Assignment Sheet
Electric Circuits

Objectives
You will be able to:
A. define current and ampere.
    use the relationship $I = \Delta q / \Delta t$.
B. define DC circuit.
    define Ohm's law (V=IR), resistance, and ohm.
C. calculate the effective resistance of combinations of resistors in series and parallel.
    explain the use of ammeters and voltmeters in circuits.
D. define resistivity.
    state the effect of temperature on resistance.
E. use the power equation P=IV to find the power loss or gain in a resistor or battery under dc
    conditions.
    explain internal resistance for a battery.
F. use Kirchhoff's rules to solve dc circuits that contain batteries and resistances.
G. analyze a given electrical situation from the viewpoint of safety.
    explain the operation of fuses.

Reading
A. Electrical Circuits and Electric Current, p. 254–255
B. Ohm's Law and Resistance, p. 257–259
C. Series and Parallel Circuits, p. 259–263
D. Resistivity ($R = \rho L / A$; longer, thinner, more resistivity of material → more resistance), notes
E. Electric Energy Power (and electrical heating), p. 263–266
    Internal resistance of batteries, notes
F. Kirchhoff's junction rule, notes
    Kirchhoff's loop rule, notes
    Solving circuit problems, notes
G. Alternating Current and Household Circuits, p. 266–270

Laboratory
Light bulbs in series and parallel

Focus Questions:
1. When a battery is being used in a circuit, will the voltage across its terminals be less than that
    measured when there is no current being drawn from the battery? Explain.
2. If the current through a certain resistance is doubled, explain what happens to the power dissipated
    in that resistor?
3. Suppose that the appliances connected to a household circuit were wired in series rather than in
    parallel. What disadvantages would there be to this arrangement? Explain.