UNIT: CIRCUITRY GAME

energy in motion!

Your Mission:

You’ll build simple circuits and test different output devices (a buzzer, motor, and LED). Observe how electrical energy changes into **sound**, **motion**, or **light**. You are exploring *energy transformations!*

Focus: Energy Transformations – Observe how electrical energy changes into sound, motion, or light using different output devices.

Materials:

* Buzzer or motor
* LED (light-emitting diode)
* Arduino OR basic battery-powered circuit with a switch
* Breadboard or circuit base
* Wires and alligator clips
* Battery pack (AA or 9V)

STUDENT DIRECTIONS:

**STEP 1: Set Up Your Power Source:**

* + Connect the battery pack to the breadboard or Arduino.
	+ Be sure the power is OFF at the start.

**STEP 2: Connect Your Output Device:**

* + Choose one output (LED, buzzer, or motor) and connect it to the circuit.
	+ Make sure the polarity (positive and negative) is correct for the LED or motor.

**STEP 3: Test the Circuit:**

* + Flip the switch ON and observe what happens.
	+ What do you hear? What do you see? What do you feel?

**STEP 4: Repeat with Other Devices:**

* + Swap out the output device (try all 3: buzzer, motor, and LED).
	+ Turn the switch ON/OFF each time and record your observations.

**STEP 5:Observe and Record:**

* + Fill in the data table below. Think about what type of energy is produced and where it came from.

**Record It!**

| **Output Device** |  **Type of Energy Produced** | **Energy Transfer (From → To)** |
| --- | --- | --- |
| Buzzer |  |  |
| Motor |  |  |
| LED |  |  |

**Think About It:**

* What happened when you turned the switch on?
* What energy change occurred each time?
* Which device surprised you the most?

✍️ Write your reflection or explanation on the back of your worksheet or notebook.

Standards Alignment

NGSS:MS-PS3-5 STEL:STEL 1E, STEL 6F, STEL 7F, STEL 11F CCSS: CCSS.MATH.CONTENT.6.SP.B.4, CCSS.MATH.CONTENT.7.EE.B.4, CCSS.MATH.CONTENT.7.RP.A.2,