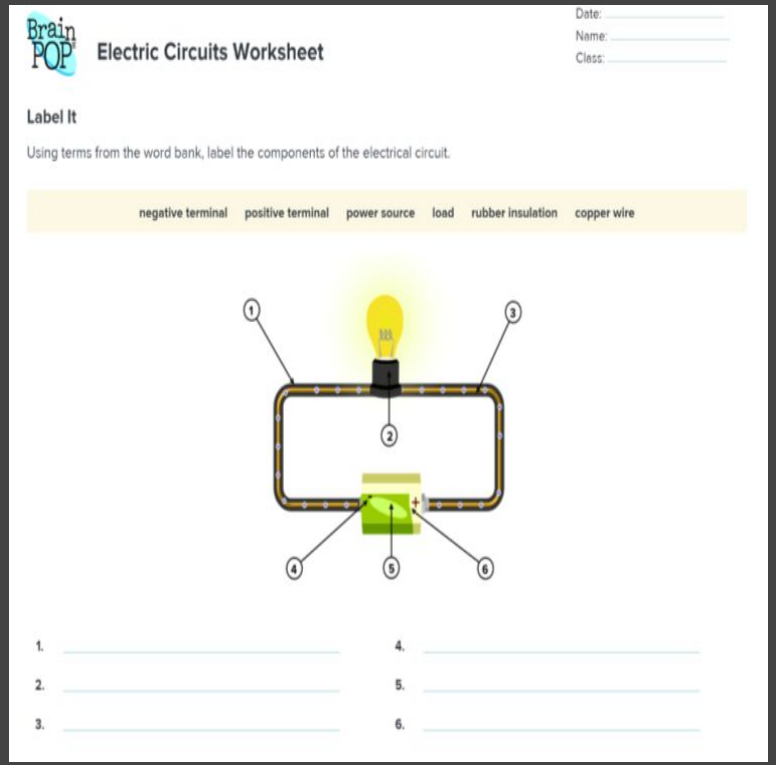
Create your own flashcards!

**OPTION 1:**

1. Find a piece of paper and cut it into eighths (or 8 equal pieces).
2. List the following terms on 6 of the cards, leaving 2 blank.
   electric circuit, route (verb), conductor (in electricity), component, insulator (in electricity), and current (in electricity)
3. Write your own definition for each term on the back of the cards.
4. Choose two other terms from the video to write on the last two cards. Then have someone close quiz you on the definitions.

**OPTION 2:** Click on the link below and create digital flashcards.
BrainPop Digital Flashcards

# Label It:



Brain POP Electric Circuits Worksheet

Date:
Name:
Class:

Label It

Using terms from the word bank, label the components of the electrical circuit.

negative terminal | positive terminal | power source | load | rubber insulation | copper wire

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

## Option 1:

- Use the printable from your district packet and complete the circuit by labeling each number in the diagram correctly.

## Option 2:

- On a blank piece of paper, draw your own circuit to the match the diagram you see in the photo to the left.
- Label each part of the circuit with the correct term from the word bank.

## Option 3:

- Click on the link below and label it digitally.
  BrainPop "Label It" Worksheet

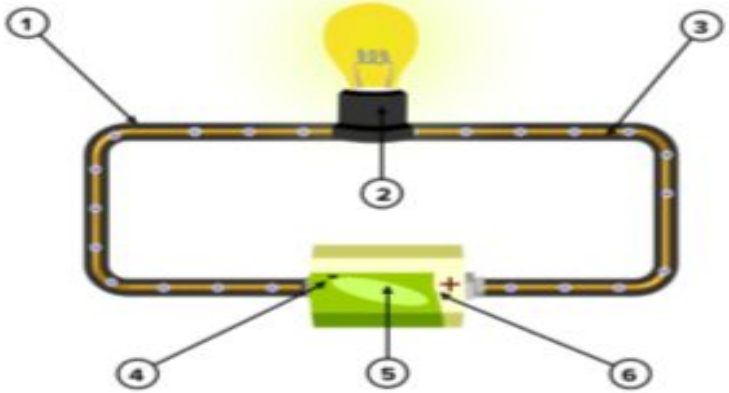
# Electric Circuits Worksheet

Date: _____
Name: _____
Class: _____

## Label It

Using terms from the word bank, label the components of the electrical circuit.

