STEM 101
Powered by THE STEM ACADEMY

Name: _____
Period: _____

UNIT: ELECTRICAL CIRCUITS

ENERGY CONVERSION PIT STOP – POWERING LEDS

OBJECTIVE:

Construct a system where chemical energy from a battery converts into light energy.

MATERIALS:

- ✓ Battery + holder
- ✓ Breadboard or cardboard
- ✓ 2 LEDs
- ✓ Resistors
- ✓ Aluminum foil (optional)
- ✓ Switch

STUDENT DIRECTIONS:

Step 1: Design Your Circuit

1. Place the battery in the holder.
2. Connect the battery to a breadboard circuit with LEDs and resistors.
3. Add a switch to control the circuit.

Step 2: Test for Brightness and Resistance

1. Try using different resistor values (330Ω, 1kΩ, etc.).
2. Note how the brightness changes.

Record:

Resistor Used	Brightness (Low/Med/High)

Name: _____
Period: _____

Reflection Prompts:

- How does the resistor affect the energy conversion into light?

  _____

  _____

- Why is managing energy important in real-world devices?

  _____

  _____

STANDARDS ALIGNMENT

NGSS: HS-PS3-3 **STEL:** STEL 1E, STEL 2E, STEL 3E, STEL 4E, STEL 5E, STEL 6E, STEL 7E **CCSS:** CCSS.MATH.CONTENT.HSN.Q.A.1–3, CCSS.MATH.CONTENT.HSA.CED.A.1, CCSS.MATH.CONTENT.HSA.REI.B.3, CCSS.MATH.PRACTICE.MP2, CCSS.MATH.PRACTICE.MP4, CCSS.MATH.PRACTICE.MP5