

Contents

Foreword by Marilyn Burns xi

Introduction xiii

How to Use This Book xv

I School Mathematics for the 21st Century

ELEMENTARY AND SECONDARY MATHEMATICS IN AMERICA 1

- MESSAGE 1 Math for a Flattening World
RESHAPING SCHOOL MATHEMATICS FOR THE 21ST CENTURY 3
- MESSAGE 2 Untapped Potential
MOVING PAST THE ACHIEVEMENT GAP 8
- MESSAGE 3 Making the Case for Creativity
AN OVERLOOKED ELEMENT IN SCHOOL MATHEMATICS 13
- MESSAGE 4 Good Old Days
LEARNING FROM THE ROADS WE'VE TRAVELED 18
- MESSAGE 5 Technology Is a Tool
CHANGING MATHEMATICS IN A TECHNOLOGICAL WORLD 24
- MESSAGE 6 "Teach Harder!" Isn't the Answer
IMPROVEMENT TAKES MORE THAN TEACHER EFFORT 29
- MESSAGE 7 Not Your Grandpa's Algebra
PREPARING ALL STUDENTS FOR COLLEGE AND THE WORKFORCE 33
- MESSAGE 8 More Math, More Dropouts?
HOW WE RAISE THE BAR MATTERS 39
- MESSAGE 9 Increasing Access or Ensuring Failure?
POLICY MAKERS THROW A HAMMER THROUGH THE WALL 44

- MESSAGE 10 It's Not Just About Math and Reading
THE NEED FOR A WELL-BALANCED CURRICULUM 50
- MESSAGE 11 Weighing Hens
LOOKING AT BENCHMARK TESTING 55
- MESSAGE 12 Beyond Band-Aids and Bandwagons
MAKING REAL CHANGE 60
- MESSAGE 13 Seek First to Understand
COLLABORATING TO IMPROVE MATHEMATICS TEACHING AND LEARNING 65
-

II

Great Ideas Whose Time Has Come (and Gone?)

MATHEMATICS ISSUES FACING SCHOOLS AND DISTRICTS 69

- MESSAGE 14 Balance Is Basic
A 21ST-CENTURY VIEW OF A BALANCED MATHEMATICS PROGRAM 71
- MESSAGE 15 Less Can Be More
RETHINKING THE SPIRAL CURRICULUM 78
- MESSAGE 16 Hard Arithmetic Isn't Deep Mathematics
TEACHING MORE THAN COMPUTATION 83
- MESSAGE 17 Constructive Struggling
THE VALUE OF CHALLENGING OUR STUDENTS 88
- MESSAGE 18 Faster Isn't Smarter
THE TRAP OF TIMED TESTS 93
- MESSAGE 19 Embracing Accountability
SURVIVING THE TEST WHILE TEACHING GOOD MATHEMATICS 98
- MESSAGE 20 Putting Calculators in Their Place
THE ROLE OF CALCULATORS AND COMPUTATION IN THE CLASSROOM 103
- MESSAGE 21 No More Pilgrim Pie
THE CHALLENGES OF INTEGRATING MATHEMATICS WITH OTHER SUBJECTS 109
- MESSAGE 22 We Don't Care About the Answer
YES, WE DO. LOOKING FOR BALANCE 115
- MESSAGE 23 The Power of Patterns
DRAWING ON MATHEMATICAL PATTERNS AS WE TEACH 120

- MESSAGE 24 Do It In Your Head
THE POWER OF MENTAL MATH 126
- MESSAGE 25 Pushing Algebra Down
IS SOONER BETTER? 130
- MESSAGE 26 Beyond Pockets of Wonderfulness
WORKING ACROSS BOUNDARIES AND TRANSITIONS 136
- MESSAGE 27 A Math Message to Families
HELPING STUDENTS PREPARE FOR THE FUTURE 141



Real Students and Real Teachers

MATHEMATICS IN TODAY'S CLASSROOMS 147

- MESSAGE 28 So Now You're a Teacher
BEGINNING A PROFESSIONAL JOURNEY 149
- MESSAGE 29 The Evolution of a Mathematics Teacher
HOW WE DEVELOP AS PROFESSIONALS 154
- MESSAGE 30 Crystal's Calculator
LEARNING FROM OUR STUDENTS 159
- MESSAGE 31 Do They Really Need It?
A LESSON IN EXPECTATIONS FROM AFRICA 166
- MESSAGE 32 Yes, but . . .
BELIEVING IN EVERY STUDENT 172
- MESSAGE 33 Engaged in What?
ACTIVITY ISN'T ALWAYS ENGAGEMENT 177
- MESSAGE 34 Forgetting Isn't Forever
LETTING STUDENTS GET TO THE GOOD STUFF 181
- MESSAGE 35 Putting Testing in Perspective
ASSESSMENT AS A PARTNER TO LEARNING 187
- MESSAGE 36 I Know What an 82 Means!
GRADES AND GRADING IN THE 21ST CENTURY 193
- MESSAGE 37 Boring!
IS KEEPING STUDENTS INTERESTED A TEACHER'S JOB? 199
- MESSAGE 38 Ten Kinds of Wonderful
ROLES FOR TEACHERS IN THE 21ST CENTURY 204

MESSAGE 39	Standing on the Shoulders . . .	
	LEARNING FROM EACH OTHER	210
MESSAGE 40	Seven Steps Toward Being a Better Math Teacher	
	A PATH OF LIFELONG IMPROVEMENT	214
MESSAGE 41	Thank you, Mr. Bender	
	CELEBRATING TEACHERS WHO MAKE A DIFFERENCE	220
Afterword:	The Sum of the Parts Is Greater than Some of the Parts	225
Acknowledgments		227
Readings and References		229
Index		241
About the Author		253