

Table of Contents

Unit 1: Foundations

Chapter 1: Science Practices and Skills

Preparation: Chapter 1	8
1.1 Scientific Investigation I	10
1.2 Scientific Investigation II	12
1.3 Engineering Design Process I	14
1.4 Engineering Design Process II	16
1.5 Skills Review	18
1.6 Graphing Skills	20
1.7 Chapter 1 Review	22

Unit 2: Life Science

Chapter 2: Animal Structures and Their Functions

Preparation: Chapter 2	36
2.1 Animal Classification	38
2.2 External Animal Structures	40
2.3 Animal Growth I	42
2.4 Animal Growth II	44
2.5 Animal Protection	46
2.6 Internal Animal Structures	48
2.7 Design Process: Biomimicry	50
2.8 Chapter 2 Review	52

Chapter 3: Animal Information Processing

Preparation: Chapter 3	60
3.1 Animal Senses	62
3.2 Properties of Light	64
3.3 Sensory Processing in the Brain	66
3.4 Animal Responses	68
3.5 Animal Behaviors	70
3.6 Animal Survival	72
3.7 Investigation: Reaction Time	74
3.8 Chapter 3 Review	76

Chapter 4: Plant Structures and Their Functions

Preparation: Chapter 4	84
4.1 Plant Characteristics	86
4.2 External Plant Structures	88
4.3 Vascular Plants	90
4.4 Nonvascular Plants	92
4.5 Photosynthesis	94
4.6 Plant Structures and Special Features	96
4.7 Investigation: Response to Environment	98
4.8 Chapter 4 Review	100
Unit 2 Connect	102
Unit 2 Design	104

Unit 3: Physical Science

Chapter 5: Energy

Preparation: Chapter 5	122
5.1 Types of Energy	124
5.2 Energy of Motion	126
5.3 Speed	128

5.4 Change in Motion..... 130

5.5 Heat Transfers Energy..... 132

5.6 Sound and Light Transfer Energy..... 134

5.7 Investigation: Marble Collisions..... 136

5.8 Chapter 5 Review..... 138

Chapter 6: Energy from Natural Resources

Preparation: Chapter 6 146

6.1 Natural Resources..... 148

6.2 Nonrenewable Energy..... 150

6.3 Renewable Energy..... 152

6.4 Energy Availability..... 154

6.5 Impact on the Environment..... 156

6.6 Alternative Energy Sources 158

6.7 Design Process: Waterwheel..... 160

6.8 Chapter 6 Review..... 162

Chapter 7: Waves and Information Transfer

Preparation: Chapter 7 170

7.1 Introduction to Waves 172

7.2 Wave Properties..... 174

7.3 Types of Waves 176

7.4 Sound Waves 178

7.5 Information Transfer 180

7.6 Information Technology..... 182

7.7 Design Process: Sending Messages..... 184

7.8 Chapter 7 Review..... 186

Chapter 8: Electricity

Preparation: Chapter 8 194

8.1 Life and Electricity..... 196

8.2 Static Electricity 198

8.3 Current Electricity..... 200

8.4 Circuit Types 202

8.5 Electrical Energy Transformation 204

8.6 Conductors and Insulators..... 206

8.7 Investigation: Electric Circuits 208

8.8 Chapter 8 Review..... 210

Unit 3 Connect..... 212

Unit 3 Design..... 214

Unit 4: Earth Science

Chapter 9: Earth’s Surface

Preparation: Chapter 9 232

9.1 Soil 234

9.2 Minerals 236

9.3 Rocks..... 238

9.4 Mountain Patterns..... 240

9.5 Earthquakes and Volcanoes 242

9.6 Patterns of Rock Formations 244

9.7 Design Process: Mapping New Land..... 246

9.8 Chapter 9 Review..... 248

Chapter 10: Changes in Earth's Surface

Preparation: Chapter 10	258
10.1 Change	260
10.2 Weathering	262
10.3 Erosion	264
10.4 Water Sources	266
10.5 Water Cycle	268
10.6 Extreme Changes	270
10.7 Design Process: Erosion Prevention	272
10.8 Chapter 10 Review	274

Chapter 11: Living Things Change Earth's Surface

Preparation: Chapter 11	282
11.1 Resources	284
11.2 Ecosystems	286
11.3 Case Study 1: Beavers	288
11.4 Case Study 2: Ants	290
11.5 Case Study 3: Elephants	292
11.6 Case Study 4: Invasive Species	294
11.7 Investigation: Plants Breaking Rocks	296
11.8 Chapter 11 Review	298
Unit 4 Connect	300
Unit 4 Design	302

Unit 5: Human Body

Chapter 12: Body Systems

Preparation: Chapter 12	316
12.1 Many Systems	318
12.2 Circulatory System	320
12.3 Respiratory System	322
12.4 Digestive System	324
12.5 Immune System	326
12.6 Musculoskeletal System	328
12.7 Investigation: Pulse Rate	330
12.8 Chapter 12 Review	332

Chapter 13: Maintain Body Systems

Preparation: Chapter 13	340
13.1 Choices	342
13.2 Nutrition	344
13.3 Activity	346
13.4 Technology: Vaccines and Antibiotics	348
13.5 Total Wellness	350
13.6 External Influences	352
13.7 Investigation: The Effects of Poor Nutrition	354
13.8 Chapter 13 Review	356
Unit 5 Connect	358
Unit 5 Design	360
Glossary	369
Index	373
Credits	377