

Table of Contents

Preface	v
Acknowledgments	vi
Fundamental Ideas for High-Quality Mathematics Education	vii
Introduction	1
Snapshot of How Students Are Performing in Mathematics	1
Purpose of This Guide	2
What It Means to Be Mathematically Literate	3
Examples of High-Quality Mathematics Classrooms	3
Elementary School Classroom Example	3
Middle School Classroom Example	5
High School Classroom Example	6
Elements of These Classrooms	9
The Six NCTM Principles: The Foundation of a High-Quality Mathematics Program	10
Equity	12
Curriculum	12
Teaching	13
Learning	14
Assessment	15
Technology	17
Putting the NCTM Principles into Action in Your School	17
Actions Administrators Can Take to Support the Six NCTM Principles	17
Observing and Evaluating a Mathematics Classroom	21
Developing and Supporting Professional Development	22
Elements of Effective Professional Development Programs	22
Knowledge Needed by Mathematics Teachers	23
Regular Teacher Collaboration—Building a Professional Learning Community	23
School Leadership That Supports Teachers' Professional Growth	23
Supporting New Teachers	24
Identifying Instructional Materials	24
Who Should Be Involved in Identifying Instructional Materials?	24
How Do You Analyze Instructional Materials?	24

Communicating with Families	25
Why Is Family Involvement Important?	25
What Information and Resources Should Be Communicated to Families?	25
Ways to Communicate with Families	26
The NCTM Figure This! Program	26
 Communicating with Others in the School System and Community	 26
 Conclusion	 27
 Answers to Frequently Asked Questions	 28
Are the traditional basics still important?	28
What mathematics beyond the traditional basics should all students learn?	28
How should students be grouped?	28
What is the role of practice or drill in instruction?	28
What are the appropriate uses of manipulatives in the mathematics classroom?	28
Will calculators and other technology hurt students' computational skills?	29
When should students master their basic computational facts?	29
How should students learn their basic single-digit facts?	29
Should elementary schools use mathematics specialists?	29
What does algebra really entail in the elementary school?	30
What about algebra in the eighth grade?	31
Do all students need four years of high school mathematics?	31
How do I address those who may hold different views on teaching mathematics?	31
 Resources from NCTM	 32
 Other Resources	 33
 Table of NCTM Standards and Expectations	 33
 References	 46