

ELECTRICITY & CIRCUITS

**For
Special
Ed**



INCLUDES GOOGLE SLIDES



This unit was created with this guy in mind. He has autism and an intellectual disability. He is a non-reader, and loves the sound of piano keys. With some support he is able to do this unit, and enjoys the challenge. He is my tester!!

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This unit contains almost 200 pages of material. I have included a detailed lesson plan to help you make the most of everything in this unit including how to add some group activities.

Electricity Lesson Plan

Preparation

- Print out a vocabulary board for each student to use throughout unit
 - Laminate or place in page protector
- Book
 - Print out, laminate, and bind
 - OR your students can listen to the pre-recorded version
- Vocabulary cards
 - Print out a set of cards onto cardstock and laminate
 - Make one set for each student and also one for the teacher to use in I Spy games
- Sample Circuit cards
 - Print out a set of cards for each student onto cardstock and laminate
 - See cards for activity suggestions

Preassessment (do day 1 before starting lesson)

- Choose the form of the assessment that best fits the learning level of your student.
- Give the assessment to assess what your students may already know
- I cannot emphasize enough how important this step is. If you want to see growth, this preassessment is so important!!

Teaching Tips

1. *Color Coding:* this is a really easy way to add more structure to a matching activity. Outline or color in an empty box or sorting label. Outline or color in the corresponding picture symbols the same colors. Becomes a color matching task.
 - a. For more info, read more here:
<https://specialneedsforspecialkids.org/2015/09/05/using-color-coding-for-differentiation/>
 - b. I also have a blog post on differentiating one activity 3 ways:
<https://specialneedsforspecialkids.org/2018/10/22/differentiating-1-activity-3-ways-easily-and-effectively/>
2. *Make your own copies of the activities:* Every day I review the activity we did yesterday. For that reason:
 - a. I often complete the activity myself and often laminated it for easy review that I could use year after year.

The lesson plans contain:

Overall tips for teaching
students with significant
needs

Quick Look

Day	Activity	Day	Activity
1	<ul style="list-style-type: none">• Book• Vocab cards activity• Circle map	9	<ul style="list-style-type: none">• Book• Vocab cards activity• Counting switches
2	<ul style="list-style-type: none">• Book• Vocab cards activity• Circle map	10	<ul style="list-style-type: none">• Book• Experiment #1
3	<ul style="list-style-type: none">• Book• Vocab cards activity• Sorting activity	11	<ul style="list-style-type: none">• Book• Experiment #3
4	<ul style="list-style-type: none">• Book• Vocab cards activity• Sorting activity	12	<ul style="list-style-type: none">• Book• Vocab cards cut and paste• Vocabulary puzzle
5	<ul style="list-style-type: none">• Book• Vocab cards activity• Labeling circuits	13	<ul style="list-style-type: none">• Book• Vocab cards cut and paste• Vocabulary puzzle
6	<ul style="list-style-type: none">• Book• Vocab cards activity• Labeling circuits	14	<ul style="list-style-type: none">• Book• Vocab cards activity• Close worksheet
7	<ul style="list-style-type: none">• Book• Vocab cards activity• Labeling circuits	15	<ul style="list-style-type: none">• Book• Vocab cards activity• Close worksheet
8	<ul style="list-style-type: none">• Book• Vocab cards activity• Counting switches	16	<ul style="list-style-type: none">• Assessment

The lesson plans contain:

A quick look at what you will do each day

Day 9

Activity	Notes	Materials
Read or listen to a recording of the book (10 minutes)	<ul style="list-style-type: none">• Read through the story, asking lots of questions• Continue to make connections between book and vocabulary board	<ul style="list-style-type: none">• Book• Vocabulary board
Vocabulary cards Bean Bag Toss (10 minutes)	<ul style="list-style-type: none">• Glue the cut apart symbols to the paper plates (one on each plate)• Arrange them around the room• Students toss the bean bag trying to get it to land on a paper plate• Students retrieve the paper plate and share the vocabulary card they retrieved	<ul style="list-style-type: none">• Vocabulary cards• Vocabulary cards cut apart• Small paper plates (you can also use pieces of construction paper)• Bean bags
Counting activity Review (5 minutes)	<ul style="list-style-type: none">• Review the counting activity from yesterday	<ul style="list-style-type: none">• Finished counting activity
Counting activity (10 minutes)	<ul style="list-style-type: none">• Complete 2 of the activities where students count switches, lights, and name the type of circuit• Add color coding if needed for more support• Make connections to book and vocabulary cards	<ul style="list-style-type: none">• Counting activity• Scissors• Glue
Sharing (10 minutes)	<ul style="list-style-type: none">• Each student shares their finished sequencing activity	<ul style="list-style-type: none">• Completed activity• Communication devices

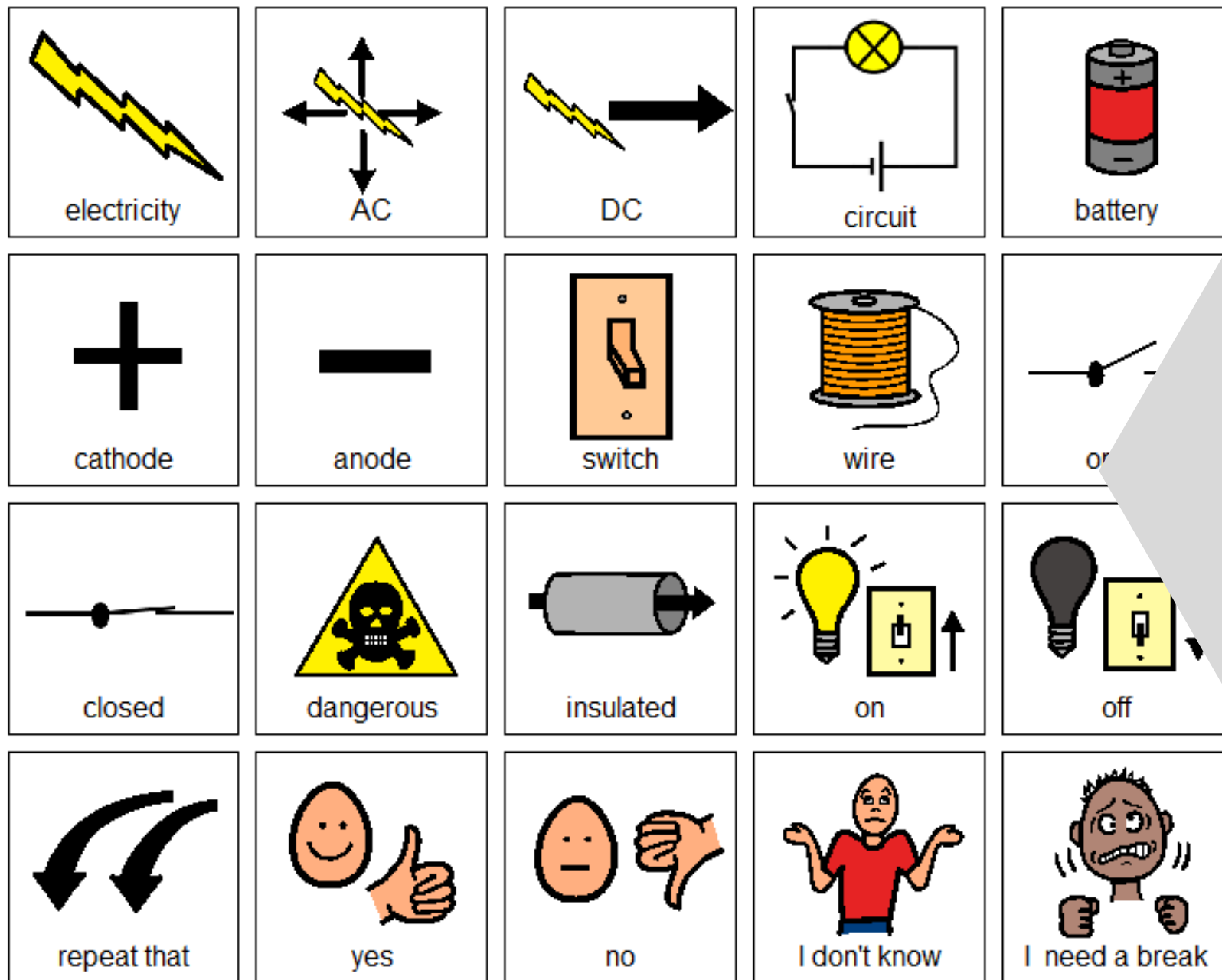
The lesson plans contain:

