Introducing:
SNAP CIRCUITS® STEM Classroom Activity Kit

For 3rd to 6th Class Class

There are enough materials for a class of 6-18 students.

SUITABLE FOR STANDARD CLASSROOM INSTRUCTION, AFTER SCHOOL PROGRAM AND STEM CAMPS

SNAP CIRCUITS STEM Classroom Activity Kit will allow Students to grasp how electrical circuits work, and drive appreciation for how electrical circuits impact their lives.

*Our STEM Classroom Activity Kit was designed by teachers for teachers!**

Feedback from teachers:

"What I really enjoyed about this classroom set was that everything that was needed to understand the unit was in the box. I really enjoyed the convenience of just having to tell students this is what is needed for the lesson or turn to page in your books."

"My overall impression is that I loved this curriculum. It had the perfect balance of teacher-directed and student-directed learning within each lesson."

"I would recommend this curriculum and set to another teacher and school. This curriculum has so much potential and hands-on activities which allows students to explore different concepts and be successful in science."

SNAP CIRCUITS

Skills acquired

Describe how a circuit works

- Identifying the components of the circuit and the function of each component.
- Identifying how the electrical energy was converted in a specific circuit.
- Representing the circuit through a simple schematic

Follow directions to modify an existing circuit

- By moving, adding, and substituting components
- Evaluating how modifications to the circuit changed the function of the circuit overall

Design their own circuit

- Build, test and troubleshoot circuits to apply basic principles of electricity

Program Summary

- Enriches students with STEM and includes Math and English elements
- Appropriate for primary school teachers who want to dive deeper into tech with their students.
- Step-by-step curriculum to teach concrete skills and concepts through regular steps and processes
- Open Ended challenges: Real-world applications relevant to students creates confidence and stamina for problem-solving
- SUITABLE FOR STANDARD CLASSROOM INSTRUCTION, AFTER SCHOOL PROGRAM AND STEM CAMPS

SNAP CIRCUITS STEM

Classroom Activity Kit

- 6 activity kits
  (suitable for 1:1, 2:1 or 3:1 student to activity kit ratio)
- 1 Teacher curriculum guide delivering 10 days of lessons
- 6 student workbooks*
- Detailed list and explanation of parts;
  electric switch, meter, resistors, LEDs, lamps, motor
- Packet of spare parts to ensure continuous learning
- Supplemental materials with both traditional assessments (pre/post/summative) and project-based, hands-on assessments for flexibility in teaching styles
- Slide presentation, PDF and link to Google Docs presentation
- Durable carrying case for all 6 activity kits
- Summary sheet detailing curriculum flow for communicating value
- Shipping Included

€699

For more information please contact:

support@cogs.ie
0879157995

Model# SCSC3CP –
Snap Circuits Classroom Activity Kit

UPC# 756619014180

Model# SCSCWP6 –
Student manual 6 pack

UPC# 756619014203

***Additional Student workbooks (Pack of 6)**

€59.99

General Activity Flow By Day

Snap Circuits® STEM Curriculum Grade 3-5
Performance Expectations Identified

The following Performance Expectations and Connections are addressed throughout the program.

- Performance Expectation 3-PS2-3- for cause and effect relationship between objects.
- ETS1.B, Engage in Argument from Evidence- for patterns and cause and effect, addressed in the formative questions in each day.
- CCSS.ELA-LITERACY.RL4.1- While there's no specific stories or text, students do take notes on the information presented which is then used as a reference of details for inferences drawn.

The following identifies each day's title of activity and any specific Performance Expectations and Connections addressed.

