

**Assignment Sheet  
Electric Circuits**

## Objectives

You will be able to:

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

## Reading

- A. 21-1, Electric Current, p. 725–728  
21-2, Resistance and Ohm's Law, p. 728–731  
21-8, Ammeters and Voltmeters, p. 749–750
- B. 21-3, Energy and Power in Electrical Circuits, p. 731–734
- C. 21-4, Resistors in Series and Parallel, p. 734–740
- D. 21-5, Kirchhoff's Rules, p. 740–743
- E. Fuses; household circuits, notes

## 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? Explain conceptually why the mathematics makes sense.
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.