Detailed instructions on how that day's lesson should run

This unit comes with a vocabulary board.

Vocabulary boards are great for ALL students to assist with participation and engagement in group discussions.

Tips on how to use in the unit!!

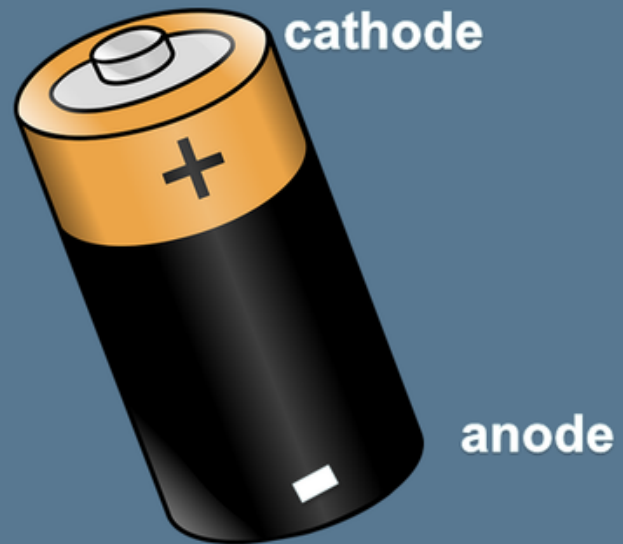


Direct current or DC is the electricity we use when we put new batteries into our favorite toy or game. The electricity flows in one direction out of the battery, through a wire and back to the battery.



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A battery has 2 terminals. A positive terminal called a **cathode**, and a negative terminal called an **anode**. You will see these are marked by a + and a - sign on a battery.



There is a 42 page book with this unit using simple text and photos.

It comes in a pdf version as well as a voice recorded powerpoint (so you don't have to print it out.)

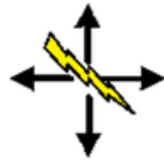
electricity

Form of energy that travels through a medium.



alternating current (AC)

Electricity that flows in many different directions.



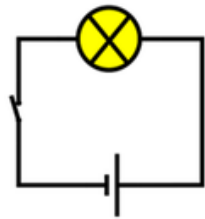
direct current (DC)

Electricity that flows in one direction.



circuit

A closed path that allows electricity to flow from one point to another.



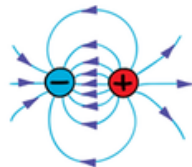
volts



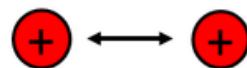
Ohm's Law

$$I = V/R$$

energy field



repel

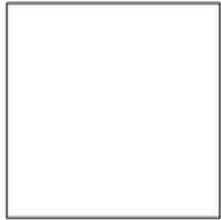


There are 16 vocabulary cards that come in color and black and white.

Included are suggestions for group activities to do with these each day.

cathode

Positive end of a battery.



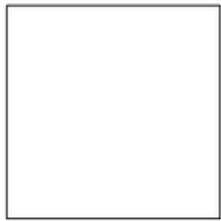
anode

Negative end of a battery.



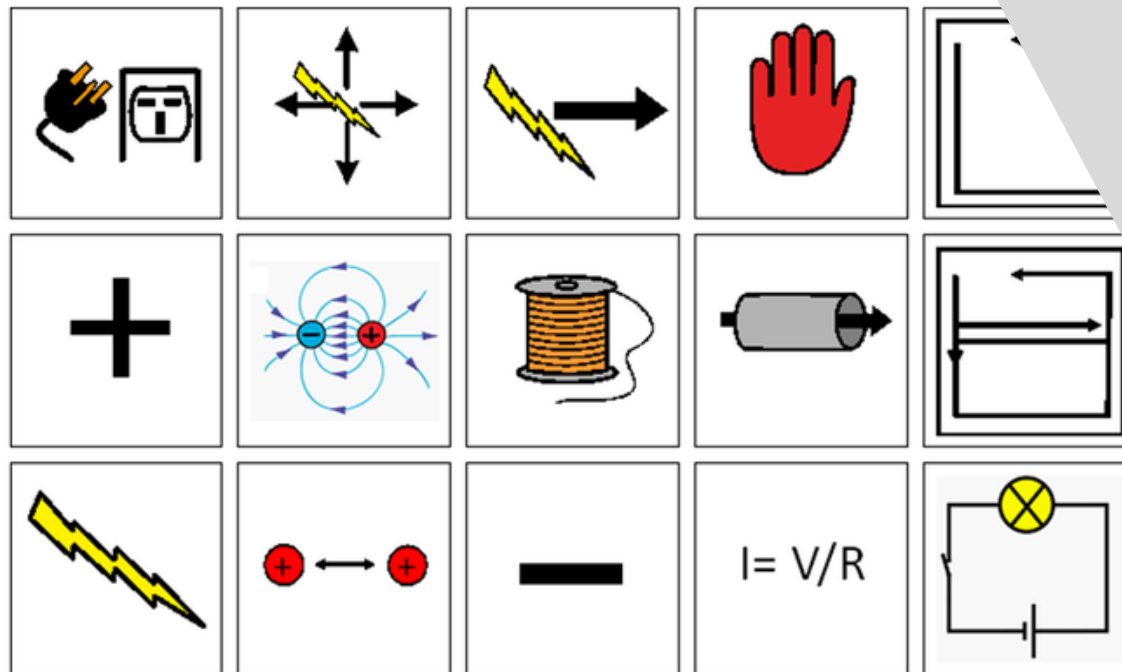
conductor

An object that allows electricity to flow through it easily, like metals.