- Day 1: Introduction – Electricity In Our Lives
- Day 2: Explaining A Circuit (circuit vocabulary terms)
- Day 3: Creating Snap Circuit Flashlight plus Changing Loads
  >Challenge Activity-Impact of Having Multiple Sources of Electrons (4-PS3-2, 4-PS3-4)
- Day 4: Conductors and Insulators (4-PS3-2, 4-PS3-4)
- Day 5-6: Loads in Series (4-PS3-2, 4-PS3-4, Math Connections of Measurement and Data with Represent and interpret data)
  >Challenge Activity-Impact of Changing Loads
- Day 6-7: Loads in Parallel (4-PS3-2, 4-PS3-4, Math Connections of Measurement and Data with Represent and interpret data)
  >Challenge Activity- Building a Doorbell Circuit>
  Challenge Activity- Building a Doorbell With Simultaneous Light Circuit (4-PS3-2, 4-PS3-4, 3-5ETS1-1, 3-5ETS1-2)
- Day 8: Diodes and Resistors 4-PS3-2, 4-PS3-4, 3-5ETS1-3, Math Connections of Measurement and Data with Represent and interpret data, Operations and Algebraic Thinking with Write and Analyze Patterns)
- Day 9: LEDs and Variable Resistor (4-PS3-2, 4-PS3-4)
- Day 10: Resistors In Series and Resistors In Parallel: (4-PS3-2, 4-PS3-4)
- Extra Day Activity: Electric Heater (4-PS3-2)
- Extra Day Activity: Flying Saucer and Super Flying Saucer (4-PS3-2)

This information is also in your Teacher Guide.

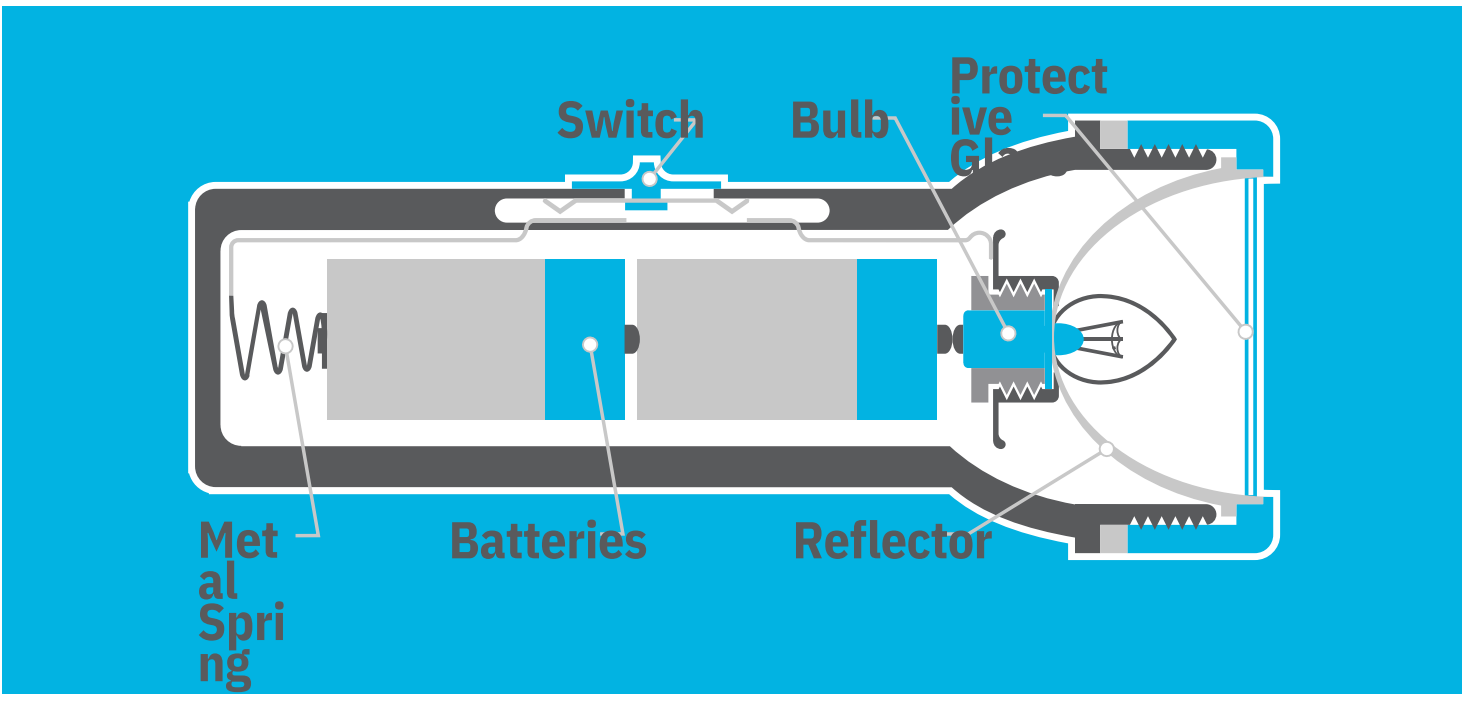
Suggested Pacing: 10 days of activities, 20-30 minutes each

