Contents

Preface, ix

Unit Force, Motion, and Energy, 1



Laws of Motion, 3

Relationship Between Force and Motion, 4 Sir Isaac Newton and the Laws of Motion, 5

Summing It Up, 13

Key Terms, 14

Enrichment, 14

Envi Watch, 14

Tech Talk, 15

Sci-Virtue, 15

Chapter Test, 16

Performance Task, 18



Work, Power, and Energy, 19

Work, 20

Power, 24

Energy, 27

Summing It Up, 32

Key Terms, 33

Enrichment, 33

Envi Watch, 33

Tech Talk, 34

Sci-Virtue, 34

Chapter Test, 35

Performance Task, 36



Forms of Energy, 37

Sound, 38

Light, 45

Heat, 52

Electricity, 65

Summing It Up, 73
Key Terms, 74
Enrichment, 74
Envi Watch, 75
Tech Talk, 75
Sci-Virtue, 76
Chapter Test, 76
Performance Task, 78
Career Ops, 78



Earth and Space, 79



CHAPTER 4 Earthquakes and Faults, 81

Faults, 82
Earthquakes, 84
Earthquake Preparedness, 92
Summing It Up, 95
Key Terms, 96

Enrichment, 96
Envi Watch, 97
Tech Talk, 97
Sci-Virtue, 98

Chapter Test, 99

Performance Task, 100



Typhoons, 101

Typhoon Formation, 102 Why the Philippines is Prone to Typhoons, 103 Describing Typhoons and Other Weather Conditions, 105 Effect of Landforms and Bodies of Water on Typhoons, 110

Summing It Up, 112

Key Terms, 112

Enrichment, 113

Envi Watch, 113

Tech Talk, 114

Sci-Virtue, 114

Chapter Test, 115

Performance Task, 116



Heavenly Bodies, 117

Minor Members of the Solar System, 118 Beyond the Solar System, 127 Science and Technology for Space Exploration, 135

Summing It Up, 142

Key Terms, 142

Enrichment, 143

Envi Watch, 143

Tech Talk, 144

Sci-Virtue, 144

Chapter Test, 145

Performance Task, 147

Career Ops, 148





Particulate Nature of Matter, 151

Building Blocks of Matter, 152 Submicroscopic Classification of Matter, 163 Energy and Phase Changes of Matter, 166 Classification of Matter According to Composition, 173 Representations of the Classifications of Matter, 177

Summing It Up, 180 Key Terms, 181 Enrichment, 181 Envi Watch, 182 Tech Talk, 183 Sci-Virtue, 183 Chapter Test, 184 Performance Task, 188



Atomic Structure, 189

Subatomic Particles, 190 Atomic Number and Mass Number, 197

Summing It Up, 202 Key Terms, 203 Enrichment, 203 Envi Watch, 204 Tech Talk, 204 Sci-Virtue, 205 Chapter Test, 206 Performance Task, 208



Periodic Table of Elements, 209

Historical Development of the Periodic Table of Elements, 210

Periodic Classification of Elements, 214

Periodic Trends, 227

Summing It Up, 237

Key Terms, 238

Enrichment, 239

Envi Watch, 239

Tech Talk, 240

Sci-Virtue, 240

Chapter Test, 241

Performance Task, 243

Career Ops, 244



Living Things and Their Environment, 245



Human Digestive System, 247

Human Digestive System: Structure and Functions, 248

Accessory Digestive Organs, 255

Coordinated Functions of the Digestive, Respiratory, Circulatory, and Excretory Systems, 258

Digestive System Diseases, 260

Contemporary Health Issues, 264

Summing It Up, 275

Key Terms, 276

Enrichment, 276

Envi Watch, 277

Tech Talk, 277

Sci-Virtue, 277

Chapter Test, 278

Performance Task, 280

CHAPTER 11

Heredity and Variation of Traits, 281

Genetics, 282

Heredity-Associated Structures, 282

Cell Division, 286

Genetic Variation via Sexual Reproduction, 293

Summing It Up, 296

Key Terms, 297

Enrichment, 297

Envi Watch, 297

Tech Talk, 298

Sci-Virtue, 298

Chapter Test, 299

Performance Task, 300



Biodiversity and Interactions in the Environment, 301

Biodiversity, 302

Classification of Living Things, 303

Biological Interactions, 304

Protection and Conservation of Rare and Economically Important Species, 306

Energy Flow in an Ecosystem, 311

Biogeochemical Cycles, 314

Impact of Human Activities on Ecosystems, 318

Summing It Up, 321

Key Terms, 322

Enrichment, 322

Envi Watch, 323

Tech Talk, 323

Sci-Virtue, 323

Chapter Test, 324

Performance Task, 326

Career Ops, 327

Glossary, 329 Bibliography, 343 Index, 347