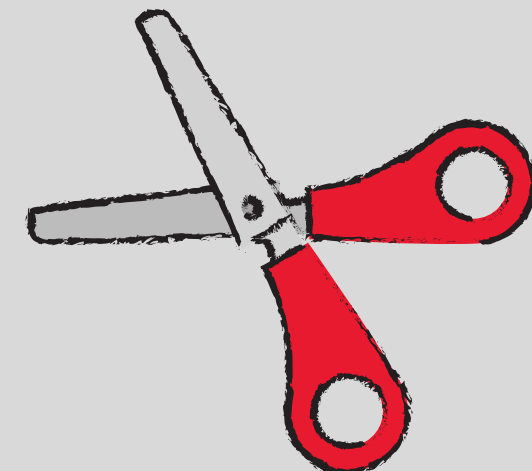


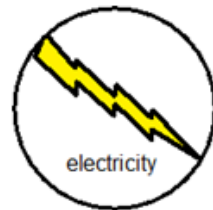
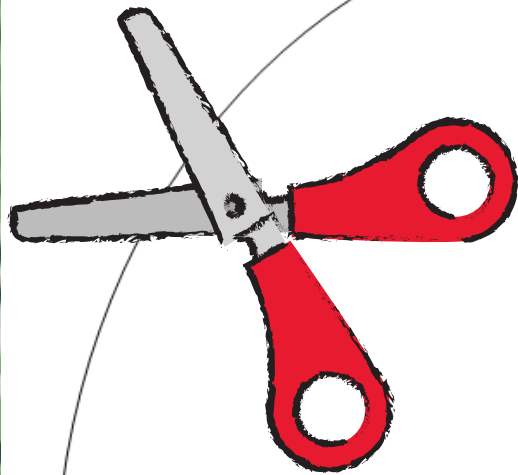
resistance









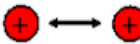


Something that slows down the flow of electricity and decreases the conductivity.








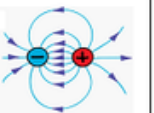
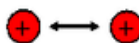








On days 12 & 13 there is an activity where students will match either the picture to the definition or the definition to the picture (harder).





 alternating current	 direct current	 dangerous	 battery
 insulator	 resistance	 volts	 energy field
 repel	 conductor	$I = V/R$ ohm's law	 on







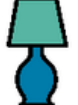


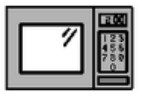








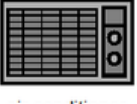



 alternating current	 direct current	 vibrate	 battery
 insulator	 resistance	 volts	 energy field
 repel	 wet	$I = V/R$ ohm's law	 ultrasounds
 audible	 conductor	 dangerous	 on

There are 2 circle maps. One is on electricity and one is on the components of a circuit.

Circle maps are a great way for students to see the concept at a glance.

There are 2 versions:

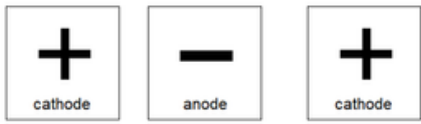
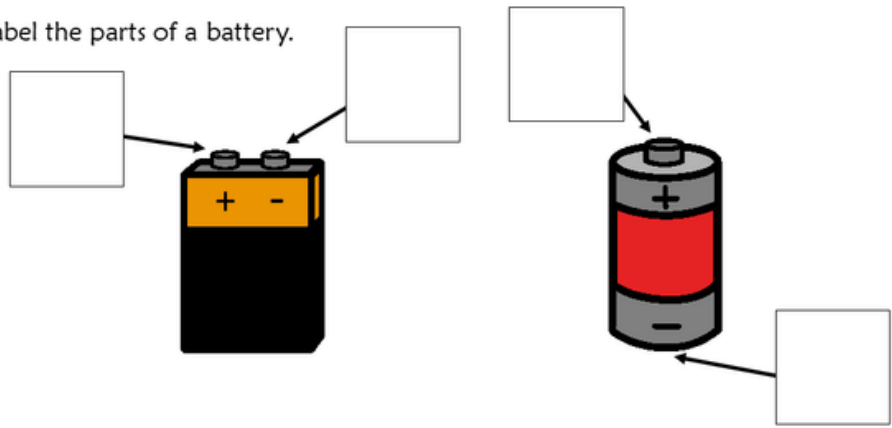
- One is errorless
- One has wrong answers mixed in students will have to set aside.

 electricity		 no electricity		
 toaster	 toilet	 lights	 kettle	 lamp
 jack-o-lantern	 hot air balloon	 microwave	 bike	 skateboard
 TV	 sneakers	 oven	 surfboard	 hair dryer
 trampoline	 air conditioner	 computer	 umbrella	 vacuum cleaner

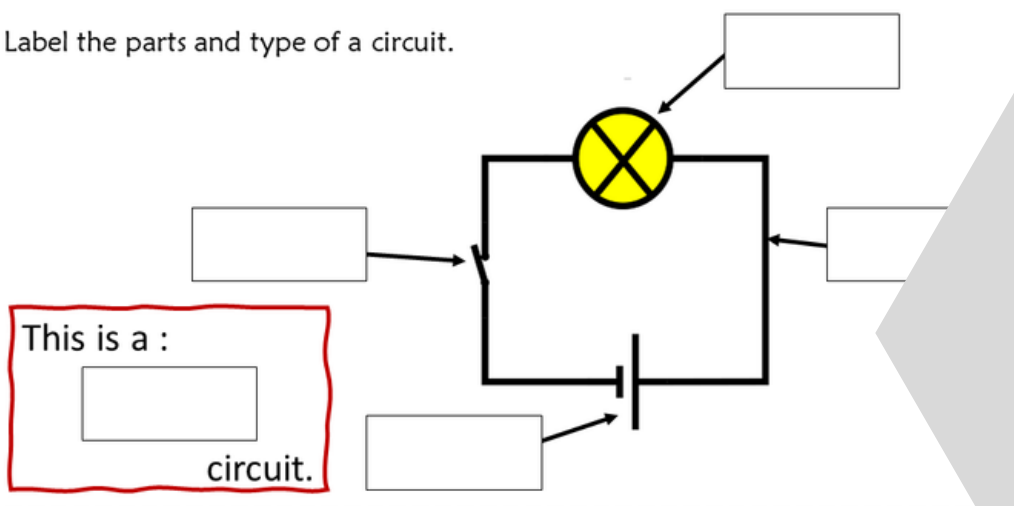
 battery		 no battery	
 flashlight	 straw	 hearing aid	 camera
 book	 crayons	 cell phone	 candle
 fishing pole	 video game	 baseball glove	 pool toys
 toy piano	 football	 bike pump	 calculator

There are 2 sorting activities exploring electricity. Suggestions for differentiation and answer keys are included.

