Our Vision

*Mathematics in Action: Algebraic, Graphical, and Trigonometric Problem Solving,* Sixth Edition, is intended to help college mathematics students gain mathematical literacy in the real world and simultaneously help them build a solid foundation for future study in mathematics and other disciplines.

Our team of twelve faculty, primarily from the State University of New York and the City University of New York systems, used the AMATYC *Crossroads* Standards to develop this *Mathematics in Action* series to serve a very large population of college students who, for whatever reason, have not yet succeeded in learning mathematics. It became apparent to us that teaching the same content in the same way to students who have not previously comprehended it is not effective, and this realization motivated us to develop a new approach.

*Mathematics in Action* is based on the principle that students learn mathematics best by doing mathematics within a meaningful context. In keeping with this premise, students solve problems in a series of realistic situations from which the crucial need for mathematics arises. *Mathematics in Action* guides students toward developing a sense of independence and taking responsibility for their own learning. Students are encouraged to construct, reflect on, apply, and describe their own mathematical models, which they use to solve meaningful problems. We see this as the key to bridging the gap between abstraction and application and as the basis for transfer learning. Appropriate technology is integrated throughout the books, allowing students to interpret real-life data verbally, numerically, symbolically, and graphically.

We expect that by using the *Mathematics in Action* series, all students will be able to achieve the following goals:

- Develop mathematical intuition and a relevant base of mathematical knowledge.
- Gain experiences that connect classroom learning with real-world applications.
- Prepare effectively for further college work in mathematics and related disciplines.
- Learn to work in groups as well as independently.
- Increase knowledge of mathematics through explorations with appropriate technology.
- Develop a positive attitude about learning and using mathematics.
- Build techniques of reasoning for effective problem solving.
- Learn to apply and display knowledge through alternative means of assessment, such as mathematical portfolios and journal writing.

Our vision for you is to join the growing number of students using our approaches who discover that mathematics is an essential and learnable survival skill for the 21st century.
Pedagogical Features

The pedagogical core of *Mathematics in Action* is a series of guided-discovery activities in which students work in groups to discover mathematical principles embedded in realistic situations. The key principles of each activity are highlighted and summarized at the activity’s conclusion. Each activity is followed by exercises that reinforce the concepts and skills revealed in the activity.

The activities are clustered within each chapter. Each cluster contains regular activities along with project and lab activities that relate to particular topics. The lab activities require more than just paper, pencil, and calculator; they also require measurements and data collection and are ideal for in-class group work. The project activities are designed to allow students to explore specific topics in greater depth, either individually or in groups. These activities are usually self-contained and have no accompanying exercises. For specific suggestions on how to use the three types of activities, we strongly encourage instructors to refer to the *Instructor’s Resource Manual with Tests* that accompanies this text. New PowerPoints have been created to support instructors looking to implement this contextual approach to algebra.

Each cluster concludes with two sections: “What Have I Learned?” and “How Can I Practice?” The “What Have I Learned?” exercises are designed to help students pull together the key concepts of the cluster. The “How Can I Practice?” exercises are designed primarily to provide additional work with the numeric, algebraic, and graphing skills of the cluster. Taken as a whole, these exercises give students the tools they need to bridge the gaps between abstraction, skills, and application.

Each chapter ends with a Summary containing a brief description of the concepts and skills discussed in the chapter, plus examples illustrating these concepts and skills. The concepts and skills are also referenced to the activity in which they appear, making the format easier to follow for those students who are unfamiliar with our approach. Each chapter also ends with a Gateway Review, providing students with an opportunity to check their understanding of the chapter’s concepts and skills.

What’s New in the Sixth Edition

The Sixth Edition retains all the features of the previous edition, with the following content changes:

- All the data-based activities and exercises have been updated to reflect the most recent information and/or replaced with more relevant topics.
- The introductory scenarios in several activities have been replaced with more robust, up-to-date situations.
- Several new real-world exercises have been added throughout.
- The exposition and treatment of topics has been carefully reviewed and revised/rewritten where necessary to provide students with a more clear and easy to understand presentation.
- New PowerPoint presentations have been developed to support instructors looking to implement the contextual approach to algebra.
- Learning Catalytics questions have been developed for nearly every activity, providing an opportunity for instructors to quickly assess the progress on a given concept and give students an opportunity to use technology as an interactive learning tool.
- For ease in course planning, the mathematical concept explored in each activity is now included in the activity head.
MyLab Math Changes in the Sixth Edition

- Exercise coverage has been enhanced to ensure better conceptual flow, encourage conceptual thinking about math topics, and balance out the coverage of skills related questions.
- A new video program built around the Consortium approach will provide additional multimedia support.
- New to this edition, Integrated Review in MyLab Math provides additional assignments and study aids for select prerequisite topics for students who will benefit from remediation. Integrated Review materials can be used to help underprepared students get up to speed, or for a corequisite course model.
- Learning Catalytics questions are now premade to complement teaching with Mathematics in Action. Learning Catalytics allows students to use their own mobile devices in the classroom for real-time engagement.
- Skill Builder assignments provide just-in-time adaptive practice at the exercise level, delivering questions personalized to each student with the goal of enabling them to better complete their homework assignment.

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The Consortium for Foundation Mathematics
Resources for Success

Get the Most Out of MyLab Math for *Mathematics in Action: Algebraic, Graphical, and Trigonometric Problem Solving*, Sixth Edition by the Consortium for Foundation Mathematics

The active learning at the heart of the Mathematics in Action series is complemented by a full suite of resources in the MyLab course created specifically for the unique Consortium approach. Brand new and expanded MyLab resources ensure more than ever that students have a consistent experience from the text to MyLab. The integration of Consortium’s activity-based learning with the #1 choice in digital learning for developmental math ensures that students build a solid conceptual understanding of topics.

