CHAPTER 1 *Highlights*

KEY TERMS

model (p. 6)

system (p. 7)

hypothesis (p. 8)

controlled experiment (p. 9)

accuracy (p. 16)

precision (p. 16)

significant figures (p. 17)

PROBLEM SOLVING

If you need more problem-solving practice, see **Appendix I: Additional Problems.**

KEY IDEAS

Section 1 What Is Physics?

- Physics is the study of the physical world, from motion and energy to light and electricity.
- Physics uses the scientific method to discover general laws that can be used to make predictions about a variety of situations.
- A common technique in physics for analyzing a complex situation is to disregard irrelevant factors and create a model that describes the essence of a system or situation.

Section 2 Measurements in Experiments

- Physics measurements are typically made and expressed in SI, a system that uses a set of base units and prefixes to describe measurements of physical quantities.
- *Accuracy* describes how close a measurement is to reality. *Precision* results from the limitations of the measuring device used.
- The significant figures of a measurement include all of the digits that are actually measured plus one estimated digit.
- Significant-figure rules provide a means to ensure that calculations do not report results that are more precise than the data used to make them.

Section 3 The Language of Physics

- Physicists make their work easier by summarizing data in tables and graphs and by abbreviating quantities in equations.
- Dimensional analysis can help identify whether a physics equation is invalid.
- Order-of-magnitude calculations provide a quick way to evaluate the appropriateness of an answer.

Variable Symbols

Quantities		Units	
Δy	change in vertical position	m	meters
Δt	time interval	s	seconds
m	mass	kg	kilograms