

# Introduction

Welcome to *Baseball Math*, an activity and project book that connects mathematics skills to one of your students' most involving interests. Assignments range from one-page skill reviews to projects designed to involve groups of students for several weeks. Throughout, the emphasis is on how and why—the essence of problem solving—as well as on communication and reasoning. Many activities include Challenge Problems, and numerous open-ended questions enhance critical thinking skills. Although the intended grade-level range of the book is 4 through 8, no levels are assigned to specific activities. Abilities and aptitudes vary widely from grade to grade and from student to student. The Table of Contents includes a listing of the skills developed in each activity and project.



Classroom teachers, as well as researchers, know that most youngsters prefer academic involvements that combine work and play. A study funded by the Alfred P. Sloan Foundation found that sixth-grade students benefited from instruction that linked such interests as art, hobbies, and sports to math and science assignments. This would not have surprised John Dewey, who wrote that “experience is most rewarding when it involves the seemingly contradictory traits of rigor and playfulness.”

The lore and numbers of baseball lend themselves perfectly to



contextualized, real-world instruction. In the Morrison Elementary School in Philadelphia, Paula Goldstein posed this problem to her students: “On June 10, 1944, Joe Nuxhall pitched two-thirds of an inning for the Cincinnati Reds. But he had to get permission first from his high school principal. Joe was only fifteen years old, and was the youngest player ever to appear in the major leagues. How many outs did he record that day?”

In the pages that follow, your students will project the value of their baseball card collections, compute averages, compile statistics, design a ballpark, compete in a fantasy baseball league, and much more. Activities in the first section are brief, one-page assignments; the projects in the second section are more extended and well suited to small- and large-group participation. In this latter section, assignments range from estimating players' future performance statistics to a classroom presentation of the poem “Casey at the Bat.” Cooperative learning strategies are modeled in many of the projects.

You can use the activities and projects for review, reinforcement, and enrichment. And don't hesitate to assign these activities to the girls in your classroom. The next time you attend a baseball game or watch one on TV, notice how many girls are at the game. Girls are now included in Little League contests, and girls play softball as well as baseball at many levels of competition. One of baseball's many

## Introduction

---



attributes is that it can be played and enjoyed by almost everyone.

Mathematics is a means of investigation, a way of solving problems, and a way of thinking.

It is connected to everything. Baseball

activities and projects provide a meaningful and motivating context for mathematics instruction. As Dewey proposed, the traits of rigor and playfulness need not be contradictory.

### Acknowledgments

Randy Souviney, an old friend, read an early version of this book and offered some very helpful suggestions for improvement. A new friend, Jack Coffland, read a subsequent draft and provided some finishing touches. Publishing friends Bobbie Dempsey, Jenny Bevington, and Tom Nieman inspired and supported me during their tenures at Good Year Books, exemplifying the sort of author-publisher relationship that all authors cherish.

### References

Barra, Allen. *Clearing the Bases: The Greatest Baseball Debates of the Last Century*.

New York: St. Martin's Press, 2002.

*Baseball Prospectus 2005: Statistics, Analysis, and Insight for the Information Age*.

New York: Workman Publishing Co., 2005.

James, Bill. *The New Bill James Historical Baseball Abstract*.

New York: Fireside Books, 2003.

Koppett, Leonard. *Koppett's Concise History of Major League Baseball: Revised and Expanded Edition*.

New York: Carroll & Graf, 2004.

Neft, David, et al. *The Sports Encyclopedia: Baseball 2004*.

New York: Griffin House, 2004.

Ritter, Lawrence S. *The Story of Baseball, 3rd edition*.

New York: HarperCollins, 1999.

Robinson, Ray and Jennison, Christopher. *Greats of the Game*.

New York: Abrams, 2005.

Ward, Geoffrey and Burns, Ken. *Baseball: An Illustrated History*.

New York: Alfred A. Knopf, Inc., 1996.

