

TABLE OF CONTENTS

| | |
|---|-----|
| What is <i>Math Detective</i> ®? | v |
| Key Ideas and Math Topics Charts | vii |
| Scoring Rubric/Assessment Criteria | ix |
| To the Student: Why You Should Become a <i>Math Detective</i> ® | x |
| Sample Problem: The Camping Trip | xi |
| <i>Math Detective</i> ® Certificates | xiv |
| I. NUMBER AND NUMERATION | |
| 1—The Summit Summer Camp | 2 |
| 2—The Prime Dart Game | 4 |
| 3—Let's Have Some Order! | 6 |
| 4—David's Division Dilemma | 8 |
| 5—The Amazing Mayans | 10 |
| 6—The Planet Report | 12 |
| 7—The Percent Building | 14 |
| II. OPERATIONS | |
| 8—The Roberts Family Reunion | 18 |
| 9—Classroom Supplies | 20 |
| 10—Getting Ready for Track | 22 |
| 11—The School Election | 24 |
| 12—Don't Spill the Black Beans! | 26 |
| 13—The Taxi Investigation | 28 |
| III. RATIO, PROPORTION, AND PERCENT | |
| 14—Making Maple Syrup | 32 |
| 15—Testing Time | 34 |
| 16—The 8th-Grade Dance | 36 |
| 17—Eddie's Cat Rescue Gone Wrong | 38 |
| 18—The Furniture Store | 40 |
| 19—The Better Deal? | 42 |

IV. GEOMETRY AND INTRODUCTION TO TRIGONOMETRY

| | |
|--|----|
| 20—The Three Triangles | 46 |
| 21—The Area Competition | 48 |
| 22—The Geometry Quilt | 50 |
| 23—The Rectangle Resort | 52 |
| 24—The Octopus Intersection | 54 |
| 25—Soccer Abroad | 56 |
| 26—The Tale of the Math Garden | 59 |
| 27—Designing a Slide (Introduction to Trigonometry)..... | 62 |

V. PROBABILITY

| | |
|------------------------------------|----|
| 28—The Potato Delight Store..... | 66 |
| 29—The Display Dilemma..... | 68 |
| 30—The Custom License Plate..... | 70 |
| 31—The Big Jolly Jelly Beans | 72 |

VI. STATISTICS

| | |
|--|----|
| 32—Winning the Shopping Spree | 76 |
| 33—The Battle of the Video Games | 78 |
| 34—Great Books to Read..... | 80 |
| 35—Dream-On Survey | 82 |
| 36—Farming Our Town | 84 |
| 37—The Mean Rainfall..... | 86 |
| 38—Circle of Pizza | 89 |

VII. ALGEBRAIC CONCEPTS

| | |
|-------------------------------------|-----|
| 39—Expression Session | 92 |
| 40—The Bacteria Investigation | 95 |
| 41—Quane's Quarter Collection | 98 |
| 42—Barrow, Alaska | 100 |
| 43—The Calendar Magician | 102 |
| 44—Differing Degrees | 104 |

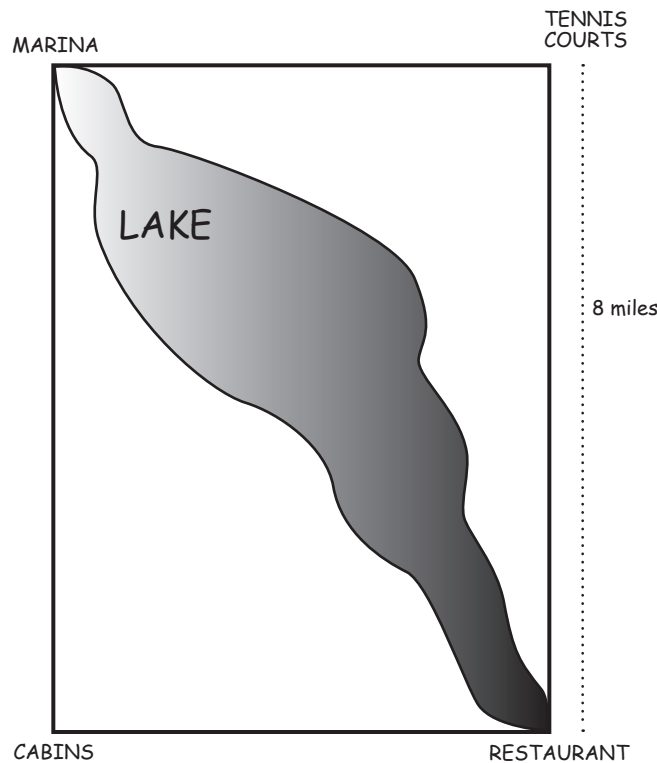
| | |
|---------------|-----|
| ANSWERS | 107 |
|---------------|-----|

23—The Rectangle Resort

¹The Baker family went on vacation last summer. ²They stayed in a cabin. ³The cabins were located six miles from the restaurant.

⁴The Bakers knew the distance from the tennis courts to the

restaurant by looking at the map below. ⁵They also knew that the restaurant, the cabins, the marina, and the tennis courts were at each corner of a rectangle because that is how the resort got its name.



Questions

1. How far is it from the cabins to the marina? Use complete sentences to explain your thinking.

2. How far is it from the marina to the tennis courts? _____

Give the number of the sentence that provides the best evidence for your answer.

3. Find the area of the rectangle shown in the diagram. Show your work.

4. The Bakers wanted to take a boat from the marina to the restaurant. Find the length of the lake. (Use the Pythagorean Theorem $a^2 + b^2 = c^2$ where a and b are the sides of the rectangle and c is the diagonal, or hypotenuse.) Show your work.

5. What is the distance from the cabin to the tennis courts if you could travel across the diagonal of the rectangle? Use complete sentences to explain your thinking.