CREATING WITH SNAP CIRCUITS®

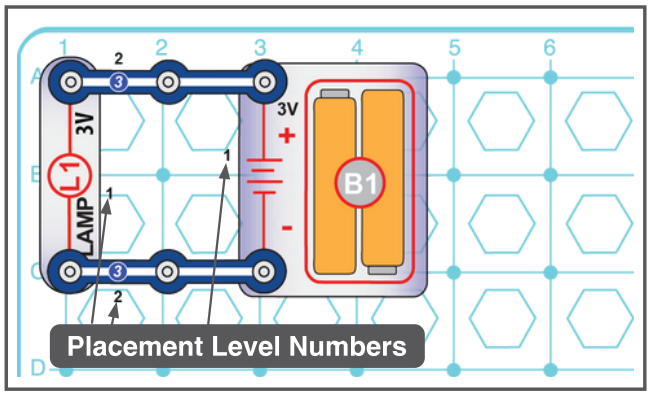
Build a "Flashlight"

Day 3

Sample Teacher Cirriculum Manual



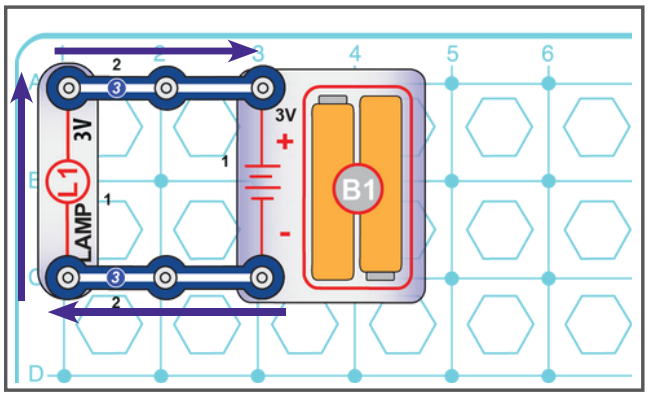
Creating Snap Circuits® flashlight plus changing loads



Build the circuit as shown in the picture.
First place the parts with Placement Lever Number "1", then the parts with Placement Level "2".

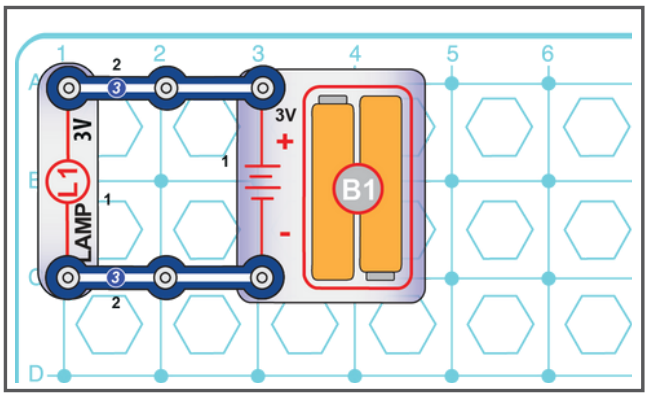
Parts used:
2 3-snap wire
1 Battery holder (B1) 1 Base grid
1 3V Lamp (L1)

Note: if you are using AC-SNAP (the optional Snap Circuits® AC adapter) then connect the 3V side of the B6 module in place of the battery holder.



This is the simplest circuit, it has 1 of each of a circuit's requirements - a source of electrons, a path for the electrons, and a load.

Let's trace the path of the electrons.



Now, there's a component missing in our simple Snap Circuit flashlight when compared to our original flashlight.

What is it? **A SWITCH**. Let's add it.

