

# Preface

*Introductory Algebra, Sixth Edition* was written to provide a solid foundation in algebra and is intended for basic for students who might not have previous experience in algebra. Specific care was taken to make sure students have the most up-to-date relevant text preparation for their next mathematics course or for non-mathematical courses that require an understanding of algebraic fundamentals. I have tried to achieve this by writing a user-friendly text that is keyed to objectives and contains many worked-out examples. As suggested by AMATYC and the NCTM Standards (plus Addenda), real-life and real-data applications, data interpretation, conceptual understanding, problem solving, writing, cooperative learning, appropriate use of technology, number sense, estimation, critical thinking, and geometric concepts are emphasized and integrated throughout the book.

The many factors that contributed to the success of the previous edition have been retained. In preparing the Sixth Edition, I considered comments and suggestions of colleagues, students, and many users of the prior edition throughout the country.

## What's New in the Sixth Edition?

- **The Martin-Gay Program** has been revised and enhanced with a new design in the text and MyLab Math to actively encourage students to use the text, video program, and Video Organizer as an integrated learning system.
- **New Section Chapter R** includes a new section (R.4 Reading Pictographs and Bar, Line, and Circle Graphs), and the end of Chapter R contains updated Highlights, Review Questions, and Test Questions.
- **Updated Section Chapter 8** has been updated to include a section previously covered in Chapter 6 (8.7 Direct Inverse Variation Including Radical Applications).
- **Appendices** The newly numbered appendices now contain two new tables (A.2 Table on Finding Common Percents of a Number and A.4 Geometric Formulas), as well as a new appendix (Appendix F Interval Notation and Finding Domains and Ranges from Graphs).

In addition, Appendix C covers an expanded section entitled “Mean, Median, Mode, Range and Intro to Statistics.” This is a new robust section that not only reviews mean, median, and mode, but includes an introduction of Range, which is a measure of dispersion. This section also includes frequency distribution tables and graphs and a formula for finding the position of the median.

Appendices B–F have been updated so that all are now organized by objectives and all contain practice problems that accompany the examples.

- **New Getting Ready for the Test** can be found before each Chapter Test. These exercises can increase student success by helping students prepare for their Chapter Test. The purpose of these exercises is to check students’ conceptual understanding of the topics in the chapter as well as common student errors. It is suggested that students complete and check these exercises before taking a practice Chapter Test. All Getting Ready for the Test exercises are either Multiple Choice or Matching, and all answers can be found in the answer section of this text.

**Video Solutions** of all exercises can be found in MyLab Math. These video solutions contain brief explanations and reminders of material in the chapter. Where applicable, incorrect choices contain explanations.

Getting Ready for the Test exercise numbers marked in blue indicate that the exercise is available in **Learning Catalytics**. 

- **New Learning Catalytics** is an interactive student response tool that uses students' smartphones, tablets, or laptops to engage them in more sophisticated tasks and thinking. Generate class discussion, guide your lecture, and promote peer-to-peer learning with real-time analytics. Accessible through MyLab Math, instructors can use Learning Catalytics to:
  - Pose a variety of open-ended questions that help your students develop critical thinking skills.
  - Monitor responses to find out where students are struggling.
  - Use real-time data to adjust your instructional strategy and try other ways of engaging students during class.
  - Manage student interactions by automatically grouping students for discussion, teamwork, and peer-to-peer learning.
  - Pearson-created questions for developmental math topics are available to allow you to take advantage of this exciting technology. Additionally, “Getting Ready for the Test” exercises (marked in blue) are available in Learning Catalytics. Search the question library for “MGIntro” and the chapter number, for example, MGIntro7 would be the questions from Chapter 7.
- **New Key Concept Activity Lab Workbook** includes Extension Exercises, Exploration Activities, Conceptual Exercises, and Group Activities. These activities are a great way to engage students in conceptual projects and exploration as well as group work. This workbook is available in MyLab Math, or can be packaged with a text or MyLab code.
- **Exercise Sets** have been carefully examined and revised. Special focus was placed on making sure that even- and odd-numbered exercises are carefully paired and that real-life applications are updated.
- **The Martin-Gay MyLab Math** course has been updated and revised to provide more exercise coverage, including assignable Video Check questions and an expanded video program. There are Lecture Videos for every section, which students can also access at the specific objective level; Student Success Tips videos; and an increased number of video clips at the exercise level to help students while doing homework in MyLab Math. Suggested homework assignments have been premade for assignment at the instructor's discretion.

## Key Pedagogical Features

The following key features have been retained and/or updated for the Sixth Edition of the text:

- **Problem-Solving Process** This is formally introduced in Chapter 2 with a four-step process that is integrated throughout the text. The four steps are **Understand**, **Translate**, **Solve**, and **Interpret**. The repeated use of these steps in a variety of examples shows their wide applicability. Reinforcing the steps can increase students' comfort level and confidence in tackling problems.
- **Exercise Sets Revised and Updated** The exercise sets have been carefully examined and extensively revised. Special focus was placed on making sure that even- and odd-numbered exercises are paired and that real-life applications were updated.
- **Examples** Detailed, step-by-step examples were added, deleted, replaced, or updated as needed. Many examples reflect real life. Additional instructional support is provided in the annotated examples.
- **Practice Exercises** Throughout the text, each worked-out example has a parallel Practice exercise. These invite students to be actively involved in the learning process. Students should try each Practice Exercise after finishing the corresponding example. Learning by doing will help students grasp ideas before moving on to other concepts. Answers to the Practice Exercises are provided at the bottom of each page.
- **Helpful Hints** Helpful Hints contain practical advice on applying mathematical concepts. Strategically placed where students are most likely to need immediate

reinforcement, Helpful Hints help students avoid common trouble areas and mistakes.