---

# Contents

<b>Activities</b> .....	1
<b>Place Hitters</b> , <i>Estimation</i> .....	2
<b>Card Profits</b> , <i>Subtraction</i> .....	3
<b>Circling the Bases</b> , <i>Multiplying Whole Numbers</i> .....	4
<b>Change Champs</b> , <i>Addition, Subtraction, Multiplying Whole Numbers</i> .....	5
<b>Team Trip</b> , <i>Addition, Subtraction</i> .....	6
<b>Diamond Data</b> , <i>Reading Charts and Graphs</i> .....	7
<b>Sporting Goods</b> , <i>Reading and Writing Decimals</i> .....	9
<b>A Trip to the Park</b> , <i>Applying Formula Problems</i> .....	10
<b>A Game of Inches</b> , <i>Communication Process</i> .....	11
<b>Choosing Sides</b> , <i>Multiplication and Addition</i> .....	12
<b>Graphing Favorites</b> , <i>Reading and Making Charts and Graphs</i> .....	13
<b>Average Attendance</b> , <i>Finding Averages</i> .....	14
<b>Crystal (Base) Ball</b> , <i>Adding and Multiplying Whole Numbers</i> .....	15
<b>Big Bucks</b> , <i>Reading and Interpreting Charts and Graphs</i> .....	16
<b>Hit Parade</b> , <i>Reading Charts and Graphs, Averaging</i> .....	17
<b>Time Out</b> , <i>Estimation</i> .....	18
<b>Baseball Budgets</b> , <i>Interpreting Percents</i> .....	19
<b>Growth Stocks</b> , <i>Making Projections, Percents</i> .....	20
<b>Inning Time</b> , <i>Estimation, Recording and Making Graphs</i> .....	21
<b>Pitching Pros</b> , <i>Reading and Interpreting Data</i> .....	22
<b>Where They Stand</b> , <i>Reasoning</i> .....	23

