

Contents

Acknowledgments	xviii
Letter to 6–8 Teachers	xix
Letter to Middle School Principals	xx
Letter to Mathematics Coaches	xxi
Letter to Preservice College and University Instructors	xxii
How to Use This Book	xxiii

Part I. You Are the Architect of Your Classroom 1

Chapter 1. Surveying Your Site: Knowing Your Students	2
Why Is It So Important to Know Your Students?	3
What Is Prior Knowledge in Mathematics?	3
What Do Access and Equity Really Mean?	5
How Do Identity and Agency Influence Lesson Planning?	5
What Do Culturally and Linguistically Diverse Students Need?	7
What Do Students Living in Poverty Need?	9
What Are Learning Needs?	10
What Are the Unique Needs of the Adolescent?	12
What Are the Common Themes?	14
Chapter 2. Your 6–8 Blueprint: Planning Mathematics Lessons for Coherence, Rigor, and Purpose	15
What Is Coherence?	16
What Is Rigor?	16
What Is the Purpose of a Lesson?	19
<i>What Is Conceptual Understanding?</i>	19
<i>What Is Procedural Fluency?</i>	21
<i>What Is Transfer?</i>	22
How Can You Ensure That You Plan Lessons for Coherence, Rigor, and Purpose?	23
Lesson-Planning Template	24

Part II. Drafting Your 6–8 Blueprint 27

Chapter 3. Laying Your Foundation: It Starts With Big Ideas, Essential Questions, and Standards	28
What Are State Standards for Mathematics?	29
What Are Essential Questions?	30
What Are Process Standards?	31
Building Unit Coherence	34
Sixth-Grade Snapshot: Big Ideas, Essential Questions, and Standards	35
Seventh-Grade Snapshot: Big Ideas, Essential Questions, and Standards	36

Eighth-Grade Snapshot: Big Ideas, Essential Questions, and Standards 37
Under Construction 38

Chapter 4. Reinforcing Your Plan: Learning Intentions and Success Criteria 39

What Are Learning Intentions? 40
What Are Mathematics Learning Intentions? 40
What Are Language and Social Learning Intentions? 41
 Language Learning Intentions 41
 Social Learning Intentions 42
How Do You Communicate Learning Intentions With Students? 43
What Are Success Criteria? 44
How Do Learning Intentions Connect to the Success Criteria? 45
When Should Learning Intentions and Success Criteria Be Shared With Students? 45
Building Unit Coherence 46
Sixth-Grade Snapshot: Learning Intentions and Success Criteria 47
Seventh-Grade Snapshot: Learning Intentions and Success Criteria 48
Eighth-Grade Snapshot: Learning Intentions and Success Criteria 49
Under Construction 50

Chapter 5. Deciding on Purpose: Why Are You Building This Lesson? 51

What Is the Role of a Conceptual Understanding Lesson? 52
What Is Procedural Fluency, and How Does It Build From a Conceptual Understanding Lesson? 56
How Do You Know If You Need a Conceptual Understanding or Procedural Fluency Lesson? 58
 How Do You Create a Transfer Lesson? 59
Building Unit Coherence 62
Sixth-Grade Snapshot: Lesson Purpose 63
Seventh-Grade Snapshot: Lesson Purpose 64
Eighth-Grade Snapshot: Lesson Purpose 65
Under Construction 66

Chapter 6. Choosing Tasks: The Heart of a Lesson 67

Why Are Tasks Important? 68
What Is a Worthwhile Task? 69
 Uses Significant Mathematics for the Grade Level 69
 Rich 69
 Problem Solving in Nature 69
 Authentic/Interesting 69
 Equitable 70
 Active 70
 Connects to Process Standards and/or Mathematical Practices 70
How Do You Adapt Tasks? 71
What Are Some Sources for Worthwhile Tasks? 73
Building Unit Coherence 74
Sixth-Grade Snapshot: Task Selection 75
Seventh-Grade Snapshot: Task Selection 76

Eighth-Grade Snapshot: Task Selection 79
Under Construction 80

Chapter 7. Choosing Materials: Representations, Manipulatives, and Other Resources 81

What Is the Role of Representations in Mathematics Lessons? 82
What Is a Manipulative? 86
How Are Manipulatives Used? 89
What Are Other Resources? 91
Building Unit Coherence 91
Sixth-Grade Snapshot: Material Selection 92
Seventh-Grade Snapshot: Material Selection 93
Eighth-Grade Snapshot: Material Selection 94
Under Construction 95