Label the parts of a battery.



Label the parts and type of a circuit.

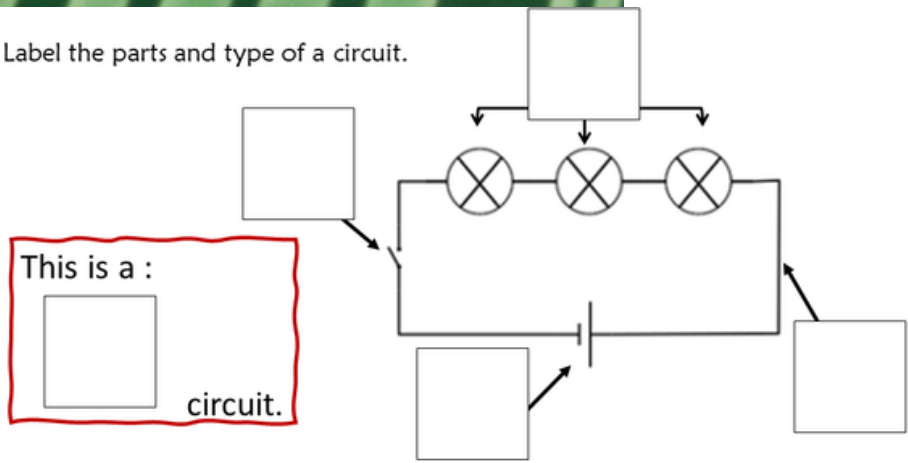


This is a :

 circuit.

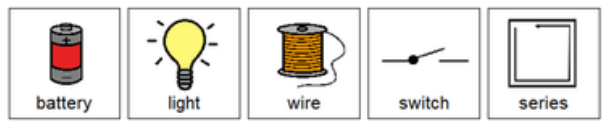


Label the parts and type of a circuit.



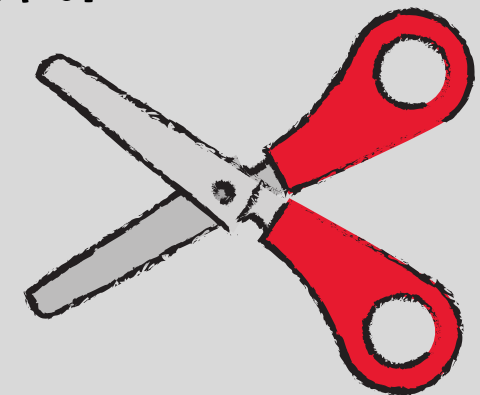
This is a :

 circuit.

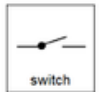
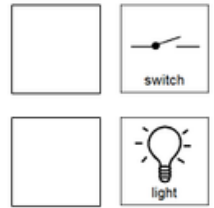
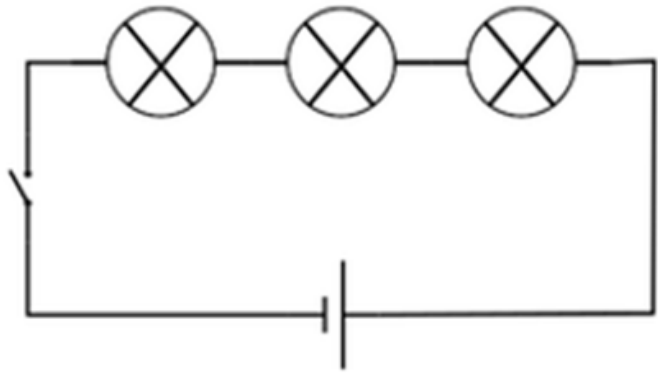


There are 3 labeling activities. 3 of them use words and 3 of them include picture symbols.

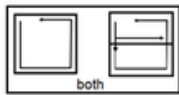
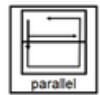
There are color-coded options provided for students who need more support.



1. Circle all the switches.
2. Color in all the lights.
3. Count and record the number of each.
4. Decide what type of circuit or circuits are present.

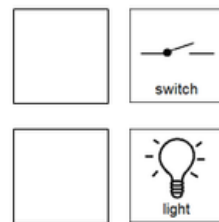
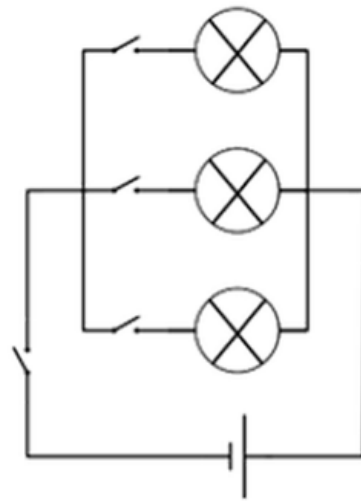


Circle the types of circuits present.

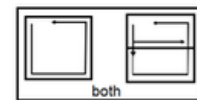
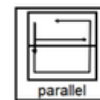
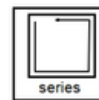


