UNIT: CIRCUITRY GAME

BUILD, BREAK & REBUILD

Your Mission:

You’re a circuit engineer on a rebuild mission! Carefully take apart an old circuit, sort your parts, and use them to build a brand-new one. Try combining light and sound, fix any problems, and show how parts can be reused in creative ways!

GOAL: Break down an existing circuit and use the same parts to build a new, working circuit with both light and sound.

Materials:

* Snap circuit board or breadboard (if available)
* LEDs (light-emitting diodes)
* Buzzers or sound modules
* Connecting wires
* Battery pack
* Switch (optional)

STUDENT DIRECTIONS:

**Step 1: Carefully break down your old circuit.**

* Take apart the circuit you built in Station 1 or Station 2.
* Keep the materials organized so they’re easy to reuse.

**Step 2: Review your parts.**

* Lay out your LED, buzzer, wires, and battery pack.
* Check the positive and negative sides of the components (especially the LED and buzzer—they only work one way!).

**Step 3: Begin rebuilding your circuit.**

* Start with a simple loop: Connect the battery to the buzzer or light.
* Then try to add the second component (so it includes both a light and a sound).
* Decide if you want them to work at the same time or use a switch to control them.

**Step 4: Test your new circuit.**

* Make sure all connections are tight and that the batteries are working.
* Turn it on (if there’s a switch) or complete the circuit to test it.

**Step 5: Problem-solve and adjust.**

* If one part doesn’t work, check:  
  ✅ Is it connected in the correct direction (especially LEDs)?  
  ✅ Are all connections complete?  
  ✅ Is the battery charged?

Try switching the order of components or changing the design.

**Sketch Your New Circuit Design Below:**

(Include batteries, wires, light, and buzzer in your drawing.)  
 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Did your new circuit work?**

☐ Yes  ☐ No  ☐ Sort of

If it didn’t work, what will you try differently next time?  
→ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
→ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Standards Alignment

NGSS: 2-PS1-3 STEL**:** STEL 1A, STEL 2A, STEL 4A, STEL 8A, STEL 9A CCSS: CCSS.MATH.CONTENT.2.MD.D.10, CCSS.MATH.PRACTICE.MP1, CCSS.MATH.PRACTICE.MP5, CCSS.MATH.PRACTICE.MP6