Chapter 8. Cementing the Cracks: Anticipating Student Thinking 96

What Are Misconceptions, and Where Do They Come From? 97
How Can You Plan to Minimize Misconceptions? 98
 Formative Assessment 100
 Questioning 101
 Anticipating 101
Building Unit Coherence 102
Sixth-Grade Snapshot: Student Thinking 103
Seventh-Grade Snapshot: Student Thinking 104
Eighth-Grade Snapshot: Student Thinking 105
Under Construction 106

Chapter 9. Framing the Lesson: Formats 107

How Do Middle School Schedules Affect Planning and Instruction? 108
What Are Some Different Lesson Formats? 108
 Four-Part Lesson Plan 109
 Game Format 110
 Small-Group Instruction 111
 Pairs 112
How Do You Plan for Interdisciplinary Instruction? 113
Building Unit Coherence 113
Sixth-Grade Snapshot: Lesson Format 114
Seventh-Grade Snapshot: Lesson Format 115
Eighth-Grade Snapshot: Lesson Format 116
Under Construction 117

Chapter 10. Evaluating Impact: Formative Assessment 118

What Is Formative Assessment? 119
What Are Specific Formative Assessment Techniques? 121
 Observation 121
 Interview 123

<i>Show Me</i>	125
<i>Hinge Questions</i>	126
<i>Exit Task</i>	128
Building Unit Coherence	130
Sixth-Grade Snapshot: Formative Assessment	131
Seventh-Grade Snapshot: Formative Assessment	132
Eighth-Grade Snapshot: Formative Assessment	133
Under Construction	134

Part III. Pulling All the Pieces Together 135

Chapter 11. Planning to Launch the Lesson 136

What Is a Lesson Launch?	137
How Can You Launch a Problem-Solving Lesson?	137
<i>See, Think, and Wonder Lesson Launch</i>	137
<i>Notice and Wonder Lesson Launch</i>	139
<i>Numberless Word Problem Lesson Launch</i>	140
What Kinds of Lesson Launches Focus on Mathematics Concepts?	141
<i>One of These Things Is Not Like the Others</i>	141
What Are Number Sense Routine Lesson Launches?	143
<i>Estimation</i>	143
<i>Number Lines</i>	144
<i>Always, Sometimes, or Never True</i>	145
<i>Splats</i>	145
<i>Number Talk</i>	146
What Do You Anticipate Students Will Do?	147
Building Unit Coherence	148
Sixth-Grade Snapshot: Launch the Lesson	149
Seventh-Grade Snapshot: Launch the Lesson	150
Eighth-Grade Snapshot: Launch the Lesson	151
Under Construction	152

Chapter 12. Planning to Facilitate the Lesson 153

What Is Mathematical Communication?	154
How Do You Facilitate Meaningful Mathematical Discourse?	154
How Do You Plan for and Pose Purposeful Questions?	156
<i>Gathering Information</i>	157
<i>Probing Thinking</i>	157
<i>Making the Mathematics Visible</i>	158
<i>Encouraging Reflection and Justification</i>	159
<i>Engage With the Reasoning of Others</i>	160
How Do You Facilitate Productive Struggle?	162
How Do You Make Sure You Engage Students in the Process Standards as You Facilitate the Lesson?	163
Building Unit Coherence	164
Sixth-Grade Snapshot: Facilitate the Lesson	165
Seventh-Grade Snapshot: Facilitate the Lesson	166

Eighth-Grade Snapshot: Facilitate the Lesson 168
Under Construction 170

Chapter 13. Planning to Close the Lesson 171

Why Do You Need Closure in a Lesson? 172
What Are Some Different Closure Activities? 172
What Is an Extended Closure? 175
Building Unit Coherence 176
Sixth-Grade Snapshot: Close the Lesson 177
Seventh-Grade Snapshot: Close the Lesson 178
Eighth-Grade Snapshot: Close the Lesson 179
Under Construction 180

Chapter 14. Surveying Your Results: Lesson Reflection 181

Why Is It Important to Reflect Upon Lessons? 182
What Kind of Reflection Cycle Supports Teacher Growth? 183
Take Time for Reflection 183
Describe What Worked 183
Describe the Challenge 184
Leverage the Success to Address the Challenge 185
Conduct Your Teaching Experiment 185

Epilogue 186

Appendix A: Complete Lesson Plans 187

Appendix B: Lesson-Planning Template 211

Appendix C: Further Reading/Resources 215

Appendix D: Glossary 217

References 221

Index 227

About the Authors 237



Visit the companion website at
resources.corwin.com/mathlessonplanning/6-8
for downloadable resources.