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1. Circle all the switches.
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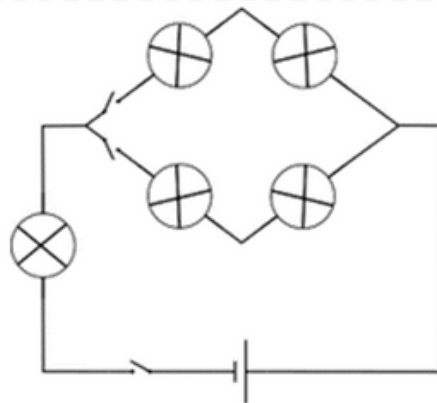
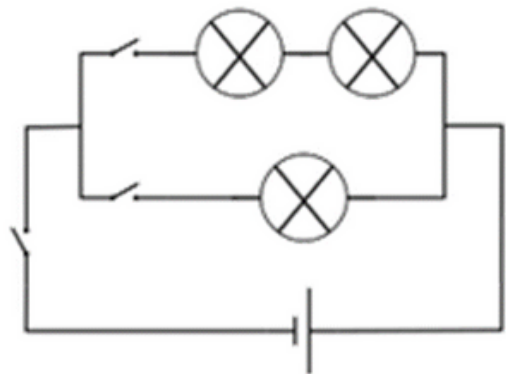
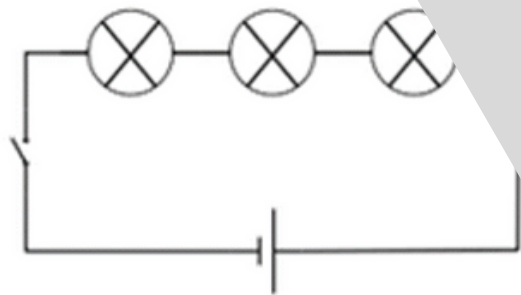
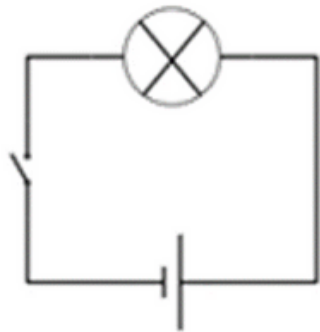
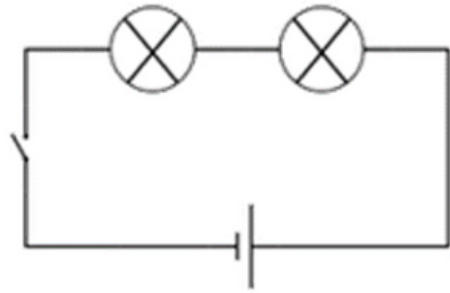
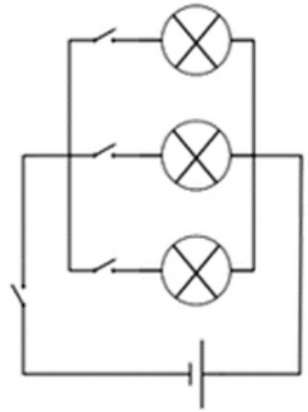
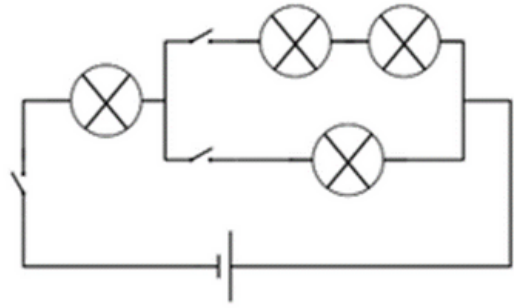
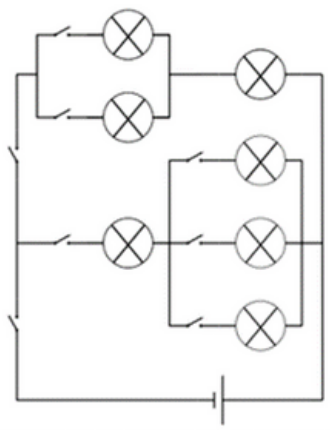


Circle the types of circuits present.



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There are 5 activities where students count the number of switches and lights. They also need to identify the type of circuit. Suggestions for differentiation and answer keys are included.

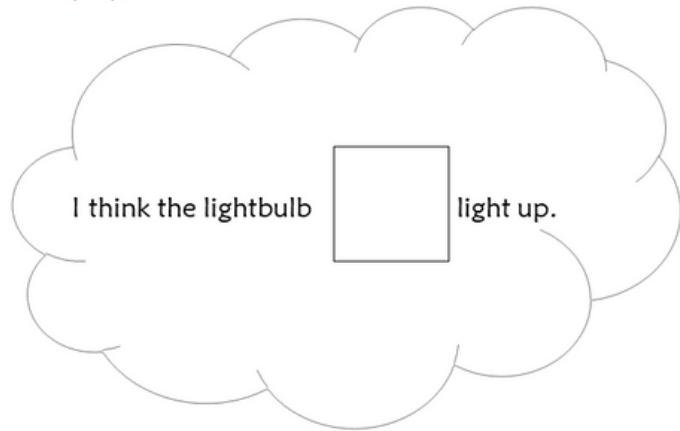


There are 12 large sample circuit cards. Included is a list of activities you can use these cards for with your students.

Electricity Experiment #1

Ice cube circuit

My hypothesis



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Electricity Experiment #1

Ice cube circuit

The Experiment:

1. Wrap the copper wire around the nails, leaving a 2-inch tail.
2. Place the nails in the ice cube tray.
3. Fill tray with vinegar.
4. Place wires from light in vinegar.

Placement in ice cube tray:



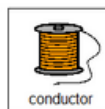
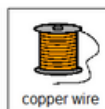
Electricity Experiment #1

Ice cube circuit

What I learned

Electricity travels in thanks to the .

The wire is a and up the lightbulb.



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There are 2 experiments included in this unit. The first one explores making a circuit with an ice cube tray. It guides students through creating and testing a hypothesis. At the end they summarize what they have learned.

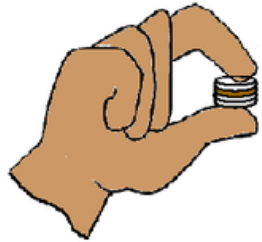
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Electricity Experiment #2

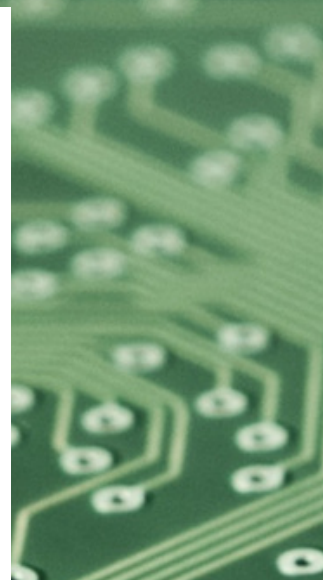
Coin Battery

The Experiment:

1. Make a stack in this order: paper, penny, paper, nickel
2. Keep repeating until all the paper is gone.
3. Hold the stack between your index finger and thumb.
4. What do you feel?
5. Repeat the above steps, but first soak the paper in vinegar.
6. What do you feel?



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Electricity Experiment #2

Coin Battery

What I learned

makes electricity travel through the

I feel the .

Electricity Experimen

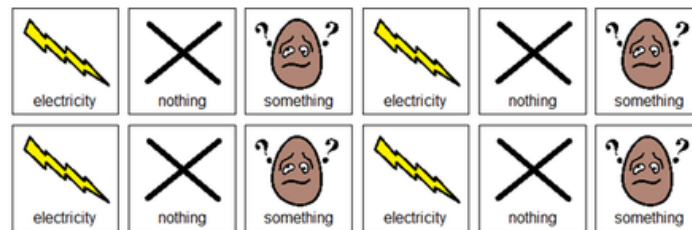
Coin Battery

Testing my hypothesis:

	Prediction (what I will feel)	
Dry paper		
Wet paper		






















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






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The second experiment explores what it takes to make a battery out of coins. It guides students through creating and testing a hypothesis. At the end they summarize what they have learned.

