

Electric

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Understanding Electricity

- Explore career opportunities associated with the electric and allied industries
- Describe the relationship between voltage, resistance, and current as defined by Ohm's Law
- Learn that electricity is a flow of electrons
- Understand how wet and dry cell batteries convert chemical energy into electrical energy
- Describe the relationship among electrical potential, current, and resistance in an ohmic system
- Compare and contrast the instruments used to measure voltage, resistance, and current
- Compare the composition and properties of conductors and insulators
- Understand the difference between ground wires, hot wires, and neutral wires in household wiring
- Understand energy consumption of appliances/technology phantom loads, household appliances, electric motors

Safety

- Describe how different levels of electrical shock affect the human body
- Create an educational product describing Overhead Powerline Safety
- Understand the importance of grounding in electrical circuits
- Determine the procedures necessary to safely replace or install electrical devices in a device box, such as a light fixture, receptacle, or switch

Magnets

- Explain the properties and the applications of mechanical and electromagnetic waves
- Compare and contrast mechanical waves and electromagnetic waves based on refraction, reflection, transmission, absorption, and their behavior through a vacuum and/or various media
- Describe the similarities and differences across the electromagnetic spectrum



Circuits

- Collect additional tooling needed to work on a residential electrical circuit
- Demonstrate the layout and operation of electrical circuits (series, parallel, and seriesparallel circuits)
- Design a device that converts electrical energy to another form of energy using open or closed simple circuits
- Conduct an experiment to determine the relationships between 1) current and voltage, 2) current and resistance, and 3) voltage and resistance

Machinery

- Learn the basic parts of an electric motor and how they work
- Properly use and care for electrical equipment and necessary tools
- Determine power usage of household appliances where power = volts x amps

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