**SCIENCE:**

**ACT Science Alignment – Build your own Circuitry Game**

**Electricity & Circuitry**

Students explore fundamental scientific concepts related to electricity, circuit behavior, and component interactions. Through hands-on experimentation, they analyze electrical current, resistance, and energy transfer while troubleshooting and optimizing circuit performance. These activities align with ACT Science by strengthening data interpretation, hypothesis testing, and analytical reasoning in real-world electrical applications.

**Potential ACT Science Standards Covered in this Unit**

This unit connects to ACT science skills in five key areas:

**ACT Science Rating Scale – Experimental & Data Analysis**

1. **(16–19) Recognizing components and basic functions in a circuit**

* Identify batteries, resistors, wires, and switches
* Understand simple cause-effect relationships (e.g., closing a switch completes a circuit)

1. **(20–23) Interpreting data from simple circuit tests**

* Read voltage and current values from meters
* Observe patterns like brightness changes with resistance

1. **(24–27) Analyzing relationships in experimental data**

* Graph current vs. voltage to identify linear patterns
* Compare series vs. parallel circuit behavior using collected data

1. **(28–32) Evaluating circuit performance and efficiency**

* Interpret multivariable data tables (e.g., voltage, current, resistance)
* Determine how component changes affect circuit function

1. **(33–36) Designing and optimizing experimental circuits**

* Form hypotheses and run circuit tests to confirm predictions
* Analyze limitations, errors, and propose improvements

**Why This Matters for ACT Preparation**

By engaging with real-world circuit design scenarios in the **Circuitry Game Kit**, students:

✅ Develop scientific inquiry skills by testing variables such as wire material, battery type, and resistor strength in different circuit configurations.  
✅ Analyze data from circuit experiments to identify patterns, evaluate performance, and draw evidence-based conclusions.  
✅ Strengthen their understanding of scientific concepts like energy transfer, resistance, and systems thinking—all aligned with ACT Science expectations.

These hands-on, experiment-based activities help students build critical thinking and data interpretation skills, preparing them to confidently analyze graphs, compare experimental setups, and evaluate outcomes—just like on the ACT Science section and in real-world STEM environments.