Electricity

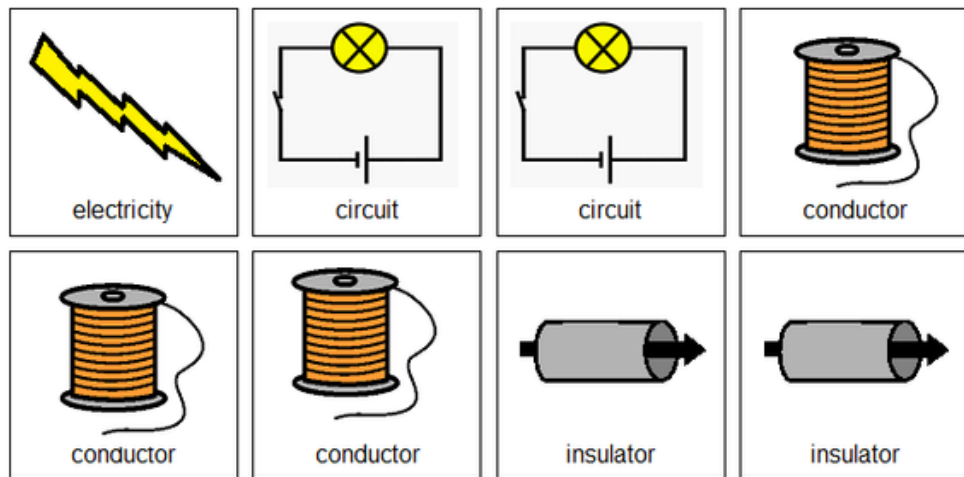
	 energy field	 circuit	 insulator	 conductor	 electricity
	 conductor		 battery	 circuit	 energy field
 electricity		 energy field	 conductor	 battery	 insulator
	 battery				
 energy field			 circuit		 battery
		 battery			

Electricity

		 electricity	
 circuit			
 conductor	 insulator		 electricity
 electricity	 circuit		 insulator

There is a Sudoku puzzle in this unit as well. This is a great way to work with the new vocabulary!!

There are 2 versions plus answer keys.



Electricity

XCSXYRFXULKPOSO
ZIZOOPARALLELCD
URSZRXSERIESGVS
HCIFTQBEVKUMWAF
QUCURRENTDAFEQK
FIDGCONDUCTORQM
RTIHALTERNATING
ETRTHANODEDOMYT
PLEINSULATORSNJ
ECCZEA FNCLRRMJU
LATOFZCQDXIGJCV
NRESISTANCEARUO
XCATHODEKIZRFHL
FWLLIANHIRAVIBT
UXOBBPYSWITCHBS

alternating	resistance	conductor	parallel
current	circuit	cathode	insulator
switch	direct	series	anode
repel	volts		

Electricity

XCSXYRFXULKPOSO
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XCATHODEKIZRFHL
FWLLIANHIRAVIBT
UXOBBPYSWITCHBS

alternating	resistance	conductor	parallel
current	circuit	cathode	insulator
switch	direct	series	anode
repel	volts		

There is also a word search to work with vocabulary. If your students cannot do a word search, have them highlight the circle words on the answer key.

Electricity

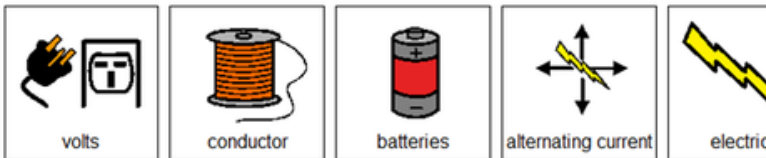
1. is energy that travels in a current.

2. The current is measured in .

3. is electricity that comes from a source and goes in many directions.

4. use direct current to send electricity around a circuit

5. Copper wire is a good of electricity.



Circuits

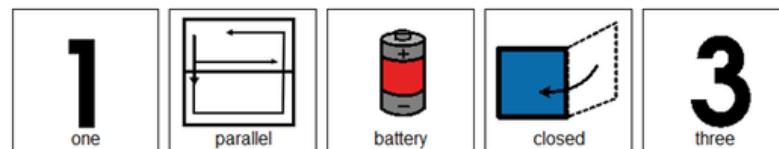
1. There are main parts to a circuit.

2. A is an example of a power source.

3. For the circuit to be complete, the switch must be .

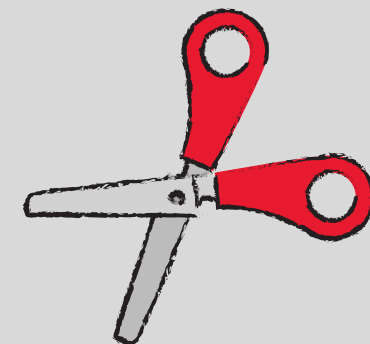
4. A series circuit sends the current in direction.

5. A circuit can send the current in more than one direction.

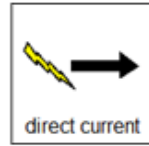
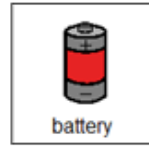
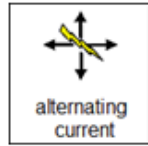


Close worksheet are a great informal assessment. This unit has 10 questions that review facts in the book.

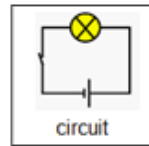
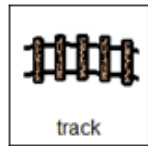
Answer key included.



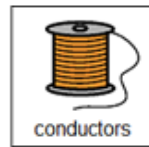
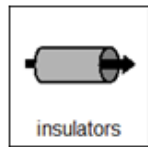
1. Electricity that comes from a power plant and goes in many directions uses:



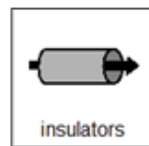
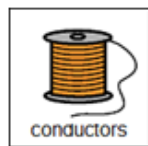
2. What is the name of the pathway the current runs on?



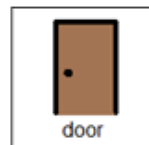
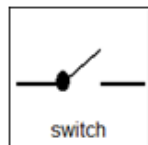
3. Wire and other metals make good:



4. Paper, plastic, and rubber make good:



5. When this is open on a circuit, the current will stop:



FINALLY the assessment!!
There are 3 versions. This version has 10 questions with 3 picture choices for each question.

Answer key included.

Print onto cardstock or mount on index cards. Cut pictures apart and show student answer choices for each question.

