

|                      |   |
|----------------------|---|
| ATL SKILL ()         |  |
|                      |   |
| Q1                   |   |
| DEFINITIONS          |  |
| GLOBAL CONTEXT ()    |  |
| KEY CONCEPT ()       |  |
| RELATED CONCEPT ()   |  |
| SOLUTION             |  |
| FORMATIVE ASSESSMENT |  |
| Q2                   |   |
| SUMMATIVE ASSESSMENT |  |
| Q3                   |   |

# Variable Resistance

## Before You Begin

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## Technical Background

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### Variable Resistors

Potentiometer

Photoresistor



## Developing Technical Skills

### Circuit #11

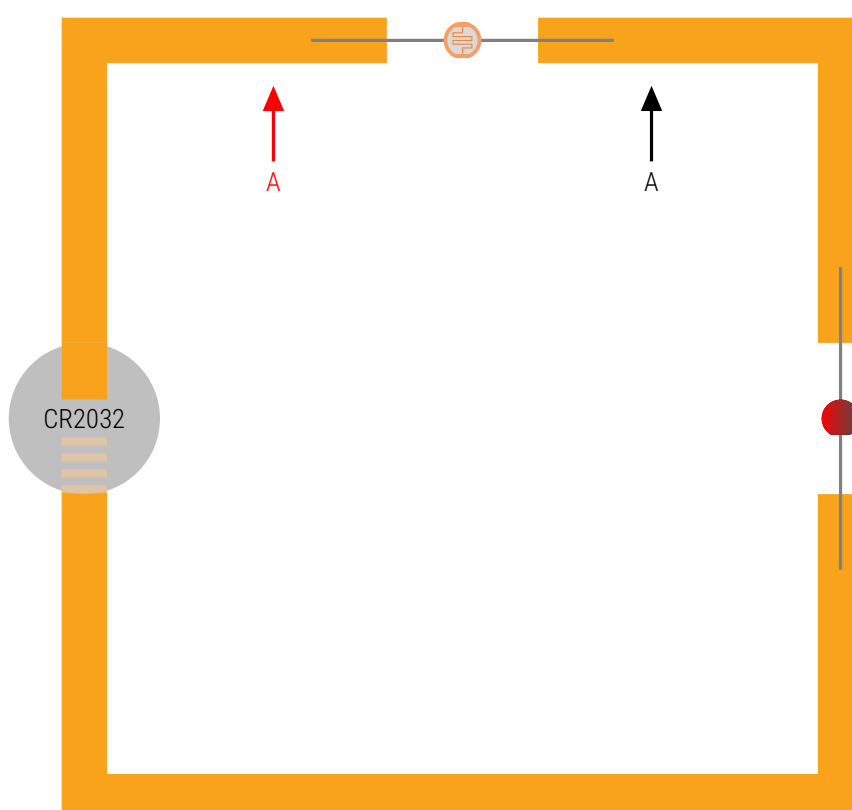
Our first circuit this lesson will use the photoresistor to provide variable resistance for the circuit.

#### You Will Need

- (1) CR2032 Battery
- (1) Photoresistor/LDR
- (1) LED
- (1) Roll of Copper Tape
- (1) Roll of Cellophane Tape

#### Directions

Create the following paper circuit, then wave your hand over the LDR to observe the effects of variable resistance on the LED.



#### ATL SKILL (Communication Skills)

*...make inferences and draw conclusions...*

**q4** Use a multimeter to measure the resistance of the LDR in the above circuit as the light entering it changes. Do the results agree with your idea of how this variable resistor works? Why or why not?

## Circuit #12

The following circuit will allow you to explore the behaviours of the potentiometer, particularly as you turn it in each direction.