Replace one of the 3-snap wires with a slide switch (labeled S1).

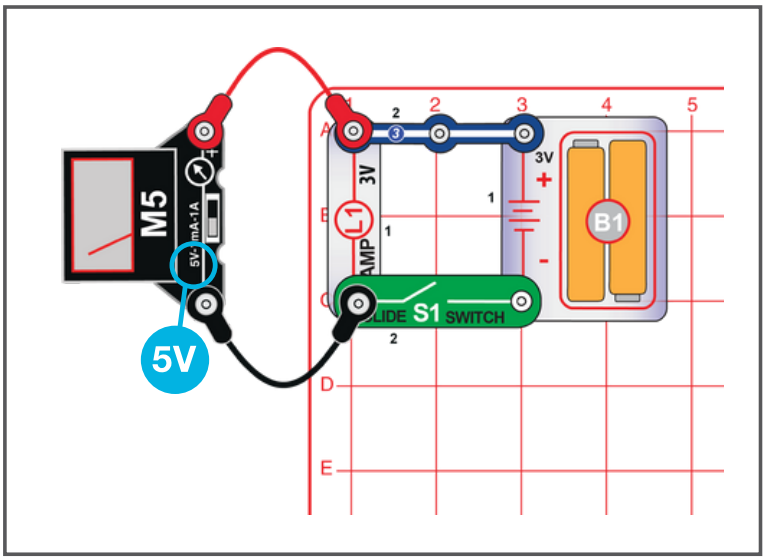
See the drawing to the left.

Directions, Observations, and Formative questions:

1.With the slide switch in the off position will the bulb light? Yes or **No** (circle one)
2.Is the circuit open or closed? Open or **Closed** (circle one)

Now set the switch to the on position.

1. What happened to the circuit? Describe this. **With the slide on the switch now pointing to on, the circuit is closed the light will turn on.**
2. In either situation, if the electrons could travel, have we changed the path of electrons?
Yes or **No** (circle one)



Let's look at voltage
Create the circuit shown here.

Set the meter (M5) to the 5V setting.
Use the meter to measure voltage, reading the measurement
shown on the 5 scale.

Parts used:
1 3-snap wire
1 Battery holder (B1) 1 Base grid
1 3V Lamp (L1)
1 Meter (M5)
1 Slide switch (S1)
1 Red jumper wire
1 Black jumper wire

Note for all circuits using meter (M5): Your actual results may vary. M5 is a simple meter; don't expect it to be as accurate as normal electronic test instruments. Results can also vary depending on the strength of your batteries.

Directions, Observations, and Formative questions:

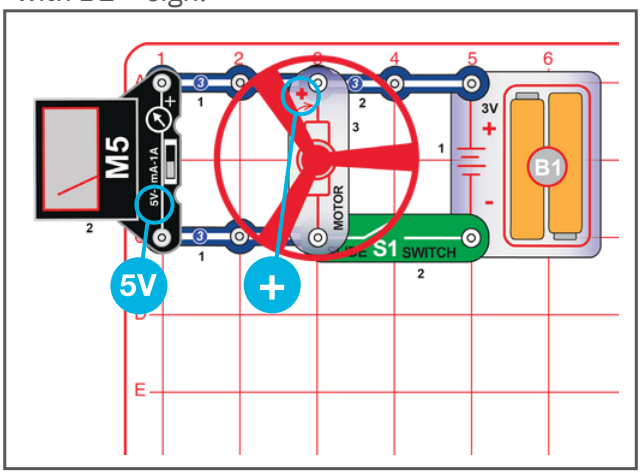
1.Turn the switch on. What is the voltage? **Over 3V with new batteries**

2.Where does the voltage come from? **Explain The voltage is coming from the batteries.**

3.Does the value of the voltage make sense? Explain.**The response should touch on something related to what the meter shows for the voltage across the light compared to the voltage supplied from the batteries**

Loads can be changed

Create the circuit shown in the picture below, with a motor instead of a lamp.
Set the meter (M5) to the 5V setting. M1 has the + sign on the same side with B1 + sign.