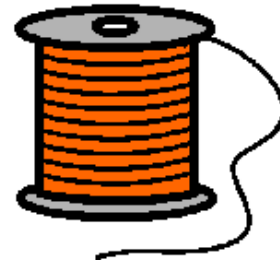
Q 3



insulators



cushions



conductors

Q 4



conductors



insulators



plugs

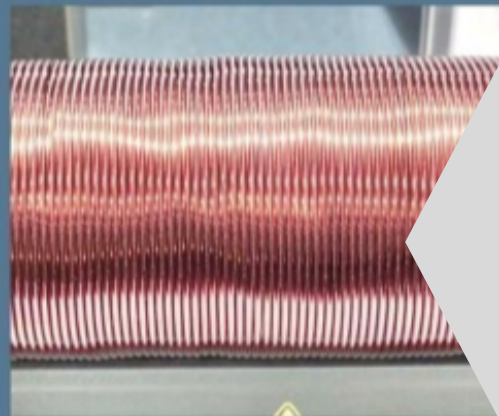
With this version, you cut out the answer choices and glue them on index cards. Ask the student the question, and they point to the correct answer.

1. Electricity that comes from a power plant and goes in many directions uses:
 - A. Alternating current
 - B. Battery
 - C. Direct current
2. What is the name of the pathway the current runs on?
 - A. Track
 - B. Circuit
 - C. Road
3. Wire and other metals make good:
 - A. Insulators
 - B. Cushions
 - C. conductors
4. Paper, plastic, and rubber make good:
 - A. Conductors
 - B. Insulators
 - C. plugs
5. When this is open on a circuit, the current will stop:
 - A. Switch
 - B. Door
 - C. Window
6. Something that slows the current down is said to cause:
 - A. Friction
 - B. Flow
 - C. resistance

This is your traditional multiple choice version. It can also be used as a recording sheet if your students are using the version with index cards.

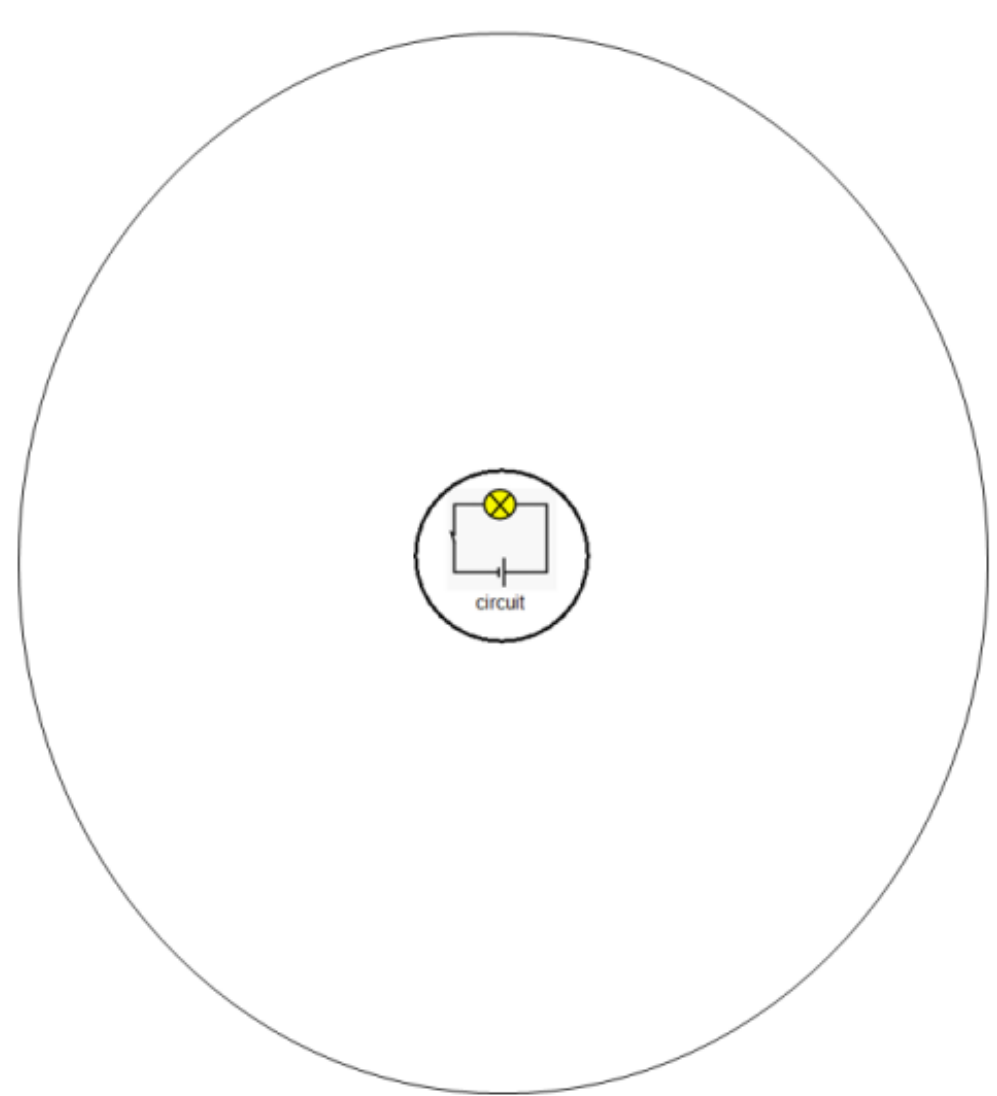
Watch the
movie on
Electricity

If you need more energy or electricity going to your object, you can either increase the voltage (get a bigger battery) or decrease the resistance (use better wire).


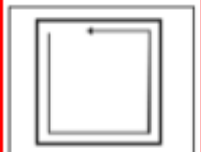
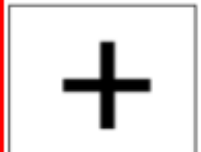

