

Contents

Introduction	1	Mathematics and Poetry: Problem Solving in Context	47
1. Mathematics as Problem Solving		<i>Frances R. Curcio, Myra Zornowski, and Susan Vigliarolo</i>	
The Mangoes Problem	4	<i>TCM February 1995</i>	
<i>Jerry K. Stonewater</i>			
<i>MTMS November–December 1994</i>			
Mathematics Investigator	9	3. Mathematics as Reasoning	
<i>Ron Lancaster</i>		Fun with Logical Reasoning	52
<i>MTMS September–October 1994</i>		<i>Michele Warman</i>	
Don't Give Up!	11	<i>AT May 1982</i>	
<i>William H. Kraus</i>		Students as Researchers: An Inclined-Plane Activity	57
<i>MT February 1993</i>		<i>Thomas G. Edwards</i>	
Cryptarithms: Math Made Me Daft, Momma	14	<i>MTMS November–December 1995</i>	
<i>William A. Ewbank</i>		The Sky(Dome) Is the Limit	61
<i>MT January 1988</i>		<i>TCM March 1996</i>	
Networks—New York Subways, a Piece of String, and African Traditions	20	Sort Of	63
<i>Claudia Zaslavsky</i>		<i>TCM October 1995</i>	
<i>AT October 1981</i>		What's in a Name?	64
Problem Solving with Discrete Mathematics	26	<i>TCM September 1995</i>	
<i>Louis M. Friedler</i>			
<i>TCM March 1996</i>		4. Mathematical Connections	
2. Mathematics as Communication		We Had a Math Day	68
Communicating in the Language of Mathematics	32	<i>Carolyn Boysaw Mason</i>	
<i>Larry Buschman</i>		<i>AT December 1982</i>	
<i>TCM February 1995</i>		Students Can Discover the Occupational Link with Mathematics	72
500+ Writing Formats	37	<i>J. S. Weathers</i>	
<i>Margaret E. McIntosh</i>		<i>MT November 1989</i>	
<i>MTMS March–April 1997</i>		Now and Then: The Long-Distance Doctor	76
Journal Writing: An Insight into Students' Understanding	41	<i>Betsy K. Bennett</i>	
<i>Karen S. Norwood and Glenda Carter</i>		<i>MTMS May 1996</i>	
<i>TCM November 1994</i>		Flower Beds and Landscape Consultants: Making Connections in Middle School Mathematics	80
Math News Gazette	44	<i>Jim Hersberger and Bill Frederick</i>	
<i>TCM February 1995</i>		<i>MTMS April–May 1995</i>	
Math Times Herald	45	The Pond: Doing Research Together	84
<i>TCM February 1995</i>		<i>Kevin Kinneavy</i>	
		<i>MTMS March–April 1996</i>	

The Civil War and the <i>Standards</i> : Some Mathematical Activities	90
<i>Trent M. Doyle</i>	
<i>MTMS</i> March–April 1996	
Our Diets May Be Killing Us	94
<i>Brenda K. J. Shannon</i>	
<i>MTMS</i> April–May 1995	
The Case of Video Viewing, Reading, and Writing in Mathematics Class: Solving the Mystery	99
<i>Frances R. Curcio and J. Lewis McNeece</i>	
<i>MT</i> November 1993	
Mathematics as Current Events	102
<i>Mary F. Klein</i>	
<i>MT</i> November 1993	
The 12.7 cm Hot Dog Corporation	105
<i>Hope Martin</i>	
<i>AT</i> January 1989	