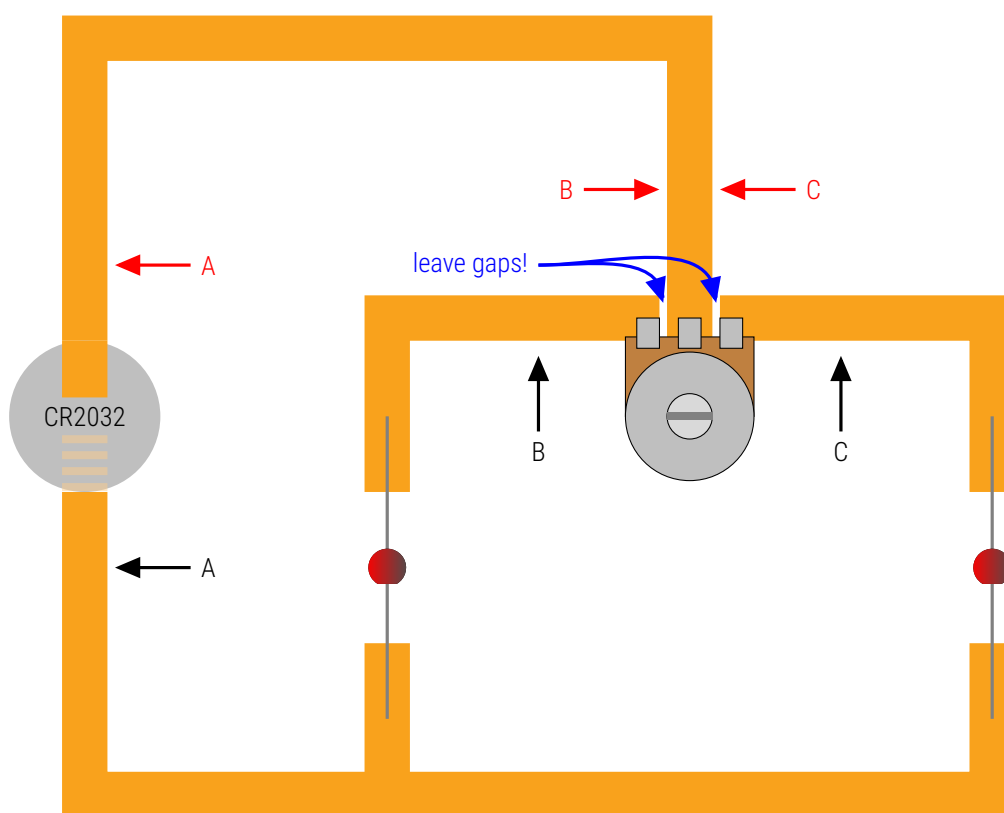
### You Will Need

- (1) CR2032 Battery
- (1) Potentiometer
- (2) LEDs
- (1) Roll of Copper Tape
- (1) Roll of Cellophane Tape

### Directions

Create the following paper circuit and manipulate the potentiometer to observe its effects on the two LEDs.

**Note:** The gaps between the terminals of the potentiometer are necessary. You may need to trim your copper tape slightly if you are having trouble leaving enough space.



### ATL SKILL (Communication Skills)

...make inferences and draw conclusions...

q5 Using a multimeter to take the appropriate measurements, describe the behaviour of the potentiometer.

**FORMATIVE ASSESSMENT**



**q6** Sketch a circuit diagram for a circuit where two potentiometers each manipulate their own LED.

**q7** Create the paper circuit of your above diagram below.

**q8** Did you create a parallel or series circuit with your potentiometers and LEDs? Explain your choice.



## Reflections

### ATL SKILL (Communication Skills)



*...make inferences and draw conclusions...*

**Q9** Does your ability to verify your inferences or conclusions through the use of a tool, such as the multimeter, embolden or hinder your guesses? Briefly explain why.

*...use and interpret a range of discipline-specific terms and symbols...*

**Q10** The paper circuits we have been building use their own symbols. Do these symbols make it easier or harder to understand a circuit as compared to the circuit diagrams we have also been learning? Explain why.

**Q11** What aspect of this lesson was the most challenging for you? How did you overcome that challenge?

**Q12** Select the option which best reflects how confident you are in applying what you have learned in this lesson.



**Q13** What additional questions do you still have about this lesson's content?