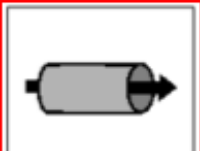



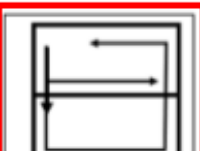

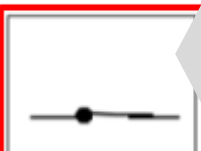



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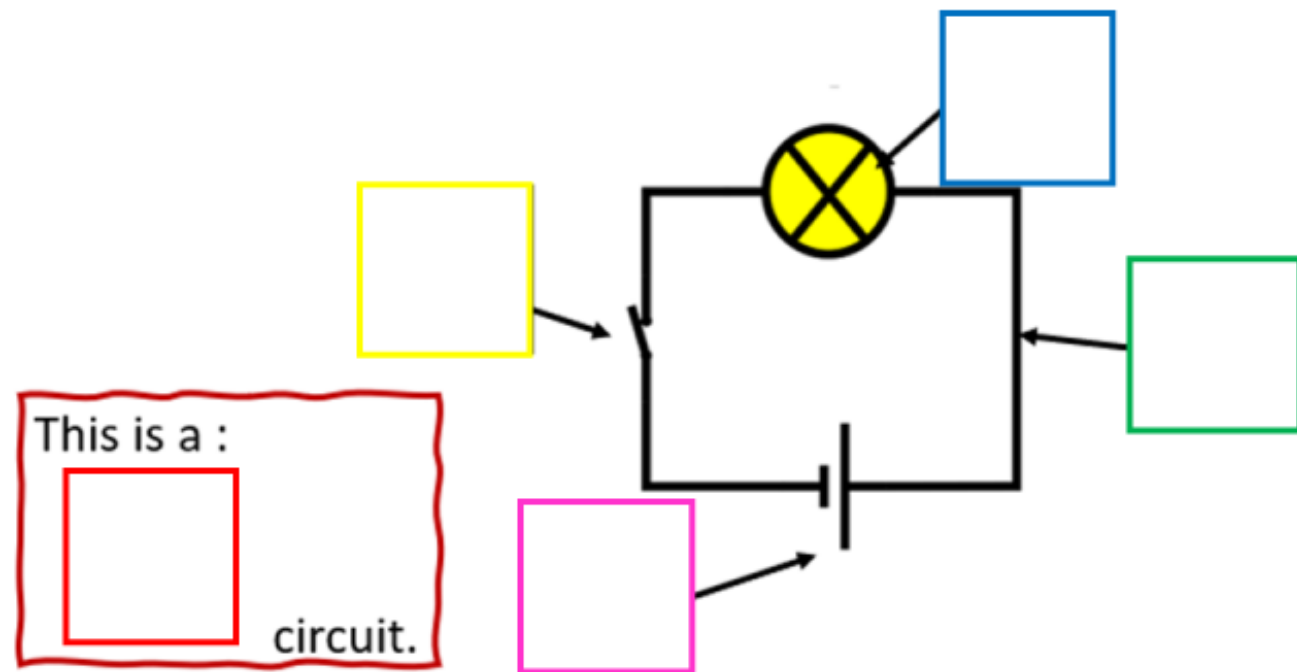
This unit also has digital activities. There is a movie version of the books students can listen to read aloud.



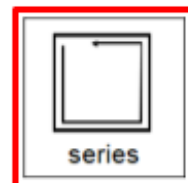
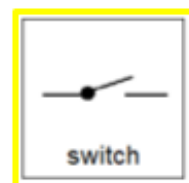
Place the picture in the circle map about circuits.

 open switch	 series	 cathode	 battery
 insulator	 resistance	 volts	
 parallel	 conductor	 closed switch	

The digital activities have students click and drag their answers.

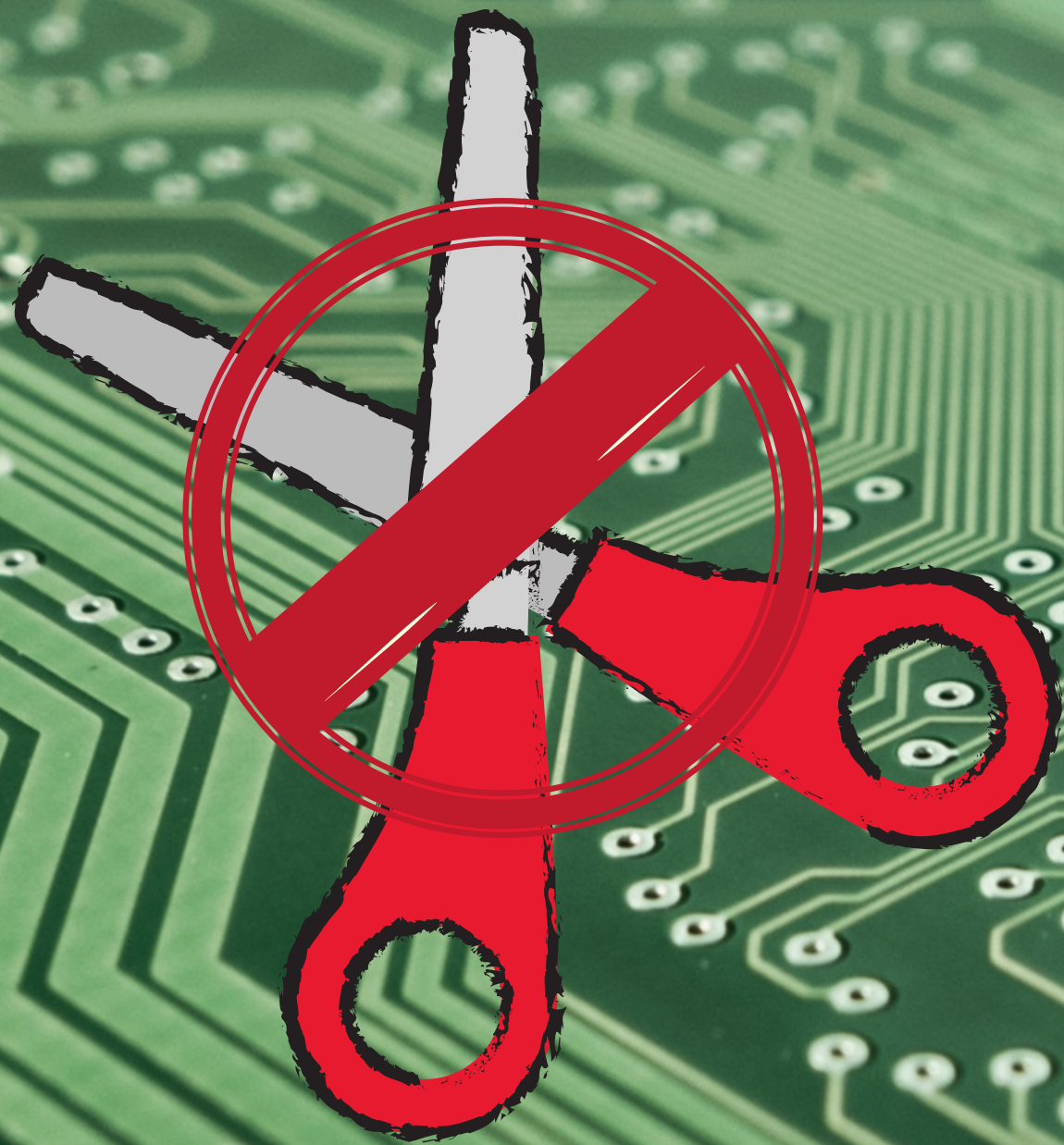


Label the parts of a circuit.



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There are 2 sets of slides. One set has color-coding for more support.



[Click Here to read more!!](#)

I realize there will be some students out there unable to do cutting activities. I have a blog post with ways to complete activities without a pair of scissors!!

All of the activities (except the books) come in color and black and white.