A new video program for support where and when students need it

A completely new video series offers students support in and out of the classroom. Videos are available as short, objective-level videos or longer section lecture videos. This program is created specifically for the Consortium series and its unique approach—so students can be assured that terminology and problem solving techniques in the videos are completely consistent with what they experience in the classroom.

A new PowerPoint program

PowerPoints are available for the first time with this title! Presenting an overview of key concepts from each activity, these can be used by students as study or review aids, and can also be used by instructors to help structure class-time. Accessible, screen-reader friendly versions of the PowerPoints are available in the MyLab course.

Get Students Prepared

New! Integrated Review content ensures students are caught up on prior skills, or can be used for a corequisite course.

Integrated Review provides embedded and personalized review of prerequisite topics within relevant chapters. Students can check their prerequisite skills, and receive personalized practice on the topics they need to focus on, with study aids like worksheets and videos also available to help.

Integrated Review assignments are premade and available to assign in the Assignment Manager.

pearson.com/mylab/math
Support College Success
A new Mindset module is available in the course, with mindset-focused videos and exercises that encourage students to maintain a positive attitude about learning, value their own ability to grow, and view mistakes as a learning opportunity.

Get Students Engaged
New! Learning Catalytics questions specific to Consortium’s content are pre-built and available through MyLab Math. Learning Catalytics is an interactive student response tool that uses students’ smartphones, tablets, or laptops to engage them in more sophisticated tasks and thinking. Consortium-specific questions have been pre-made, and are noted in the Annotated Instructor’s Edition at point-of-use when relevant for a particular section’s objective. Search for MathInActionGREEN#, where # is the chapter number, in Learning Catalytics to begin using the Consortium questions with your students!

Personalize Learning
New! Skill Builder exercises offer just-in-time additional adaptive practice. The adaptive engine tracks student performance and delivers questions to each individual that adapt to his or her level of understanding. This new feature allows instructors to assign fewer questions for homework, allowing students to complete as many or as few questions as they need.

pearson.com/mylab/math
Resources for Success

Whether you are using Mathematics in Action for the first time or the tenth time, we know that having a full suite of resources to support teaching and learning is essential to implementing this unique approach. All resources are built specifically for each Consortium title, giving students and instructors resources that match and complement the main text and MyLab.

Instructor Resources

Annotated Instructor’s Edition
Contains all the content found in the student edition, plus answers to all exercises directly beneath each problem and Learning Catalytics instructor annotations.

The following instructor resources are available to download through Pearson’s Instructor Resource Center, or from MyLab Math.

Instructor’s Resource Manual with Tests
This resource includes:
- Sample syllabi suggesting ways to structure the course around core and supplemental activities.
- Sample course outlines with timelines for covering topics.
- Teaching notes for each chapter—ideal for using the text for the first time!
- Extra skills practice worksheets for difficult topics.
- Sample chapter tests and final exams.
- Information about incorporating technology in the classroom, such as graphing calculators.

TestGen®
Enables instructors to build, edit, print, and administer tests using a computerized bank of questions developed to cover all the Objectives of the text. TestGen is algorithmically based, allowing instructors to create multiple but equivalent versions of the same question or test with the click of a button. Instructors can also modify test bank questions or add new questions.

Instructor Training Videos
From author Ernie Danforth, the videos provide instructors with advice ranging from the Consortium teaching philosophy to tips for implementing group-work.

New! PowerPoint Lecture Slides
These slides present key concepts and definitions from the text. These have been created to support instructors looking to implement this contextual approach in the classroom, and can also be used as a student study aid.

Student Resources

Worksheets for Classroom or Lab Practice with Integrated Review
Provide extra practice to ensure that students have many opportunities to work problems related to the concepts learned in every activity. Concept Connections, a feature unique to these worksheets, offer students an opportunity to show in words that they understand the mathematical concepts they have just practiced.
TO THE STUDENT

The book in your hands is most likely very different from any mathematics textbook you have seen before. In this book, you will take an active role in developing the important ideas of arithmetic and beginning algebra. You will be expected to add your own words to the text. This will be part of your daily work, both in and out of class. It is the belief of the authors that students learn mathematics best when they are actively involved in solving problems that are meaningful to them.

The text is primarily a collection of situations drawn from real life. Each situation leads to one or more problems. By answering a series of questions and solving each part of the problem, you will be led to use one or more ideas of introductory college mathematics. Sometimes, these will be basic skills that build on your knowledge of arithmetic. Other times, they will be new concepts that are more general and far reaching. The important point is that you won’t be asked to master a skill until you see a real need for that skill as part of solving a realistic application.

Another important aspect of this text and the course you are taking is the benefit gained by collaborating with your classmates. Much of your work in class will result from being a member of a team. Working in small groups, you will help each other work through a problem situation. While you may feel uncomfortable working this way at first, there are several reasons we believe it is appropriate in this course. First, it is part of the learning-by-doing philosophy. You will be talking about mathematics, needing to express your thoughts in words. This is a key to learning. Secondly, you will be developing skills that will be very valuable when you leave the classroom. Currently, many jobs and careers require the ability to collaborate within a team environment. Your instructor will provide you with more specific information about this collaboration.

One more fundamental part of this course is that you will have access to appropriate technology at all times. You will have access to calculators and some form of graphics tool—either a calculator or computer. Technology is a part of our modern world, and learning to use technology goes hand in hand with learning mathematics. Your work in this course will help prepare you for whatever you pursue in your working life.

This course will help you develop both the mathematical and general skills necessary in today’s workplace, such as organization, problem solving, communication, and collaborative skills. By keeping up with your work and following the suggested organization of the text, you will gain a valuable resource that will serve you well in the future. With hard work and dedication you will be ready for the next step.

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