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MATH BRAINTEASERS

APRIL BLAKELY



Good Year Books
Culver City, California

Dedication

*For Carolyn—Sister, friend, and teacher.
Your spirit lives on in the lives of those you've touched.*

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Table of Contents

Preface	iv	Who's Who?	28	Flower Power	57
Scope and Sequence	vi	Number Perfect	29	Coin Toss	58
The Hole Story	1	Fill the Bucket	30	Space to Roam	59
Mad Math	2	Eating Habits	31	Pencil Probability	60
Rrrabbit	3	Follow the Dots	32	Cut the Cube	61
No Bones About It	4	All Gassed Up	33	Boxed in Again	62
Follow the Bouncing Ball	5	Circle Divide	34	Circle in a Square	63
More Mad Math	6	Dish Duty	35	Mail Mistake	64
Workout	7	The Indy 500	36	Slip of the Eye	65
Boxed In	8	Abandon Ship!	37	Pay Raise	66
Mystery Number	9	Going to the Fair	38	Travel Time	67
Voyage to Mars	10	Fruit Fun	39	Where's the Fire?	68
Book Bazaar	11	Counting Squares	40	Side by Side	69
Roo Race	12	Holding Hands	41	Memory Loss	70
Hand to Hand	13	Numbers, Please!	42	Pass the Pencils	71
House Hunting	14	Decisions, Decisions	43	What-Nots?	72
Finals	15	Count a Cube	44	Five	73
Farmer Goes to Market	16	Eggy Situation	45	Shaping Up	74
Shape Shifter	17	Race Day	46	All Cut Up	75
Jellybeans	18	Eggs-actly	47	The Wall	76
Fraction Action	19	Countdown	48	A Tall Tale	77
Bell Ringer	20	Plant a Tree	49	Treasure Seekers	78
Pascal's Triangle	21	On and Off	50	Punctuality	79
Soupy Situation	22	All Boxed Up	51	A Treacherous Ride	80
All Mixed Up	23	Family Matters	52	The Allowance	81
Table, Please?	24	Yard Work	53	Me and My Shadow	82
Show Biz	25	Select a Sign	54	Answer Key	83–90
Missing Numbers	26	Absentminded	55		
Puppy Puzzle	27	Choices	56		

Preface

Dear Teachers and Parents,

The ability to analyze and solve problems is a critical skill for middle school students. The activities within this book were designed to provide an opportunity to develop and enhance these skills. Each problem has been carefully correlated to meet the standards set by the National Council of Teachers of Mathematics (NCTM). Every problem in MATH BRAINTEASERS builds students' problem-solving skills as they work to solve challenging exercises. Teachers and parents will find this book a welcome addition to their lessons.

At first, some of the solutions in MATH BRAINTEASERS may appear obvious, but upon reflection you will find that the answers are not always simple. I suggest that you discuss each problem as it is completed and review the thought processes involved in solving each exercise. There are four critical steps in solving any problem:

1. Understand the problem.

What do you know?

What do you need to find out?

Frequently, mistakes are made before any actual calculations begin. Always read carefully what the problem is asking and in what method the answer is expected. For example, an exercise might be written using seconds in its computations but require that the answer be given in minutes or hours. Therefore, any answer given in seconds would be incorrect. Also, remember that not carefully reviewing phrases such as *more than*, *less than*, *which one*, and *how many* can lead to incorrect conclusions. Circling the question on your paper is usually helpful.

2. Plan a strategy.

What can you do?

Decide what information you need to solve the problem and organize it. Charts or lists are very helpful at this point because they help to sort the data into usable information. For example, read the problem below.

David spent \$17 on school supplies and \$5 on video games. Carl spent \$9 on school supplies and \$18 on video games. How much more did Carl spend than David?

You might simply write:

David — \$17 supplies
\$ 5 games

Carl — \$ 9 supplies
\$18 games

3. Carry out your plan.

Use the information you gathered to find a solution. There are several strategies to help.

- a. Draw a diagram
- b. Draw a table
- c. Make a list
- d. Find a pattern
- e. Estimate
- f. Guess and test
- g. Use algebraic equations
- h. Compare with a simpler problem

4. Reflect on your answer.

Have you answered the question?

Does your answer seem reasonable?

Decide whether the answer is logical. If so, then congratulations! You have probably solved the problem successfully. If not, then look back to the first three steps. Does each step precisely lead to the next? Look for an error in your logic and try again.

Each exercise in Math Brainteasers is correlated to a Scope and Sequence chart on page vi that will help you organize your lessons. As an extension, we've provided students with space on many pages, where they can creatively write similar problems. You'll also find detailed instructions offering possible solutions for solving each problem in the answer key at the end of this book. These problems could easily be used as five minute time fillers or to build an entire lesson around. At home, you might find that the entire family enjoys them.

Most importantly, whether you're at home or school, remember—make it fun!

Sincerely,

April Blakely
Middle School Math Teacher

Scope and Sequence

Topics	Page
Algebraic Equations/Expressions	9, 11, 13, 28, 25
Decimals	4, 78, 79, 81
Fractions.....	16, 19, 31, 33, 50, 72, 80
Geometry.....	1, 14, 17, 22, 40, 44, 51, 59, 63, 74, 76
Measurement.....	48, 53
Number Patterns	6
Number Theory	18, 35, 49, 54, 70
Numeration	46, 69
Patterns.....	8, 21, 26, 29, 32, 65, 73
Percent.....	15, 38
Probability and Statistics	27, 43, 56, 58, 60, 64
Problem Solving	3, 5, 10, 12, 20, 28, 30, 34, 39, 41, 47, 52, 61, 62, 67, 75, 77
Ratio and Proportion.....	7, 37, 57, 68, 82
Whole Numbers	24, 36, 42, 45, 55, 66, 71
Whole Theory	2

NAME _____

DATE _____



The Hole Story

1. Find the area of the figure.
2. Find the area of the shaded region.