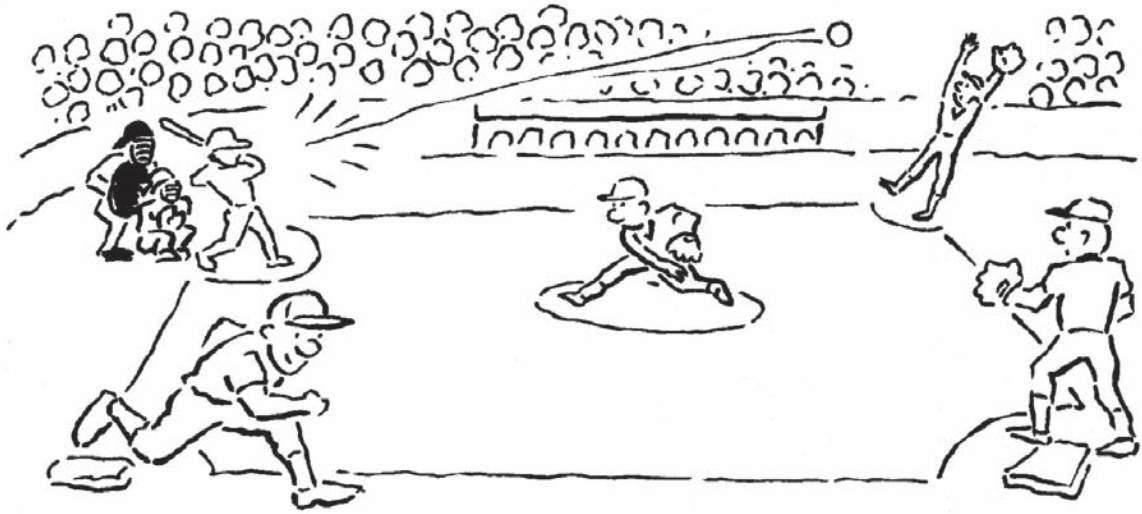
## Contents

---

<b>Slugfest</b> , <i>Estimation, Deduction</i> .....	24
<b>Game Goodies</b> , <i>Estimation</i> .....	25
<b>Lining Up</b> , <i>Reading Data</i> .....	26
<b>Tips for Tips</b> , <i>Adding Decimals, Finding Percents</i> .....	27
<b>Homer Daze</b> , <i>Reading Bar Graphs</i> .....	28
<b>Collecting Cards</b> , <i>Creating Ratios, Building Line Graphs</i> .....	29
<b>Wait 'til Next Year</b> , <i>Percents</i> .....	30
<b>Home-run Showdown</b> , <i>Ratios and Percents</i> .....	31
<b>Better Than the Boys?</b> <i>Percents</i> .....	32
<b>The Ballpark Factor</b> , <i>Percents, Averaging</i> .....	33
<b>Playing Favorites</b> , <i>Predicting Outcomes</i> .....	34
<b>Bigger Bucks</b> , <i>Division</i> .....	35
<b>Skill Sharpeners</b> , <i>Fractions, Time Problem</i> .....	36
<b>Uniform Numbers</b> , <i>Charts</i> .....	37
<b>Long Arms</b> , <i>Decimal Computation</i> .....	38
<b>Belting Beltran</b> , <i>Division</i> .....	39
<b>Striking Out</b> , <i>Ratios</i> .....	40
<b>Full House</b> , <i>Division of Whole Numbers</i> .....	41
<b>Ballpark Field Trip</b> , <i>Writing a Story Question</i> .....	42
<b>Finding the Average</b> , <i>Averaging</i> .....	43
<b>Time for Baseball</b> , <i>Time Problem</i> .....	44
<b>Red Hots</b> , <i>Percents</i> .....	45
<b>Low Points</b> , <i>Ratios and Percents</i> .....	46
<b>Ruth on the Mound</b> , <i>Averaging, Multiplying Whole Numbers and Decimals</i> .....	47

<b>Game Plan, <i>Charts</i></b> .....	48
<b>Antique Cards, <i>Research</i></b> .....	50
<b>Fields of Dreams, <i>Geometry</i></b> .....	51
<b>Projects</b> .....	53
<b>Counting the Crowd, <i>Reading Charts and Making Bar Graphs</i></b> .....	54
<b>Player Targets, <i>Whole-Number Computation</i></b> .....	57
<b>Time's Up, <i>Computation with Time</i></b> .....	59
<b>Not-So-Old Timers, <i>Averaging, Decimal Computation</i></b> .....	60
<b>Follow Your Favorite, <i>Decimal Computation, Graphing</i></b> .....	62
<b>Keeping Score, <i>Communication, Reasoning</i></b> .....	65
<b>Above Average, <i>Percents, Computation</i></b> .....	68
<b>Home Field, <i>Whole-Number Computation</i></b> .....	69
<b>Lopsided Ballpark, <i>Whole-Number Computation</i></b> .....	71
<b>Star Wars, <i>Averaging, Decimal Computation</i></b> .....	72
<b>Team Yearbook, <i>Communication, Computation</i></b> .....	81
<b>Lost Seasons, <i>Finding Averages, Dividing and Multiplying Decimals</i></b> .....	82
<b>Baseball's Honor Roll, <i>Statistics</i></b> .....	85
<b>"Casey at the Bat," <i>Communication</i></b> .....	93
<b>Leagues of Their Own, <i>Extended Calculation Project</i></b> .....	97
<b>Answer Key</b> .....	101

# Place Hitters



The Valdez family went to a baseball game in June. Circle the most sensible answers to the questions below. Explain why the other choices are not sensible.

1. What was the cost of a ticket to the game?  
\$2.00      \$20.00      \$80.00
2. How many hours did the game last?  
3          30          300
3. How many baseball caps were sold by one vendor?  
70          700          7000
4. How much did Mr. Valdez pay for a baseball cap?  
\$15.00      \$35.00      \$350.00
5. How many runs were scored in the game?  
9          90          900
6. How many pitchers appeared in the game?  
5          50          500
7. A trumpet player played the National Anthem before the game. How many minutes did the performance last?  
3          30          300
8. How many players sat in the home team's dugout?  
2          20          200