

Contents

Acknowledgments xxi

Letter to Grades 3–5 Teachers xxiii

Letter to Elementary School Principals xxv

Introduction xxvii

A Brief History of the Common Core xxvii

The Common Core State Standards for Mathematics xxvii

Instructional Shifts xxvii

Major Work of Grades 3–5 xxviii

Common Core Word Wall xxix

The Common Core Standards for Mathematical Practice xxix

Effective Teaching Practices xxxi

How to Use This Book xxxii

Reflection Questions xxxiii

Part 1. Operations and Algebraic Thinking

Domain Overview 2

Suggested Materials for This Domain 3

Key Vocabulary 3

Grade 3

Cluster A: *Represent and solve problems involving multiplication and division.* 6

Cluster B: *Understand properties of multiplication and the relationship between multiplication and division.* 15

Cluster C: *Multiply and divide within 100.* 20

Cluster D: *Solve problems involving the four operations, and identify and explain patterns in arithmetic.* 22

Sample Planning Page: Operations and Algebraic Thinking, Grade 3, Cluster A 25

Planning Pages 27

Grade 4

Cluster A: *Use the four operations with whole numbers to solve problems.* 31

Cluster B: *Gain familiarity with factors and multiples.* 38

Cluster C: *Generate and analyze patterns.* 41

Sample Planning Page: Operations and Algebraic Thinking, Grade 4, Cluster B 44

Planning Pages 48

Grade 5

Cluster A: *Write and interpret numerical expressions.* 51

Cluster B: *Analyze patterns and relationships.* 54

Sample Planning Page: Operations and Algebraic Thinking, Grade 5, Cluster A 57

Planning Pages 58

Reflection Questions: Operations and Algebraic Thinking 60

Part 2. Number and Operations in Base Ten

- Domain Overview 62
- Suggested Materials for This Domain 63
- Key Vocabulary 63

Grade 3

- Cluster A: *Use place value understanding and properties of operations to perform multi-digit arithmetic.* 65
- Sample Planning Page: Number and Operations in Base Ten, Grade 3, Cluster A 72
- Planning Page 73

Grade 4

- Cluster A: *Generalize place value understanding for multi-digit whole numbers.* 74
- Cluster B: *Use place value understanding and properties of operations to perform multi-digit arithmetic.* 79
- Sample Planning Page: Number and Operations in Base Ten, Grade 4, Cluster B 86
- Planning Pages 88

Grade 5

- Cluster A: *Understand the place value system.* 90
- Cluster B: *Perform operations with multi-digit whole numbers and with decimals to hundredths.* 97
- Sample Planning Page: Number and Operations in Base Ten, Grade 5, Cluster B 103
- Planning Pages 105
- Reflection Questions: Number and Operations in Base Ten 107

Part 3. Number and Operations—Fractions

- Domain Overview 110
- Suggested Materials for This Domain 111
- Key Vocabulary 111

Grade 3

- Cluster A: *Develop understanding of fractions as numbers.* 113
- Sample Planning Page: Number and Operations—Fractions, Grade 3, Cluster A 123
- Planning Page 125

Grade 4

- Cluster A: *Extend understanding of fraction equivalence and ordering.* 126
- Cluster B: *Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.* 130
- Cluster C: *Understand decimal notation for fractions, and compare decimal fractions.* 141
- Sample Planning Page: Number and Operations—Fractions, Grade 4, Cluster C 147
- Planning Pages 149

Grade 5

- Cluster A: *Use equivalent fractions as a strategy to add and subtract fractions.* 152
- Cluster B: *Apply and extend previous understandings of multiplication and division to multiply and divide fractions..* 155

Sample Planning Page: Number and Operations—Fractions, Grade 5, Cluster A 169

Planning Pages 171

Reflection Questions: Number and Operations—Fractions 173

Part 4. Measurement and Data

Domain Overview 176

Suggested Materials for This Domain 177

Key Vocabulary 177

Grade 3

Cluster A: *Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.* 180

Cluster B: *Represent and interpret data.* 183

Cluster C: *Geometric measurement: Understand concepts of area and relate area to multiplication and to addition.* 186

Cluster D: *Geometric measurement: Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.* 192

Sample Planning Page: Measurement and Data, Grade 3, Cluster A 194

Planning Pages 195

Grade 4

Cluster A: *Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.* 199

Cluster B: *Represent and interpret data.* 203

Cluster C: *Geometric measurement: Understand concepts of angle and measure angles.* 205

Sample Planning Page: Measurement and Data, Grade 4, Cluster A 209

Planning Pages 210

Grade 5

Cluster A: *Convert like measurement units within a given measurement system.* 213

Cluster B: *Represent and interpret data.* 215

Cluster C: *Geometric measurement: Understand concepts of volume and relate volume to multiplication and to addition.* 217

Sample Planning Page: Measurement and Data, Grade 5, Cluster C 221

Planning Pages 222

Reflection Questions: Measurement and Data 225

Part 5. Geometry

Domain Overview 228

Suggested Materials for This Domain 229

Key Vocabulary 229

Grade 3

Cluster A: *Reason with shapes and their attributes.* 232

Sample Planning Page: Geometry, Grade 3, Cluster A 235

Planning Page 236

Grade 4

Cluster A: *Draw and identify lines and angles, and classify shapes by properties of their lines and angles.* 237

Sample Planning Page: Geometry, Grade 4, Cluster A 241

Planning Page 242

Grade 5

Cluster A: *Graph points on the coordinate plane to solve real-world and mathematical problems.* 243

Cluster B: *Classify two-dimensional figures into categories based on their properties.* 246

Sample Planning Page: Geometry, Grade 5, Cluster A 249

Planning Pages 250

Reflection Questions: Geometry 252

Resources

Table 1: Addition and Subtraction Situations, Grades 3–5 254

Table 2: Multiplication and Division Situations, Grades 3–5 256

Table 3: Standards for Mathematical Practice 259

Table 4: Effective Teaching Practices 262

CCSS Where to Focus Grade 3 Mathematics 264

CCSS Where to Focus Grade 4 Mathematics 265

CCSS Where to Focus Grade 5 Mathematics 266

Reproducibles

Reproducible 1. Hundreds Chart 268

Reproducible 2. Place Value Chart to Hundreds 269

Reproducible 3. Grid Paper 270

Reproducible 4. Base-Ten Blocks 271

Reproducible 5. Fraction Area Models (Circular) 272

Reproducible 6. Fraction Area Models (Rectangular) 275

Reproducible 7. Fraction Strips/Bars 277

Reproducible 8. Place Value Chart 279

Reproducible 9. Geoboard Paper 280

Reproducible 10. Dot Paper (Centimeter) 281

Reproducible 11. Pattern Blocks 282

Reproducible 12. Tangram Pattern 283

Additional Resources 284

About the Authors 285