

Contents

Part 1	The Digestive System	
Lesson 1	Human Body Systems—A Preassessment	2
	Galen—The Gladiators’ Doctor	3
	Inquiry 1.1 Human Body Mapping	4
	Humans—The Problem-Solving Animals	6
Lesson 2	Moving Through the Digestive Tract	8
	Inquiry 2.1 Moving Right Along	10
	Spies: All Systems Go!	12
Lesson 3	Exploring Carbohydrates	14
	What Is a Water Bath?	15
	Inquiry 3.1 Testing Foods for Sugar and Starch	17
	Nutrients: You Just Can’t Live Without ’Em	20
Lesson 4	Digestion in the Mouth	24
	Inquiry 4.1 Exploring Chemical Digestion in the Mouth	25
	Making It Simple	29
	Spies: Into the System	30
Lesson 5	Digestion in the Stomach	32
	Inquiry 5.1 Exploring Chemical Digestion in the Stomach	33
	Chance of a Life Time	37
	Spies: Into the Blender	38
Lesson 6	Diffusion and Active Transport	40
	Inquiry 6.1 Spreading Out and Through	42
	Diffusion and Active Transport: Getting From Here to There	46
	Spies: The Long and Winding Tube	48
Lesson 7	Surface Area and Absorption	50
	Inquiry 7.1 Increasing the Surface Area of a Clay Cube	51
	Inquiry 7.2 Modeling the Inside Surface of the Small Intestine	52
	Surface Area: Your Intestine Isn’t Small at All	54
	Spies: Leftovers	56

Lesson 8	The Digestive System—An Assessment	60
	Inquiry 8.1 Which Solution Has the Enzyme?	61
	Looking Good, Feeling Better!	64
Part 2	The Respiratory and Circulatory Systems	
Lesson 9	Anchor Activity—Diseases and Health Careers	68
	Disease: What’s Gotten Into You?	72
Lesson 10	Assessing Breathing Models	76
	Excuse Me, Please!	77
	Inquiry 10.1 Assessing the Syringe Model of Breathing	83
	Spies: The Second Journey Begins	85
Lesson 11	How Much Air Can You Exhale?	90
	Inquiry 11.1 Measuring How Much Air You Can Exhale	92
	Up, Up, and Away!	96
	Dr. Heimlich’s Lifesaving Maneuver	97
Lesson 12	Recipe for Energy—Cellular Respiration	98
	Oxidation—One Process, Two Forms	99
	Inquiry 12.1 Investigating Cellular Respiration	102
	Inquiry 12.2 Using a Model to Show Evidence of a Waste Product of Cellular Respiration	
	Inquiry 12.3 Exploring the Movement of Carbon Dioxide Through a Membrane	104
	Polio: Machines and Medicine Control a Killer	106
	Spies: Why So Many?	108
Lesson 13	Releasing Energy From Food	110
	Counting Calories: Bombs Away!	111
	Inquiry 13.1 Comparing the Energy Released by Marshmallows and Walnuts	113
	Go for the Burn	116
Lesson 14	The Pumping Heart	120
	Dr. William Harvey Closes the Loop	121
	Inquiry 14.1 Analyzing the Siphon-Pump Heart Model	

	Marcello Malpighi—Man With a Microscope	125
	Spies: Back in Circulation	126
Lesson 15	Factors Affecting Heart Rate	130
	The Beat Goes On	131
	Inquiry 15.1 Exploring Factors That Affect Heart Rate	132
	Blood: Life’s Liquid	134
Lesson 16	The Heart Meets Resistance	138
	Inquiry 16.1 Feeling the Pressure	139
	Blood Pressure: What Goes Up Should Come Down	142
Lesson 17	The Respiratory and Circulatory Systems— An Assessment	
	Assessment Part A: Designing and Conducting an Inquiry	145
	Assessment Part B: Completing Selected-Response Items and Final Revision of Human Body Systems Posters	
	Organ and Tissue Transplantation: A ’Round-the-Clock Need	147
Part 3	The Musculoskeletal System	
Lesson 18	The Musculoskeletal System—An Overview	150
	Inquiry 18.1 Winging It	152
	Life in the Bone Zone	155
	Spies: Two Working As One	158
Lesson 19	Joints and Movement	160
	Inquiry 19.1 Exploring Joints With Models	161
	Spies: What Kind of Joint Is This?	165
Lesson 20	Muscle Size and Strength	
	Inquiry 20.1 Investigating Muscle Size and Strength	170
	Anabolic Steroids—Not Worth the Risk	173
Lesson 21	Exploring Muscle Fatigue	174
	Inquiry 21.1 Working Against Fatigue	175

	Repetitive Stress Injury: Too Much of the Same Old Thing	177
	Spies: Command Central	179
Lesson 22	The Body in Balance	182
	Making Adjustments	183
	Inquiry 22.1 Maintaining a Balance	184
	Lie Detectors: Tracking Reactions	186
	Spies: Back Home	188
Lesson 23	Final Assessment—Human Body Systems	190
	Reflex Actions: Ready or Not, Here They Come!	193
	Glossary	197
	Index	201
	Photo Credits	205