STEM 101
Powered by THE STEM ACADEMY

Name: _____
Period: _____

UNIT: MEASUREMENT

ENERGY EXPLORER

GOAL:

Explore how electrical energy is transferred from a battery to a device, like a motor or LED, and how voltage relates to how much energy is being delivered.

MATERIALS:

- ✓ 1 AA battery
- ✓ Multimeter
- ✓ Small motor *or* LED light
- ✓ Alligator clip wires (2–3)

STUDENT DIRECTIONS:

Step 1: Build Your Circuit

1. Connect one wire from the **positive (+) end of the battery** to one end of the **motor or LED**.
2. Connect another wire from the **negative (–) end of the battery** to the **other side of the motor or LED**.
3. Observe: Does the device **turn on, spin, or light up?**

Step 2: Measure Voltage with a Multimeter

1. Set the multimeter to **DC volts (V)**, in the 20V or 2V range.
2. Touch the black probe to the **negative (-)** battery terminal.
3. Touch the red probe to the **positive (+)** battery terminal.
4. Write down the number on the screen — that's the **voltage**!

Step 3: Reverse the Battery

1. Carefully switch the wires — connect the battery **backward**.
2. Observe what happens to the motor or LED.
    - Did it **spin the other way**?
    - Did the **light turn off or dim**?
3. Try measuring the voltage again.

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Record Your Results:

Test	Voltage Reading (V)	Motor/Light Reaction	What Happened When Reversed?
Try 1			
Try 2 (Reversed)			

Think & Reflect:

- How does electrical energy change when transferred to the motor or light?

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  _____

- Bonus Question: What form of energy does the motor or light give off?

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STANDARDS ALIGNMENT

NGSS: MS-PS3-5, 3-PS2-4, 4-PS3-4 **STEL:** STEL 1E, STEL 2E, STEL 6E, STEL 7F, STEL 11E **CCSS:** CCSS.MATH.CONTENT.6.SP.B.4, CCSS.MATH.CONTENT.6.EE.C.9, CCSS.MATH.CONTENT.7.RP.A.2, CCSS.MATH.PRACTICE.MP2, CCSS.MATH.PRACTICE.MP5