CHAPTER 18 Highlights

KEY IDEAS

Section 1 Schematic Diagrams and Circuits

- Schematic diagrams use standardized symbols to summarize the contents of electric circuits.
- A circuit is a set of electrical components connected so that they provide one or more complete paths for the movement of charges.
- Any device that transforms nonelectrical energy into electrical energy, such as a battery or a generator, is a source of emf.
- If the internal resistance of a battery is neglected, the emf can be considered equal to the terminal voltage, the potential difference across the source's two terminals.

Section 2 Resistors in Series or in Parallel

- Resistors in series have the same current.
- The equivalent resistance of a set of resistors connected in series is the sum of the individual resistances.
- The sum of currents in parallel resistors equals the total current.
- The equivalent resistance of a set of resistors connected in parallel is calculated using an inverse relationship.

Section 3 Complex Resistor Combinations

- Many complex circuits can be understood by isolating segments that are in series or in parallel and simplifying them to their equivalent resistances.

Variable Symbols

Quantities	Units	Conversions
I current	A amperes	= C/s = coulombs of charge per second
R resistance	Ω ohms	= V/A = volts per ampere of current
ΔV potential difference	V volts	= J/C = joules of energy per coulomb of charge

KEY TERMS

schematic diagram (p. 640)

electric circuit (p. 642)

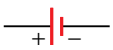
series (p. 647)

parallel (p. 651)

PROBLEM SOLVING

See **Appendix D: Equations** for a summary of the equations introduced in this chapter. If you need more problem-solving practice, see **Appendix I: Additional Problems.**

Diagram Symbols

Wire or conductor	
Resistor or circuit load	
Bulb or lamp	
Plug	
Battery/ direct-current emf source	
Switch	
Capacitor