**🔄 Station 3: Build, Break & Rebuild**

**NGSS Standard: 2-PS1-3**  
**Focus:** Breaking down and rebuilding circuits.

**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.)  
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**Did your new circuit work?**

☐ Yes  ☐ No  ☐ Sort of

If it didn’t work, what will you try differently next time?  
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🔧 **Station 3: Build, Break & Rebuild**  
**NGSS Standard:** 2-PS1-3 – *Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.*

**✅ ITEEA STEL Standards – Elementary Level**

**STEL 1A** – *The study of technology uses knowledge and skills from other subject areas.*  
→ Students apply concepts from science and engineering to redesign and troubleshoot simple circuits.

**STEL 2A** – *Technological systems are designed to meet needs and wants.*  
→ Students explore how circuit components (buzzer, LED, battery) work together as a system that can be redesigned.

**STEL 4A** – *Break systems into parts to see how they work together.*  
→ By disassembling and reassembling a circuit, students identify the role and interdependence of each component.

**STEL 8A** – *Design is a creative process for meeting human needs and wants.*  
→ Students reimagine and rebuild a functional circuit using prior knowledge and creative decision-making.

**STEL 9A** – *Modeling helps convey ideas and communicate solutions.*  
→ Students sketch and label their circuit to communicate how their redesigned system functions.

**✅ Common Core Math Standards – Elementary Level**

**CCSS.MATH.CONTENT.2.MD.D.10** – *Draw a picture graph and a bar graph to represent a data set with up to four categories.*  
→ Students can create and label a diagram of their circuit (picture graph/model) to represent its parts and connections.

**CCSS.MATH.PRACTICE.MP1** – *Make sense of problems and persevere in solving them.*  
→ Students engage in troubleshooting when the circuit does not work and iterate to fix design issues.

**CCSS.MATH.PRACTICE.MP5** – *Use appropriate tools strategically.*  
→ Students select and properly use wires, batteries, and electronic components to rebuild a functional system.

**CCSS.MATH.PRACTICE.MP6** – *Attend to precision.*  
→ Careful attention is required for correct polarity, tight connections, and circuit layout to ensure success.

**✅ Summary:**

This hands-on station aligns with **NGSS** by engaging students in building and modifying physical systems from parts. It meets **ITEEA STEL standards** through system thinking, design, and modeling. It supports **Common Core Math** by promoting visual representation, logical reasoning, and precision in building and testing a working circuit.