5. Number and Number Relationships

Promoting Number Sense in the Middle Grades	108
<i>Barbara J. Reys</i>	
<i>MTMS</i> September–October 1994	
Communicating about Fractions with Pattern Blocks	113
<i>Janet H. Caldwell</i>	
<i>TCM</i> November 1995	
Division with Fractions	118
<i>Donald Nowlin</i>	
<i>MTMS</i> November–December 1996	
Another Use for Geoboards	121
<i>Rebecca S. Nelson and Donald R. Whitaker</i>	
<i>AT</i> April 1983	
The Ratio Table	125
<i>James A. Middleton and Marja van den Heuvel-Panhuizen</i>	
<i>MTMS</i> January–March 1995	
A Conceptual Model for Solving Percent Problems	130
<i>Albert B. Bennett, Jr., and L. Ted Nelson</i>	
<i>MTMS</i> April 1994	
Place Value and Probability (with Promptings from Pascal)	135
<i>Janine S. Stone</i>	
<i>AT</i> 1980	

Add-Lo	138
<i>Gloria J. Bledsoe and V. Carl Bledsoe</i>	
<i>MT</i> March 1986	

6. Number Systems and Number Theory

Making a Problem of Junior High School Mathematics	142
<i>Peggy A. House</i>	
<i>AT</i> October 1980	
Foxy Fives	146
<i>Vicki Schell</i>	
<i>MT</i> November 1980	
Using Calculators to Discover Simple Theo- rems: An Example from Number Theory . .	150
<i>Friedhel F. Padberg</i>	
<i>AT</i> April 1981	
It's a Factor of Life	153
<i>Melfried Olson</i>	
<i>MT</i> December 1980	
Five-Cycle Number Patterns	157
<i>Stephen L. Snover</i>	
<i>AT</i> March 1982	
Connecting Decimals and Other Mathematical Content	161
<i>Charles S. Thompson and Vicki Walker</i>	
<i>TCM</i> April 1996	

7. Computation and Estimation

Redefining Computation	168
<i>John A. Van de Walle</i>	
<i>AT</i> January 1991	
Lunch Muncher and Nutritious Nibbles . . .	174
<i>Dixie Metheny and Julia Hollowell</i>	
<i>TCM</i> November 1994	
Estimate and Calculate	178
<i>Earl Ockenga and Joan Duea</i>	
<i>MT</i> April 1985	
Estimating with "Nice" Numbers	182
<i>Robert E. Reys, Barbara J. Reys, Paul R. Trafton, and Judy Zawojewski</i>	
<i>MT</i> November 1985	
Estimating with "Nice" Fractions	189
<i>Robert E. Reys, Barbara J. Reys, Paul R. Trafton, and Judy Zawojewski</i>	
<i>MT</i> November 1986	

Chalk Up Some Calculator Activities for
Rational Numbers 195
Earl Ockenga
AT February 1984

8. Patterns and Functions

Pentagonal Patterns in the Addition Table . . 200
Bonnie H. Litwiller and David R. Duncan
AT April 1985

Exploring Algebraic Patterns
through Literature 203
Richard Austin and Denisse Thompson
MTMS February 1997

And the Winner Is 210
Carol Ann Harlos
MTMS September–October 1995

The Function Game 214
Rheta N. Rubenstein
MTMS November–December 1996

Activities to Help in Learning
about Functions 218
Stephen S. Willoughby
MTMS February 1997

Mathematics Detective: Exploring Graphs—
WYSIWYG 221
Millie Johnson
MTMS March–April 1997

9. Algebra

Building Algebraic Expressions:
A Physical Model 226
Anne C. Patterson
MTMS February 1997

A Visual Approach to Algebra Concepts . . 231
Lynn Morelli
MT September 1992

Building Equations Using M&M's 234
Victoria Borlaug
MTMS February 1997

Algebra: Real-Life Investigations
in a Lab Setting 236
Leah P. McCoy
MTMS February 1997

Spreadsheets, Patterns, and
Algebraic Thinking 239
Don Ploger, Lee Klingler, and Michael Rooney
TCM February 1997

10. Statistics

Dealing with Data 244
Jean M. Shaw
AT May 1984

Having Fun with Baseball Statistics 250
Robert J. Quinn
MTMS May 1996

Dolphins or Wildcats: Exploring Election
Statistics 256
Alison S. Claus
TCM February 1996

Exploring Mean, Median, and Mode with a
Spreadsheet 259
Melvin R. (Skip) Wilson and Carol Krapfl
MTMS September–October 1995

