Contents

	K
Preface	ix
Acknowledgments	xiii
About the Authors	xv
Chapter 1. Mathematical Argumentation: Why and What	1
Argumentation Is Important!	2
What Argumentation Is—and Is Not	3
A Four-Part Model of Argumentation	4
About Truth	7
Teaching as Disciplined Improvisation	8
Improvisation for Argumentation and Norm Setting	9
Sharing Mathematical Authority	12
Getting Started With Argumentation	13
Argumentation Lessons Versus Argumentation in Lessons	15
Working Together	15
Chapter 2. Generating Cases	19
What Does It Mean to Generate Cases?	20
An Activity Rich in Argumentation and Content	20
Vignette: Small Groups Generate Cases	22
Teaching Moves	27
Establishing Norms	29
Planning	31
Tasks for Different Grade Levels	34
Working Together	36
Chapter 3. Conjecturing	39
What Does It Mean to Conjecture?	40
Vignette: Conjecturing Together	40
Teaching Moves	44
Establishing Norms	49
Vignette: Norms for Conjecturing Through Gift Giving	51

Planning	52
Tasks for Different Grade Levels	54
Digital Tools	57
Working Together	58
Chapter 4. Justifying	61
What Does It Mean to Justify?	62
Vignette: Justifying Multiple Conjectures	62
Teaching Moves for Eliciting Justifications	69
Vignette: Critiquing and Connecting Arguments	73
Teaching Moves for Critiquing and Connecting Arguments	76
Establishing Norms	78
Planning	79
Tasks for Upper Grade Levels	81
Digital Tools	83
Working Together	83
Chapter 5. Representations in Justifications	85
What Are Representations?	86
Vignette: Visual Representations Foster Participation	86
Vignette: Gestures Enable a Unique Contribution	90
Teaching Moves	93
Using Dynamic Digital Tools	95
Establishing Norms	97
Planning	98
Tasks for Different Grade Levels	100
Working Together	103
Chapter 6. Levels of Justification	105
Four Levels of Justification	106
Level 0: No Justification	106
Level 1: Case-Based Justifications	108
Level 2: Partially Generalized Justifications Based on Cases	110
Level 3: Fully Generalized Justifications	113
A Rubric for Levels	115
Teaching Moves for Transitions Between Levels	116
Working Together	118
Chapter 7. Concluding	121
What Does It Mean to Conclude?	122
Vignettes: Concluding	122
Teaching Moves	124

129
131
132
134
137
138
138
142
143
146
146
146
150
153
155
159

S

Visit the companion website at

resources.corwin.com/mathargumentation

for a Professional Development Guide and Argumentation Lesson Planning Template, as well as posters, handouts, digital mathematics tools, and other resources.