WARNING: **Moving parts. Do not touch the fan motor during operation. Do not lean over the m**

Parts used:
3 3-snap wire
1 Battery holder (B1) 1 Base grid
1 Motor (M1)
1 Fan
1 Meter (M5)
1 Slide switch (S1)

Directions and Observations:

1.Turn the switch on.
a.What happens to the fan? **It spins**
b.What does the meter read? **Over 3V with new batteries**

Challenge Opportunities for students [addresses 4-PS3-2, 4-PS3-4]
Directions, Observations, and Formative questions for the SCAN:

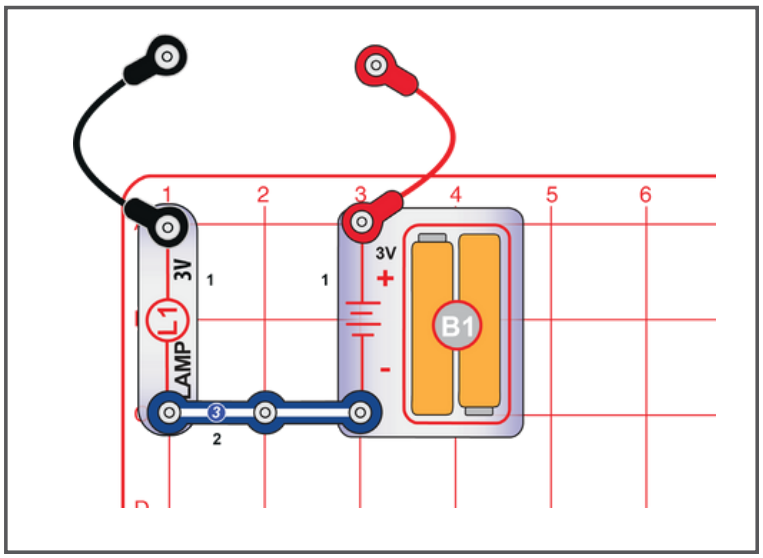
What do you think would happen if you replaced the 3-snap wire at upper right with a second B1 battery holder (so 4 batteries instead of 2)?
1.Any changes to the fan? Explain **The fan would spin faster.**
2.Any change on the meter? Explain **The voltage would be higher.**

Conductors and Insulators [addresses 4-PS3-2, 4-PS3-4]

•Materials that allow this movement between atoms to easily occur are called conductors. The best conductors are usually pure metals and include options like copper, gold, and silver. Wires are most often made of copper because it is abundant and we can mine it in high purity.

• Materials that can't easily allow for the movement of electrons are called insulators. While most things labeled on the Periodic Table are metals, the other materials would be considered insulators, though they are rarely used for one reason or another. Insulators used in circuits are generally a compound or a combination of materials. Common insulators are often made of plastic or rubber.

Create the circuit shown here:



Parts used:
3 3-snap wire
1 Battery holder (B1)
1 Base grid
1 Black jumper wire
1 Red jumper wire
1 3V Lamp (L1)
Various household materials (not i

Directions and Observations for the SCAN:

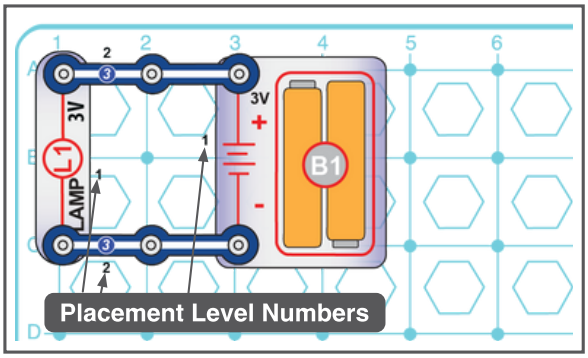
• Students should find materials around the classroom, place the loose ends of the jumper wires on the material (but not touching each other), and observe if the light turns on or stays off. The material will be classified as either a conductor (if the light turns on) or an insulator (if the light stays off). Students put their observations in the table below.

