

UNIT

1**Life's Structure and Function — 2****Exploring and Classifying Life — 4**

SECTION 1	What is science?	6
SECTION 2	Living Things	14
SECTION 3	Where does life come from?	19
	Visualizing the Origins of Life	20
SECTION 4	How are living things classified?	22
	Activity Classifying Seeds	27
	Activity: Design Your Own Experiment Using Scientific Methods	28–29
	TIME Science and Society Monkey Business	30–31

**Cells—The Units of Life — 36**

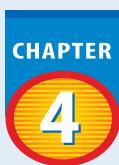
SECTION 1	The World of Cells	38
	Activity Observing Algae	44
SECTION 2	The Different Jobs of Cells	45
	Activity: Design Your Own Experiment Water Movement in Plants	50–51
	TIME Science and Society Test Tube Tissue	52–53

**Bacteria — 58**

SECTION 1	What are bacteria?	60
	Activity Observing Cyanobacteria	66
SECTION 2	Bacteria in Your Life	67
	Visualizing Nitrogen Fixing Bacteria	69
	Activity Composting	74–75
	Science Stats Unusual Bacteria	76–77
	82

CONTENTS

UNIT

2**Life's Diversity — 84****Protists and Fungi — 86**

SECTION 1	Protists	88
	Activity Comparing Algae and Protozoans	99
SECTION 2	Fungi	100
	Visualizing Lichens as Air Quality Indicators	105

Activity: Model and Invent

Creating a Fungus Field Guide 108–109

TIME Science and Society

Chocolate SOS 110–111

Plants — 116

SECTION 1	An Overview of Plants	118
	Visualizing Plant Classification	122

SECTION 2	Seedless Plants	124
------------------	-----------------------	-----

SECTION 3	Seed Plants	130
------------------	-------------------	-----

Activity Identifying Conifers 139

Activity: Use the Internet

Plants as Medicine 140–141

	A Loopy Idea Inspires “Fasten-ating” Invention	142–143
--	--	---------

Invertebrate Animals — 148

SECTION 1	What is an animal?	150
SECTION 2	Sponges, Cnidarians, Flatworms, and Roundworms ..	153
SECTION 3	Mollusks and Segmented Worms	158
SECTION 4	Arthropods and Echinoderms	164
	Visualizing Arthropod Diversity	166

Activity Observing Complete Metamorphosis 171

Activity: Design Your Own Experiment

Garbage-Eating Worms 172–173

Science Stats Squid Power 174–175

CHAPTER

**Vertebrate Animals — 180****SECTION 1**

- Chordate Animals 182



- Visualizing Fish Diversity 185

SECTION 2

- Amphibians and Reptiles 187

- Activity** Frog Metamorphosis 192

SECTION 3

- Birds 193

SECTION 4

- Mammals 197

Activity: Model and Invent

- Homes for Endangered Animals 202–203



- Cosmic Dust and Dinosaurs 204–205



- 210



Alabama Map Turtle,
Graptemys pulchra

UNIT**3****Life and the Environment — 212**

CHAPTER

**Interactions of Living Things — 214****SECTION 1**

- The Environment 216

- Activity** Delicately Balanced Ecosystems 222

SECTION 2

- Interactions Among Living Organisms 223

SECTION 3

- Matter and Energy 228



- Visualizing a Food Chain 229

Activity: Design Your Own Experiment

- Identifying a Limiting Factor 234–235

Science and Language Arts

- The Solace of Open Spaces* 236–237

CONTENTS

**Resources — 242**

SECTION 1	Energy Resources	244
SECTION 2	Alternative Energy Resources	249
NATIONAL GEOGRAPHIC		Visualizing Solar Power Plants
SECTION 3	Water	257
Activity Using Water		262
SECTION 4	Land	263
Activity: Design Your Own Experiment		
Using Land		268–269
Science and Language Arts		
A Walk in the Woods		270–271
THE PRINCETON REVIEW		276

UNIT

4**Earth's Air and Water — 278****Atmosphere — 280**

SECTION 1	Earth's Atmosphere	282
Activity Evaluating Sunscreens		290
SECTION 2	Energy Transfer in the Atmosphere	291
SECTION 3	Air Movement	295
NATIONAL GEOGRAPHIC		Visualizing Global Winds
Activity: Design Your Own Experiment		
The Heat Is On		300–301
Science and Language Arts		
Song of the Sky Loom		302–303





Weather — 308

SECTION 1	What is weather?	310
SECTION 2	Weather Patterns	318
	NATIONAL GEOGRAPHIC Visualizing Tornadoes	323
SECTION 3	Weather Forecasts	326
	Activity Reading a Weather Map	329
	Activity: Model and Invent	
	Measuring Wind Speed	330–331
	TIME Science and Society	
	Rain Makers	332–333

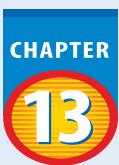


Oceans — 338

SECTION 1	Ocean Water	340
	Activity Desalination	345
SECTION 2	Ocean Currents and Climate	346
SECTION 3	Waves	351
SECTION 4	Life in the Oceans	355
	NATIONAL GEOGRAPHIC Visualizing Food Chains in a Food Web	359
	Activity: Model and Invent	
	Waves and Tides	362–363
	Science Stats Ocean Facts	364–365
	THE PRINCETON REVIEW	370

