

Test Format:

- 15 Multiple Choice/Matching
- 7 Problems (some with multiple parts)
 - Resistance calculation using the formula involving resistivity
 - Understand and be able to apply all of the formulas and rules in [Mr. Pennington's 4 minute drill](#) (but you don't really need 3 formulas for Power)
 - Find individual and total (source) currents and voltages...
 - In a parallel circuit
 - In a series circuit
 - In a complex circuit with series and parallel components
 - One problem requiring Kirchoff's rules. Determine the magnitude and directions of three unique currents within one circuit.

General Concepts:

- Know the units for resistance, energy, current, charge, drift velocity, potential difference, resistivity, and power.
- Know what current is, and what is actually happening when current flows (i.e. electrons are moving), and be able to contrast this with the idea of conventional current.
- Be able to apply Ohm's law and the rules for voltage, current, and equivalent resistance in series and parallel circuits.
- Know how a voltmeter and an ammeter should be connected to a circuit to measure voltage and current (series? or parallel?) – and why.
- Understand all of the rules and trends in [Mr. Pennington's 4 minute drill](#). But he left one out... you should know that, in **any** circuit, $P_{\text{total}} = P_1 + P_2 + P_3...$
- Know what kinds of changes in a circuit would make a bulb become brighter or dimmer.
- Be able to predict how making various changes in a circuit (e.g. adding or subtracting a resistor in parallel or series) would affect individual and/or total currents, voltages, resistances, and/or power.