

Contents

Preface	vii
Preface to <i>Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics</i>	viii
Acknowledgments	ix
1. Introduction	1
Purpose of This Guide	1
Purpose of Curriculum Focal Points	1
The Impact of Curriculum Focal Points on Curriculum, Instruction, and Assessment	2
Using This <i>Focus in Grade 8</i> Book	2
Bringing Focus into the Classroom: Instruction That Builds Understanding and Fluency	3
An instructional-progression approach	3
In-depth instructional conversations	4
Using mathematical representations	4
An Important Grade 8 Issue: Algebra Readiness	5
Grade 8 Curriculum Focal Points	6
2. Focusing on Linear Functions and Linear Equations	7
Instructional Progression for Linear Functions and Linear Equations	7
Early Foundations for Understanding Linear Functions and Linear Equations	7
Rational numbers	8
Proportionality	9
Equations	10
Focusing on Linear Functions and Linear Equations	10
Representations of linear relationships	10
Slope and y -intercept	18
Relations and functions	34
Systems of linear equations	37
Focusing on Linear Functions and Linear Equations through Problem Solving	42
Strengthening Understanding through Connections	45
Connections in later grades	47
Developing Depth of Understanding	48

Contents — Continued

3. Focusing on Analyzing Geometric Figures and Space by Using Distance and Angle.....	49
Instructional Progression for Analyzing Geometric Figures and Space by Using Distance and Angle	49
Early Foundations for Analyzing Geometric Figures and Space by Using Distance and Angle	49
Focusing on Analyzing Geometric Figures and Space by Using Distance and Angle	52
Inductive and deductive reasoning.....	52
Using inductive and deductive reasoning in geometry	53
Angle relationships in intersecting lines.....	54
The sum of the measures of the angles of a triangle	61
Similar triangles	63
The Pythagorean theorem and its converse	67
Focusing on analyzing geometric figures and space through problem solving	75
Focusing on Figures and Space through Connections	80
Connections in later grades.....	92
Developing Depth of Understanding	95
4. Focusing on Analyzing and Summarizing Data Sets	97
Instructional Progression for Analyzing and Summarizing Data Sets.....	97
Early Foundations for Analyzing and Summarizing Data Sets	97
Focusing on Analyzing and Summarizing Data Sets.....	99
Creating and comparing different data displays.....	99
Measures of center.....	111
Measures of spread.....	121
Scatter plots	128
Focusing on Analyzing and Summarizing Data Sets through Problem Solving.....	133
Focusing on Analyzing and Summarizing Data Sets through Connections	133
Connections in later grades.....	137
Developing a Depth of Understanding.....	138
5. References.....	139