LESSON PLAN
Circuits and Circuit Elements
Holt: Physics Chapter 20

Objective:  SP4. Student will evaluate relationships between electrical and magnetic forces.
           c. Determine equivalent resistances in series and parallel circuits.

Strategies:
1. Lecture and demonstrate schematic diagrams and circuits.
2. Describe simple circuits and explain how to complete one.
3. Demonstrate the difference between series and parallel circuits and give examples of each.
4. Have students work in pairs to draw 2 different examples of series and parallel circuits correctly.
5. Discuss equivalent resistance and how it is determined in a series circuit.
6. Discuss how the resistors in parallel work and how to determine the equivalent resistance of a parallel circuit.
7. Describe a complex resistor combination and calculate the resistance when there is a series and parallel component.
8. Have students work in groups of 3 or 4 to perform the Series and Parallel Circuit Lab using prefabricated boards.

Review:
1. Potential difference, current and resistance.
2. Ohm’s Law.

New Work:
1. Practice problems determining the equivalent resistance of series, parallel and complex circuits.
2. Prepare a lab report showing accurate findings of potential difference, current and resistance.

Assessment:
1. Give a quiz over practice problems to check for understanding.
2. Use attached rubric to grade lab report.
3. Chapter Test including multiple choice and problem solving.
SERIES AND PARALLEL CIRCUITS

Purpose: To investigate resistance of series and parallel circuits by measuring current and voltage to determine the equivalent resistance of the circuits.

Procedure:

1. Identify the different completed circuits on board provided.
2. Draw a diagram of each circuit and label parts.
3. Set the power supply to a specific voltage.
4. Use the multi-meter to determine the resistance of each resistor.
5. Calculate the current across each circuit using Ohm’s Law.
6. Compare to the known resistance of each resistor.
7. Graph results of both measured and calculated value.

Analysis:

1. For each circuit calculate the equivalent resistance.
2. What determines the total current for a series and parallel circuit?