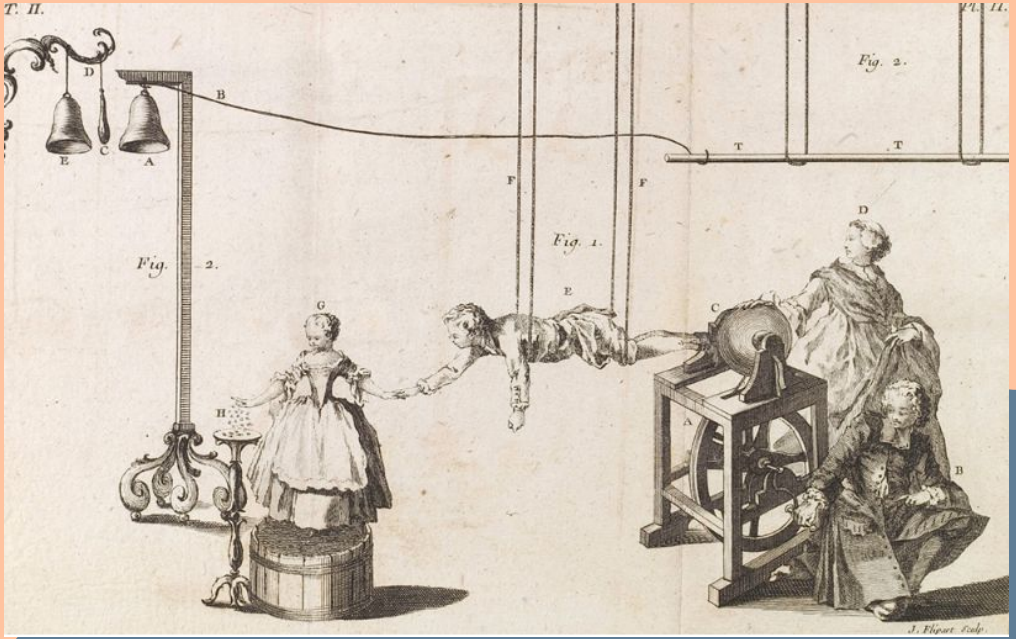
| negative terminal | positive terminal | power source | load | rubber insulation | copper wire |
|---|---|---|---|---|---|




1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

# REAL WORLD APPLICATION:

Sir William Matson (1715-1787) was an English scientist who conducted some of the earliest electrical experiments. Examine the illustrations of his "flying boy" experiment, and cite details from it as you answer the questions on the next slide.




"William Watson, "Experiments and Observations Tending to Illustrate the Nature and Properties of Electricity," 1748. In Watson's "flying boy" experiment, a rotating glass globe generated an electric charge. A boy suspended on silk ropes touched the ball with his foot, and held hands with a girl standing on a tar-covered barrel. When she held her hand above some bits of paper, they levitated in the electric field."

https://www.brainpop.com/science/energy/electriccircuits/primarysource/resources.php?type=image

# REAL WORLD APPLICATION CONTINUED:

On a piece of paper, answer the following questions. Go back to the previous slide to look for evidence to support your answers.

## PRIMARY SOURCE

View

Sir William Watson (1715-1787) was an English scientist who conducted some of the earliest electrical experiments. Examine the illustration of his "flying boy" experiment, and cite details from it as you answer the following questions.

1. How does the experiment demonstrate the concept of static electricity?

2. Why must the boy be suspended in the air?

3. What can you infer about silk, tar, glass, and human bodies from this experiment?

4. Is this set-up an electric circuit? Why or why not?

# Self Check:

Click on the picture below to take the graded quiz on BrainPop. Record your score to share with your teacher when you return!