

Preface

FROM THE AUTHOR

The Inspiration for My Teaching

I was born in Havana, Cuba, and encountered the same challenges of mathematics that many other students do: I failed freshman math. However, perseverance was one of my traits: I made 100% on the final exam the second time around.

I might still be in Cuba had not a police officer kindly informed my family that the members of a club to which I belonged were in jeopardy. An ability to figure out the obvious was another one of my traits: I left for the United States.

I came to the United States and, yes, I did know some English. After working in various jobs (roofer, sheetrock installer, dock worker), I went back to school, finished high school in one year, and received a college academic scholarship. I enrolled in Calculus and made a C. Never one to be discouraged, I persevered, became a math major, and learned to excel in the courses that had previously frustrated me. While a graduate student at the University of South Florida (USF), I taught at a technical school, an experience that contributed to my resolve to teach math and to make it come alive for my students the way brilliant instructors such as Jack Britton, Donald Rose, and Frank Cleaver had done for me.

A Lively Approach to Reach Today's Students

Teaching math at the University of South Florida was a great new career for me, but I was disappointed by the materials I had to use. A rather imposing, mathematically correct but boring book was in vogue. Students hated it, professors hated it, and administrators hated it. I took the challenge to write a better book, a book that was not only mathematically correct, but **student-oriented** with **interesting applications**—many suggested by the students themselves—and even, dare we say, entertaining! That book's approach and philosophy proved an instant success and was a precursor to my current series.

Students fondly called my class “The Bello Comedy Hour,” but they worked hard, and they performed well. Because my students always ranked among the highest on the common final exam at USF, I knew I had found a way to motivate them through **commonsense language** and humorous, **realistic math applications**. I also wanted to show students they could overcome the same obstacles I had in math and become successful, too.

If math has just never been a subject that some of your students have felt comfortable with, then they're not alone! I wrote this book with the **math-anxious** student in mind, so they'll find my tone is jovial, my explanations are patient, and instead of making math seem mysterious, I make it down-to-earth and easily digestible. For example, after I've explained the different methods for simplifying fractions, I speak directly to readers: “Which method should you use to simplify fractions? The way you understand!” Once students realize that math is within their grasp and not a foreign language, they'll be surprised at how much more confident they feel.

A Real-World Approach: Applications, Student Motivation, and Problem Solving

What is a “real-world approach”? I have found that most textbooks put forth “real-world” applications that mean nothing to the “real world” of my students. How many of my students would really need to calculate the speed of a bullet (unless they are in its path) or care to know when two trains traveling in different directions would pass by each other (disaster will certainly occur if they are on the same track)? For my students, both traditional and

nontraditional, the real world consists of questions such as “How do I find the best cell phone plan?” and “How will I pay my tuition and fees if they increase by $x\%$?” That is why I introduce mathematical concepts through everyday applications with **real data** and give homework using similar, well-grounded situations (see the “Getting Started” application that introduces every section’s topic and the word problems in every exercise section).

Putting math in a real-world context has helped me to overcome one of the problems we all face as math educators: **student motivation**. Seeing math in the real world makes students perk up in a math class in a way I have never seen before, and realism has proven to be the best motivator I’ve ever used. In addition, the real-world approach has enabled me to enhance students’ **problem-solving skills** since they are far more likely to tackle a real-world problem that matters to them than to attempt a problem that seems contrived.

Diverse Students and Multiple Learning Styles

We live in a pluralistic society, so how does one write one textbook for everyone? The answer is to build a flexible set of teaching tools that instructors and students can adapt to their own situations. Are any of your students members of a **cultural minority**? So am I! Did they learn **English as a second language**? So did I! You’ll find my book speaks directly to them in a way that no other book ever has, and fuzzy explanations in other books will be clear and comprehensible in mine.

Do all your students have the same **learning style**? Of course not. That’s why I wrote a book that will help students learn mathematics no matter what their personal learning style is. **Visual learners** will benefit from the text’s clean page layout, careful use of color highlighting, “Web It” features and the video lectures on the text’s website. **Auditory learners** will profit from the audio “e-Professor” lectures on the text’s website, and both **auditory** and **social learners** will be aided by the “Collaborative Learning” projects. **Applied** and **pragmatic learners** will find a bonanza of features geared to help them: pretests, practice problems alongside every example, and mastery tests, to name just a few. **Spatial learners** will find the “Chapter Summary” is designed especially for them, while **creative learners** will find the “Research Questions” to be a natural fit. Finally, **conceptual learners** will feel at home with features such as “The Human Side of Algebra” and the “Write On” exercises. Every student who is accustomed to opening a math book and feeling as if they’ve run into a brick wall will find in my books that a number of doors are standing open and inviting them inside.