Materials	Lamp ON or OFF	Conductor or Insulator?
Paper clip		
Metal spring		
Pen		
Coin		
Paper		
Shirt		

Creating with Snap Circuits©

Build a Snap Circuits "Flashlight"

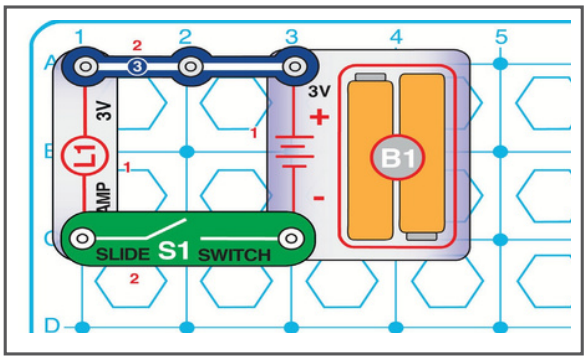
Day 3:



Build the circuit as shown in the picture.
First place the parts with Placement Lever Number “1”, then the parts with Placement Level “2”.

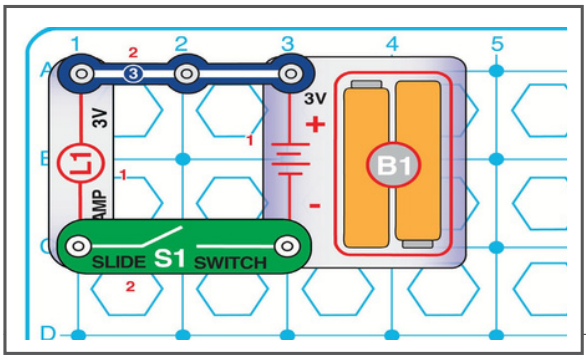
Parts used:
2 3-snap wire
1 Battery holder (B1) 1 Base grid
1 3V Lamp (L1)

Note: if you are using AC-SNAP (the optional Snap Circuits® AC adapter) then connect the 3V side of the B6 module in place of the battery holder.



This is the simplest circuit, it has 1 of each of a circuit’s requirements - a source of electrons, a path for the electrons, and a load.

Let’s trace the path of the electrons.



Now, there’s a component missing in our simple Snap Circuit flashlight when compared to our original flashlight.

What is it? _____. Let’s add it.

Replace one of the 3-snap wires with a slide switch (labeled S1). See the drawing to the left.

Directions, Observations, and Formative questions:

1.With the slide switch in the off position will the bulb light? Yes or No (circle one)

2.Is the circuit open or closed? Open or Closed (circle one)

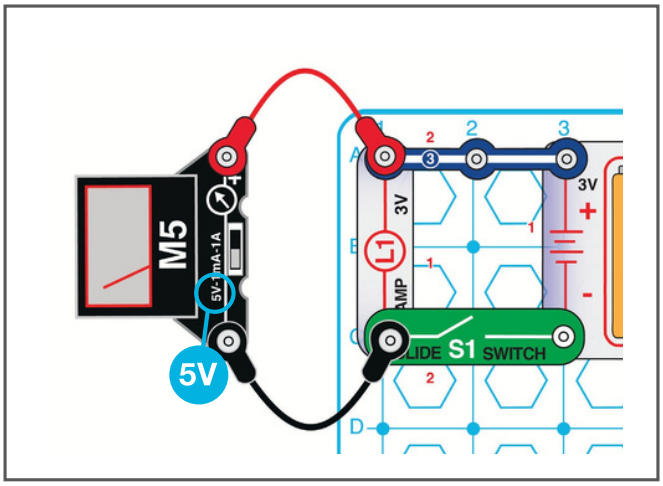
Now set the switch to the on position.

1. What happened to the circuit? Describe this.

_____

_____ _____ 2. In either situation, if the electrons could travel, have we changed the path of electrons? Yes or No (circle one)

Let's look at voltage



Create the circuit shown here.

Set the meter (M5) to the 5V setting.

Use the meter to measure voltage, reading the measurement shown on the 5 scale.

Parts used:
1 3-snap wire
1 Battery holder (B1) 1 Base grid
1 3V Lamp (L1)
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1 Slide switch (S1)
1 Red jumper wire
1 Black jumper wire

Note for all circuits using meter (M5): Your actual results may vary. M5 is a simple meter; don't expect it to be as accurate as normal electronic test instruments. Results can also vary depending on the strength of your batteries.