CONTENTS

UNIT

5**Earth and Space — 372****Rocks and Minerals — 374****SECTION 1**

Minerals—Earth's Jewels 376

SECTION 2

Igneous and Sedimentary Rocks 385

Visualizing Igneous Rock Features 388

SECTION 3

Metamorphic Rocks and the Rock Cycle 392

Activity Gneiss Rice 397

Activity Classifying Minerals 398–399

Going for the Gold 400–401

**Earthquakes — 406****SECTION 1**

Forces Inside Earth 408

SECTION 2

Features of Earthquakes 412

Visualizing Seismic Waves 414

Activity Epicenter Location 420
SECTION 3

People and Earthquakes 421

Activity Earthquake Depths 428–429

Science Stats Moving Earth! 430–431
**Views of Earth — 436****SECTION 1**

Landforms 438

SECTION 2

Viewpoints 444

SECTION 3

Maps 448

Visualizing Topographic Maps 451

Activity Making a Topographic Map 455

Activity: Model and Invent

Constructing Landforms 456–457

TIME Science and History

Location, Location 458–459

CHAPTER

16

Weathering and Erosion — 464

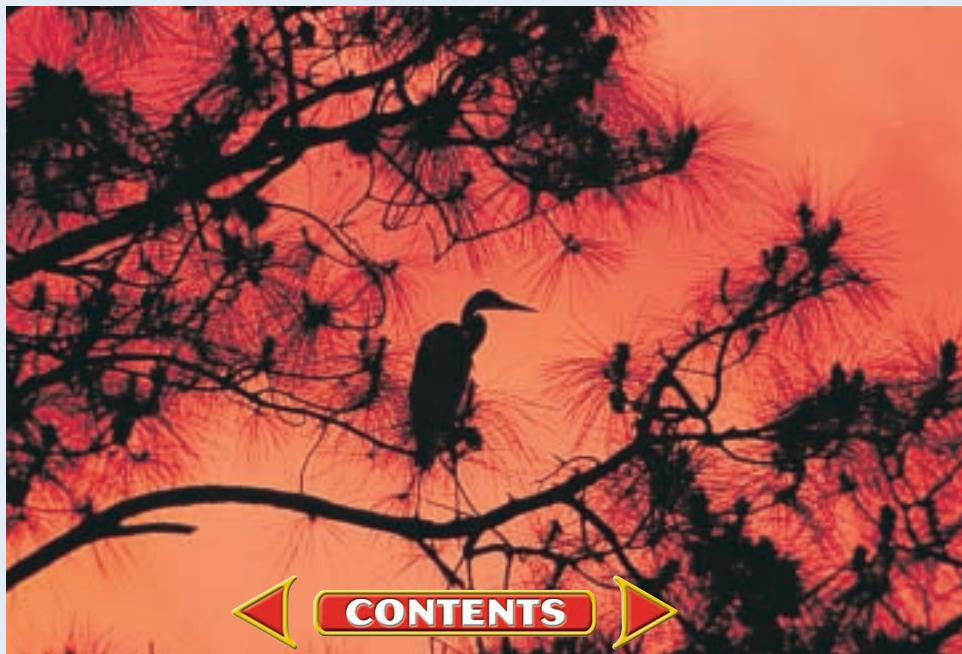
SECTION 1	Weathering and Soil Formation	466
	Activity Classifying Soils	472
SECTION 2	Erosion of Earth's Surface	473
	 NATIONAL GEOGRAPHIC Visualizing Mass Movements	474
	Activity: Design Your Own Experiment	
	Measuring Soil Erosion	482–483
	TIME Science and History	
	Crumbling Monuments	484–485

CHAPTER

17

The Solar System and Beyond — 490

SECTION 1	Earth's Place in Space	492
	Activity Moon Phases	497
SECTION 2	The Solar System	498
SECTION 3	Stars and Galaxies	506
	 NATIONAL GEOGRAPHIC Visualizing Galaxies	510
	Activity: Design Your Own Experiment	
	Space Colony	514–515
	TIME Science and Society	
	Flying High	516–517
	 THE PRINCETON REVIEW	522



CONTENTS

UNIT

6

Matter, Forces, and Energy — 524**Properties and Changes of Matter — 526**

SECTION 1	Physical Properties and Changes	528
	Visualizing Dichotomous Keys	536
SECTION 2	Chemical Properties and Changes	540
	Activity Liquid Layers	547
	Activity: Design Your Own Experiment	
	Fruit Salad Favorites	548–549

**Motion, Forces, and Simple Machines — 554**

SECTION 1	Motion	556
SECTION 2	Newton's Laws of Motion	562
	Visualizing Newton's Laws and Space Travel ..	568
SECTION 3	Work and Simple Machines	570
	Activity Motion	577
	Activity: Use the Internet	
	Methods of Travel	578–579
	Science Stats Fastest Facts	580–801

**Energy — 586**

SECTION 1	Energy Changes	588
	Visualizing Kinetic Energy	591
SECTION 2	Temperature	596
SECTION 3	Chemical Energy	604
	Activity Converting Kinetic and Potential Energy	609
	Activity: Model and Invent	
	Comparing Temperature Changes	610–611
	Science and Language Arts	
	Hiroshima	612–613
	618

UNIT

7

Electricity and Magnetism — 620**Electricity — 622**

SECTION 1	Electric Charge	624
	Visualizing Nerve Impulses	626
SECTION 2	Electric Current	631
SECTION 3	Electric Circuits	636
	Activity Current in a Parallel Circuit	643
	Activity A Model for Voltage and Current	644–645
	TIME Science and History	
	Fire in the Forest	646–647

**Magnetism — 652**

SECTION 1	What is magnetism?	654
	Activity Make a Compass	660
SECTION 2	Electricity and Magnetism	661
	Visualizing Maglev Trains	663
	Activity How does an electric motor work?	670–671
	Science and Language Arts	
	“Aagjuuk and Sivulliit”	672–673
	678