Listening to Student and Instructor Concerns

McGraw-Hill has given me a wonderful resource for making my textbook more responsive to the immediate concerns of students and faculty. In addition to sending my manuscript out for review by instructors at many different colleges, several times a year McGraw-Hill holds symposia and focus groups with math instructors where the emphasis is *not* on selling products but instead on **listening** to the needs of faculty and their students. These encounters have provided me with a wealth of ideas on how to improve my chapter organization, make the page layout of my books more readable, and fine-tune exercises in every chapter. As a result, students and faculty will feel comfortable using my book because it incorporates their specific suggestions and anticipates their needs.

IMPROVEMENTS IN THE SECOND EDITION

Based on the valuable feedback of numerous reviewers and users over the years, the following improvements were made to the Second Edition of *Introductory Algebra*.

Organizational Changes

- A new section, Operations with Fractions, has been added to the review chapter.
- A new section, Introduction to Algebra, has been added to Chapter 1.
- Graphing linear equations has been moved from Chapter 6 to Chapter 3.

- Factoring coverage has been expanded. The previous Factoring Trinomials section is now two sections, the first with $a = 1$ and the second with $a \neq 1$. There is also a new section on the Applications of Quadratics in the factoring chapter.
- Chapter 7 includes two new sections: Applications of Equations of Lines, and Direct and Inverse Variation.
- The section on Functions has been moved from the end of Chapter 6 to the end of Chapter 10.

Pedagogical Changes

- Many examples, applications, and real-data problems have been added or updated to keep the book's content current.
- The book is now produced as a paperback workbook to encourage students to write in their books as they do their homework.
- *Practice problems* with answers at the bottom of the page now appear adjacent to each example to give students immediate reinforcement of their own skills after they have read through the step-by-step solutions of the example.
- *Web Its* have been added to encourage students to visit math sites and discover the many informative and creative websites that are dedicated to stimulating better education in math.
- *Pretests* with answer grids immediately following them have been added to the beginning of each chapter to serve as a diagnostic tool.
- *Calculate Its* have been updated with recent information and keystrokes relevant to currently popular calculators.
- *Applications* have been titled where appropriate to help orient students to the kind of word problem they are about to solve.
- The RSTUV approach to problem solving has been expanded and used throughout this edition in response to positive comments from users of the previous edition.
- *Collaborative Learning* exercises have been added to encourage students to work in teams to solve fun and thought-provoking projects.
- A *Cumulative Test* has been added to the end of each chapter to continually reinforce material students have previously learned.

ACKNOWLEDGMENTS

I would like to thank the following people at McGraw-Hill (in order of appearance):

David Dietz, my sponsoring editor, who provided the necessary incentives and encouragement for creating this series with the cooperation of Bill Barter; Christien Shangraw, my first developmental editor, who worked many hours getting reviewers and gathering responses into concise and usable reports; Randy Welch, who continued and expanded the Christien tradition into a well-honed editing engine with many features, including humor, organization, and very hard work; Liz Haeefe, my new editor and publisher, who was encouraging and always on the lookout for new markets; Lori Hancock and her many helpers (LouAnn, Emily, David), who always get the picture; Dr. Tom Porter, of Photos at Your Place, who improved on the pictures I provided; Vicki Krug, one of the most exacting persons at McGraw-Hill, who will always give you the time of day, and then solve the problem; Hal Whipple, for his help in preparing the answers manuscript; Cindy Trimble, for the accuracy of the text; Jeff Huettman, one of the 100 best producers in the United States, who learned Spanish in anticipation of this project; Marie Bova, for her detective work in tracking down permission rights; Steve Stenbridge and Barbara Owca, for their help and enthusiasm in marketing the Bello series; and to Professor Nancy Mills, for her expert advice on how my books address multiple learning styles. Finally, thanks to our attack secretary, Beverly DeVine, who managed to send all materials back to the publisher on time. To all of them, my many thanks.

I would also like to extend my gratitude to the following reviewers of the Bello series for their many helpful suggestions and insights that helped me to write better textbooks:

