# Study Guide

## Interactive Textbook

- Interactive Student Edition
- Self-Assessment with remediation
- Assessment reports for teachers

## Apply the BIG Idea

### Connect to Key Concepts

Reinforce the chapter's Big Idea by connecting it to important Key Concepts. For example, ask: **What skills and knowledge do physical scientists use to study matter, energy, and the changes they undergo?** *(Sample answer: Physical scientists use the skills of observing, inferring, and predicting and their knowledge of chemistry or physics and mathematics.)*

## Teaching Resources

### Teaching Resources, Unit 1

- Chapter 1 Key Terms Review
- Chapter 1 Vocabulary Skill

### Color Transparencies

- Transparency 8.16

### Chapter Tests Levels A and B

- Chapter 1 Tests
- Chapter 1 Performance Assessment

### Standards Review Workbook

### Standards Review Transparencies

### Progress Monitoring Assessment

- Screening, diagnostic, and benchmark tests

### *ExamView*® Computer Test Bank CD-ROM

Go Online PHSchool.com
**For:** Self-Assessment
**Visit:** PHSchool.com
**Web Code:** cxa-1010

Students can take a practice test online that is automatically scored.

| Key | |
|---|---|
| | AA Active Art |
| | RNG-A Reading and Note Taking Guide, Level A |
| | RNG-B Reading and Note Taking Guide, Level B |
| | TR Teaching Resources |

# Chapter 1 Study Guide

## The BIG Idea

**Scientists investigate the natural world by posing questions, developing hypotheses, designing experiments, analyzing data, drawing conclusions, and communicating results.**

### 1 What Is Physical Science?

**Key Concepts** S 8.9

- Scientists use the skills of observing, inferring, and predicting to learn about the natural world.
- Physical science is the study of matter and energy, and the changes that they undergo.

**Key Terms**

science, observing, inferring, predicting, chemistry, physics

### 2 Scientific Inquiry

**Key Concepts** S 8.9.a, 8.9.c

- Processes used in inquiry include posing questions, developing hypotheses, designing experiments, collecting and interpreting data, drawing conclusions, and communicating.
- Scientists use models and develop laws and theories to increase people's understanding of the natural world.

**Key Terms**

scientific inquiry, hypothesis, parameter, manipulated variable, responding variable, controlled experiment, data, communicating, model, scientific theory, scientific law

### 3 Measurement

**Key Concepts** S 8.8.a, 8.8.b

- Using SI allows scientists to compare data and communicate with each other about results.
- SI units include: m, kg, $m^3$, $kg/m^3$, s, and K.
- Volume = Area × Height
- $\text{Density} = \frac{\text{Mass}}{\text{Volume}}$

**Key Terms**

SI, weight, mass, volume, meniscus, density, Celsius scale, Kelvin scale, absolute zero

### 4 Mathematics and Science

**Key Concepts** S 8.9.b

- When collecting data and making measurements, scientists use math skills involving estimation, accuracy and reproducibility, significant figures, and precision.

**Key Terms**

estimate, accuracy, reproducibility, significant figures, precision

### 5 Graphs in Science

**Key Concepts** S 8.9.d, 8.9.g

- Line graphs are used to display data to see how one variable (the responding variable) changes in response to another variable (the manipulated variable).
- A line of best fit emphasizes the overall trend shown by all the data taken as a whole.
- $\text{Slope} = \frac{\text{Rise}}{\text{Run}} = \frac{y_2 - y_1}{x_2 - x_1}$
- Line graphs are powerful tools in science because they allow you to identify trends and make predictions.

**Key Terms**

graph, horizontal axis, vertical axis, origin, coordinate, data point, line of best fit, linear graph, slope, nonlinear graph

### 6 Science Laboratory Safety

**Key Concepts** S 8.9

- Good preparation helps you stay safe when doing science activities in the laboratory or the field.
- When any accident occurs, no matter how minor, notify your teacher immediately. Then, listen to your teacher's directions and carry them out quickly.



## Diagnose and Remediate

Also available on Success Tracker

| Standard | Review and Assessment Items | Standards-Targeted Resources | Additional Resources |
|---|---|---|---|
| S 8.8.a | 3, 8, 19, 22 | RNG-A 19–24; RNG-B 18–24 | TR: Vocabulary Skill<br>TR: Key Terms<br>Student Edition in MP3 (English/Spanish)<br>Student Express with Interactive Textbook CD-ROM |
| S 8.8.b | 3, 8, 18, 19, 22, 23 | RNG-A 19–24; RNG-B 18–24 | |
| S 8.9 | 5, 11, 21 | RNG-A 11–13, 34–37; RNG-B 11–13, 34–36 | |
| S 8.9.a | 1, 5, 6, 7, 9, 12, 17, 20 | AA cgp-6012; RNG-A 11–13, 14–18; 34–37; RNG-B 11–13, 14–17, 34–36; Video Field Trip | |