Graphing in the Information Age: Using Data
from the World Wide Web 264
Julie K. Dixon & Christy J. Falba
MTMS March–April 1997

Pictures, Tables, Graphs, and Questions:
Statistical Processes 269
Andrew C. Isaacs and Catherine Randall Kelso
TCM February 1996

Implementing Data Analysis in a Sixth-Grade
Classroom 274
Patricia A. Brosnan
MTMS January–February 1996

Data with Snap, Crackle, and Pop 281
Elaine B. Hofstetter and Laura Sgroi
MTMS March–April 1996

11. Probability

Choice and Chance in Life:
The Game of “Skunk” 286
Dan Brutlag
MTMS April 1994

Explorations with Chance 290
Larry L. Hatfield
MT April 1992

Ya Gotta Play to Win: A Probability and
Statistics Unit for the Middle Grades 296
Francis (Skip) Fennell
AT March 1984

Exploring Random Numbers	301
<i>William R. Speer</i>	
TCM January 1997	
Creamy Comparisons	306
<i>Kathy Trezise</i>	
TCM November 1995	

12. Geometry

The Toothpick Problem and Beyond	310
<i>Charalampos Toumasis</i>	
MT October 1992	
Huge Trees, Small Drawings: Ideas of Relative Sizes	315
<i>Gail Burton</i>	
TCM April 1996	
Folding Perpendiculars and Counting Slope	317
<i>Ann Blomquist</i>	
MT October 1992	
Discovering Pi: Two Approaches	321
<i>Robert Gerver</i>	
AT April 1990	
Area and Perimeter Connections	325
<i>Jane B. Kennedy</i>	
MT March 1993	
The Inside-Out Box: An Analysis of Structures and Space	327
<i>Marilyn L. Fowler</i>	
TCM October 1996	
Cardboard, Rubber Bands, and Polyhedron Models	330
<i>Patricia F. Campbell</i>	
AT October 1983	

13. Measurement

A Dynamic Way to Teach Angle and Angle Measure	336
<i>Patricia W. Wilson and Verna M. Adams</i>	
AT January 1992	
Clinometer Inclines	343
<i>Robert Sovchik and L. J. Meconi</i>	
AT January 1994	
The Age of Trees	345
<i>Robert Sovchik and L. J. Meconi</i>	
AT January 1994	

Tree-and-Pencil Measurements	347
<i>Robert Sovchik and L. J. Meconi</i>	
AT January 1994	
Range Finder	349
<i>Robert Sovchik and L. J. Meconi</i>	
AT January 1994	
The Measure of Music	351
<i>Barbara Skolnick Rothenberg</i>	
TCM March 1996	
Body Measurement	352
<i>K. Allen Neufeld</i>	
AT May 1989	
Student-Made Measuring Tools	356
<i>Jean M. Shaw</i>	
AT November 1983	
Perimeter Patterns	360
<i>Richard R. Austin and Patricia Biafore</i>	
TCM December 1995	
Teaching Relationships between Area and Perimeter with the Geometer's Sketchpad . .	363
<i>Michael E. Stone</i>	
MT November 1994	

14. Assessment

Linking Instruction and Assessment in the Mathematics Classroom	368
<i>Kay B. Samons, Beth Kobett, Joan Heiss, and Francis (Skip) Fennell</i>	
AT February 1992	
Portfolios as Agents of Change	375
<i>Karen S. Karp and DeAnn Huinker</i>	
TCM January 1997	
Classroom Vignette: An Alternative- Assessment Tool	379
<i>Sharon B. Walen and James Hirstein</i>	
TCM February 1995	
Assessing Mathematical Learning	383
<i>G. Edith Robinson and Karen T. Bartlett</i>	
TCM February 1995	
Cooperative Problem Solving: But What about Grading?	386
<i>Diana Lambdin Kroll, Joanna O. Masingila, and Sue Tinsley Mau</i>	
AT February 1992	