Directions, Observations, and Formative questions:

1.Turn the switch on. What is the voltage?

2.Where does the voltage come from? Explain

_____

_____

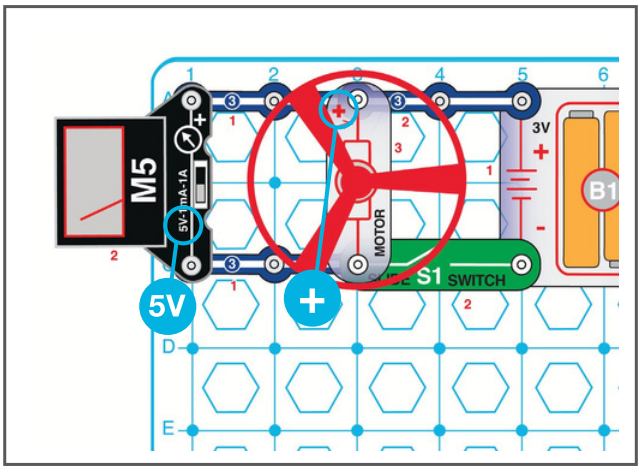
3.Does the value of the voltage make sense? Explain. _____

_____

_____

Loads can be changed

Create the circuit shown in the picture below, with a motor instead of a lamp.
Set the meter (M5) to the 5V setting. M1 has the + sign on the same side with B1 + sign.



Directions and Observations:

1.Turn the switch on.

a.What happens to the fan? _____

_____

b.What does the meter read? _____

_____

Parts used:
3 3-snap wire
1 Battery holder (B1) 1 Base grid
1 Motor (M1)
1 Fan
1 Meter (M5)
1 Slide switch (S1)

WARNING: **Moving parts. Do not touch the fan or motor during operation. Do not lean over the motor.**

Challenge Opportunities for students

Directions, Observations, and Formative questions:

1.What do you think would happen if you replaced the 3-snap wire (at the upper right) with a second B1 battery holder (so now you would have 4 batteries instead of 2)?

a.Do you think there would be any changes to the fan? Explain _____

_____

b.Do you think there would be any change on the meter? Explain _____

_____

Additional Notes: _____

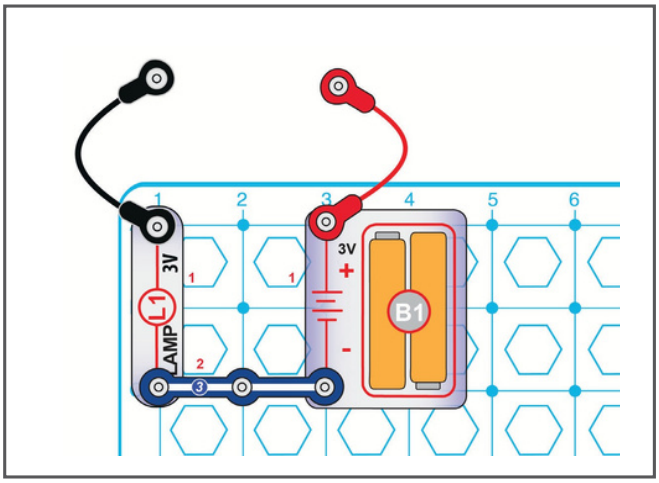
_____

_____

Create the circuit shown:

Directions and Observations:

1.Look around the room for materials to try out to determine if they are a conductor or an insulator.
2.Place the loose ends of the jumper wires on the material,
remember to not touch the ends of the jumper wires to each other.
3.Observe if the light turns on, indicating that the material is a conductor,
or if there is no light on then the material is an insulator.
4.Put your observations on the table below.



Parts used:
3 3-snap wire
1 Battery holder (B1)
1 Base grid
1 Black jumper wire
1 Red jumper wire
1 3V Lamp (L1)
Various household materials (not included)

Materials (use items you have)	Lamp ON or OFF	Conductor or Insulator?
Paper clip		
Metal spring		
Pen		
Coin		
Paper		
Shirt		