- | | |
|---|--|
| Tony Akhlaghi, <i>Bellevue Community College</i> | Joe Kemble, <i>Lamar University</i> |
| Theresa Allen, <i>University of Idaho</i> | Joanne Kendall, <i>Blinn College–Brenham</i> |
| John Anderson, <i>San Jacinto College–South Campus</i> | Bernadette Kocyba, <i>J S Reynolds Community College</i> |
| Keith A. Austin, <i>Devry University–Arlington</i> | Marie Agnes Langston, <i>Palm Beach Community College</i> |
| Sohrab Bakhtyari, <i>St. Petersburg College–Clearwater</i> | Kathryn Lavelle, <i>Westchester Community College</i> |
| Fatemah Bicksler, <i>Delgado Community College</i> | Angela Lawrenz, <i>Blinn College–Bryan</i> |
| Ann Brackebusch, <i>Olympic College</i> | Richard Leedy, <i>Polk Community College</i> |
| Gail G. Burkett, <i>Palm Beach Community College</i> | Judith L. Maggiore, <i>Holyoke Community College</i> |
| Linda Burton, <i>Miami Dade Community College</i> | Timothy Magnavita, <i>Bucks Community College</i> |
| Judy Carlson, <i>Indiana University–Purdue University Indianapolis</i> | Tsun-Zee Mai, <i>University of Alabama</i> |
| Randall Crist, <i>Creighton University</i> | Harold Mardones, <i>Community College of Denver</i> |
| Mark Czerniak, <i>Moraine Valley Community College</i> | Lois Martin, <i>Massasoit Community College</i> |
| Parsla Dineen, <i>University of Nebraska–Omaha</i> | Gary McCracken, <i>Shelton State Community College</i> |
| Sue Duff, <i>Guilford Technical Community College</i> | Tania McNutt, <i>Community College of Aurora</i> |
| Lynda Fish, <i>St. Louis Community College–Forest Park</i> | Barbara Miller, <i>Lexington Community College</i> |
| Donna Foster, <i>Piedmont Technical College</i> | Danielle Morgan, <i>San Jacinto College–South Campus</i> |
| Jeanne H. Gagliano, <i>Delgado Community College</i> | Joanne Peebles, <i>El Paso Community College</i> |
| Debbie Garrison, <i>Valencia Community College</i> | Faith Peters, <i>Miami Dade College–Wolfson</i> |
| Donald K. Gooden, <i>Northern Virginia Community College–Woodbridge</i> | Jane Pinnow, <i>University of Wisconsin–Parkside</i> |
| Ken Harrelson, <i>Oklahoma City Community College</i> | Janice F. Rech, <i>University of Nebraska–Omaha</i> |
| Joseph Lloyd Harris, <i>Gulf Coast Community College</i> | Libbie Reeves, <i>Mitchell Community College</i> |
| Tony Hartman, <i>Texarkana College</i> | Karen Roothaan, <i>Harold Washington College</i> |
| Susan Hitchcock, <i>Palm Beach Community College</i> | Don Rose, <i>College of the Sequoias</i> |
| Patricia Carey Horacek, <i>Pensacola Junior College</i> | Pascal Roubides, <i>Miami Dade College–Wolfson</i> |
| Peter Intarapanich, <i>Southern Connecticut State University</i> | Juan Saavedra, <i>Albuquerque Technical Vocational Institute</i> |
| Judy Ann Jones, <i>Madison Area Technical College</i> | Judith Salmon, <i>Fitchburg State College</i> |
| Linda Kass, <i>Bergen Community College</i> | Mansour Samimi, <i>Winston-Salem State University</i> |
| | Susan Santolucito, <i>Delgado Community College</i> |
| | Ellen Sawyer, <i>College of DuPage</i> |

A COMMITMENT TO ACCURACY

You have a right to expect an accurate textbook, and McGraw-Hill invests considerable time and effort to make sure that we deliver one. Listed below are the many steps we take to make sure this happens.

OUR ACCURACY VERIFICATION PROCESS

First Round

Step 1: Numerous **college math instructors** review the manuscript and report on any errors that they may find, and the authors make these corrections in their final manuscript.

Second Round

Step 2: Once the manuscript has been typeset, the **authors** check their manuscript against the first page proofs to ensure that all illustrations, graphs, examples, exercises, solutions, and answers have been correctly laid out on the pages, and that all notation is correctly used.

Step 3: An outside, **professional mathematician** works through every example and exercise in the page proofs to verify the accuracy of the answers.

Step 4: A **proofreader** adds a triple layer of accuracy assurance in the first pages by hunting for errors, then a second, corrected round of page proofs is produced.

Third Round

Step 5: The **author team** reviews the second round of page proofs for two reasons: 1) to make certain that any previous corrections were properly made, and 2) to look for any errors they might have missed on the first round.

Step 6: A **second proofreader** is added to the project to examine the new round of page proofs to double check the author team's work and to lend a fresh, critical eye to the book before the third round of paging.

Fourth Round

Step 7: A **third proofreader** inspects the third round of page proofs to verify that all previous corrections have been properly made and that there are no new or remaining errors.

Step 8: Meanwhile, in partnership with **independent mathematicians**, the text accuracy is verified from a variety of fresh perspectives:

- The **test bank author** checks for consistency and accuracy as they prepare the computerized test item file.
- The **solutions manual author** works every single exercise and verifies their answers, reporting any errors to the publisher.
- A **consulting group of mathematicians**, who write material for the text's MathZone site, notifies the publisher of any errors they encounter in the page proofs.
- A video production company employing **expert math instructors** for the text's videos will alert the publisher of any errors they might find in the page proofs.

Final Round

Step 9: The **project manager**, who has overseen the book from the beginning, performs a **fourth proofread** of the textbook during the printing process, providing a final accuracy review.

⇒ What results is a mathematics textbook that is as accurate and error-free as is humanly possible, and our authors and publishing staff are confident that our many layers of quality assurance have produced textbooks that are the leaders of the industry for their integrity and correctness.



