UNIT: CIRCUITRY GAME

ACT-Based Reading: Reading Circuit Diagrams

### Here are ACT-aligned reading activities for the Build Your Own Circuitry Game that help students strengthen comprehension, analyze technical texts, and interpret cause-and-effect relationships in circuit design and electrical systems.

### Objective:

Students interpret circuit schematics.

MATERIALS NEEDED:

* Circuitry game schematics
* worksheet

Student Directions:

**Goals:**
You will practice reading and interpreting circuit schematics, also known as circuit diagrams. This will help you understand how electricity flows through a circuit and how each component is represented symbolically—skills essential for both ACT reading comprehension and real-world STEM work.

**STEP 1: Review Circuit Symbols**

* Begin by reviewing common circuit symbols on your reference sheet or in the provided schematic.
* Focus on the symbols for:
	+ Battery (short and long lines)
	+ Resistor (zigzag line)
	+ LED (triangle with arrow and line)
	+ Switch (break in line with dot)
	+ Wire connections (lines that intersect or branch)

 Tip: Keep this list nearby while analyzing any schematic.

**STEP 2: Identify Components in the Diagram**

* Look closely at the circuit diagram(s) provided in the worksheet.
* Label each component using the correct name (e.g., **resistor**, **battery**, **LED**, etc.).
* Count how many of each component the diagram includes.

Use the space in your worksheet to jot down your findings.

**STEP 3: Explain Component Connections**

* Trace how the components are connected in the diagram. Ask yourself:
	+ Does the current flow from the battery, through a switch, to a resistor, and then to the LED?
	+ Are components arranged in a **series** (one path) or **parallel** (multiple paths)?
* On your worksheet, **draw arrows** to show the direction of current flow.
* In a few sentences, **explain how the circuit works** based on the connections you see.

**STEP 4: Apply Your Understanding**

* Answer the comprehension questions on the worksheet. These may include:
	+ Multiple choice (like the ACT-style question below)
	+ Short answer explanations
	+ Diagram labeling

**STEP 5: Reflect and Discuss**

* In pairs or small groups, compare your answers and discuss:
	+ Did you interpret any symbols differently?
	+ Were any parts of the diagram confusing?
	+ How does this practice help with reading and following real-world instructions?

## ACT-Style Question:

## What symbol represents a resistor in a circuit diagram?

## Zigzag line

## Circle

## Square

## Triangle

## **⚡ Why These Activities and Questions Matter**

By engaging in math-based activities connected to the **Build Your Own Circuitry Game**, students:

✅ Practice organizing electrical concepts into clear, structured calculations and formulas.
✅ Strengthen their ability to explain circuit design, Ohm’s Law, and electrical efficiency in mathematical terms.
✅ Develop problem-solving and analytical reasoning skills using real-world topics like voltage, current, and resistance.

These skills mirror the **ACT Math** requirements—helping students become confident, effective problem-solvers, prepared for college-level math and careers in STEM fields.