- **Concept Checks** This feature allows students to gauge their grasp of an idea as it is being presented in the text. Concept Checks stress conceptual understanding at the point-of-use and help suppress misconceived notions before they start. Answers appear at the bottom of the page. Exercises related to Concept Checks are included in the exercise sets.
- **Mixed Practice Exercises** In the section exercise sets, these exercises require students to determine the problem type and strategy needed to solve it just as they would need to do on a test.
- **Integrated Reviews** This unique mid-chapter exercise set helps students assimilate new skills and concepts that they have learned separately over several sections. These reviews provide yet another opportunity for students to work with “mixed” exercises as they master the topics.
- **Vocabulary Check** This feature provides an opportunity for students to become more familiar with the use of mathematical terms as they strengthen their verbal skills. These appear at the end of each chapter before the Chapter Highlights.
- **Vocabulary, Readiness & Video Check Questions** are assignable for each section of the text and in MyLab Math. **Vocabulary** exercises check student understanding of new terms. The **Readiness** exercises center on a student’s understanding of a concept that is necessary in order to continue to the exercise set. The **Video Check questions** correlate to the videos in MyLab Math, and are a great way to assess whether students have viewed and understood the key concepts presented in the videos. Answers to all Video Check questions are available in an answer section at the back of the text.
- **Chapter Highlights** Found at the end of every chapter, these contain key definitions and concepts with examples to help students understand and retain what they have learned and help them organize their notes and study for tests.
- **Chapter Review** The end of every chapter contains a comprehensive review of topics introduced in the chapter. The Chapter Review offers exercises keyed to every section in the chapter, as well as Mixed Review exercises that are not keyed to sections.
- **Chapter Test and Chapter Test Prep Videos** The Chapter Test is structured to include those problems that involve common student errors. The **Chapter Test Prep Videos** give students instant access to a step-by-step video solution of each exercise in the Chapter Test.
- **Cumulative Review** This review follows every chapter in the text (except Chapter 1). Each odd-numbered exercise contained in the Cumulative Review is an earlier worked example in the text that is referenced in the back of the book along with the answer.
- **Writing Exercises** ✍ These exercises occur in almost every exercise set and require students to provide a written response to explain concepts or justify their thinking.
- **Applications** Real-world and real-data applications have been thoroughly updated, and many new applications are included. These exercises occur in almost every exercise set and show the relevance of mathematics and help students gradually and continuously develop their problem-solving skills.
- **Review Exercises** These exercises occur in each exercise set (except in Chapter 1) and are keyed to earlier sections. They review concepts learned earlier in the text that will be needed in the next section or chapter.
- **Exercise Set Resource Icons** Located at the opening of each exercise set, these icons remind students of the resources available for extra practice and support:

See Student Resources descriptions on page xv for details on the individual resources available.

- **Exercise Icons** These icons facilitate the assignment of specialized exercises and let students know what resources can support them.
  - ▶ Video icon: exercise worked in the Interactive Lecture Series.
  - △ Triangle icon: identifies exercises involving geometric concepts.
  - ✎ Pencil icon: indicates a written response is needed.
  - 🧮 Calculator icon: optional exercises intended to be solved using a scientific or graphing calculator.
- **Group Activities** Found at the end of each chapter, these activities are for individual or group completion, and are usually hands-on or data-based activities that extend the concepts found in the chapter, allowing students to make decisions and interpretations and to think and write about algebra.
- **Optional: Calculator Exploration Boxes and Calculator Exercises** The optional Calculator Explorations provide keystrokes and exercises at appropriate points to give students an opportunity to become familiar with these tools. Section exercises that are best completed by using a calculator are identified by 🧮 for ease of assignment.
- **The Video Organizer** workbook is designed to help students take notes and work practice exercises while watching the Interactive Lecture Series videos in MyLab Math, making it easy for students to create a course notebook and build good study habits.
  - Covers all of the video examples in order.
  - Provides ample space for students to write down key definitions and properties.
  - Includes “Play” and “Pause” button icons to prompt students to follow along with the author for some exercises while they try others on their own.

The Video Organizer is available in a loose-leaf, notebook-ready format, or can be downloaded from the MyLab Math course.

- **Interactive Lecture Series**, featuring Elayn Martin-Gay, provides students with learning at their own pace. The videos offer the following resources and more:
  - **A complete lecture for each section of the text** highlights key examples and exercises from the text. “Pop-ups” reinforce key terms, definitions, and concepts.
  - **An interface with menu navigation features** allows students to quickly find and focus on the examples and exercises they need to review.
  - **Interactive Concept Check** exercises measure students’ understanding of key concepts and common trouble spots.
  - **Student Success Tip Videos** are in short segments designed to be daily reminders to be organized and to study.
  - **New! Getting Ready for the Test video solutions** cover every Getting Ready for the Test exercise. These appear at the end of each chapter and give students an opportunity to assess whether they understand the big picture concepts of the chapter, and help them focus on avoiding common errors.
  - **The Chapter Test Prep Videos** help students during their most teachable moment—when they are preparing for a test. This innovation provides step-by-step solutions for the exercises found in each Chapter Test.
  - **The Practice Final Exam Videos** help students prepare for an end-of-course final. Students can watch full video solutions to each exercise in the Practice Final Exam at the end of this text.