

Math in Society

Edition 2.5

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Development of this book was supported, in part, by the Transition Math Project and the
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About the Author/Editor



David Lippman received his master's degree in mathematics from Western Washington University and has been teaching at Pierce College since Fall 2000.

David has been a long time advocate of open learning, open materials, and basically any idea that will reduce the cost of education for students. It started by supporting the college's calculator rental program, and running a book loan scholarship program. Eventually the frustration with the escalating costs of commercial text books and the online homework systems that charged for access led to action.

First, David developed IMathAS, open source online math homework software that runs WAMAP.org and MyOpenMath.com. Through this platform, he became an integral part of a vibrant sharing and learning community of teachers from around Washington State that support and contribute to WAMAP. These pioneering efforts, supported by dozens of other dedicated faculty and financial support from the Transition Math Project, have led to a system used by thousands of students every quarter, saving hundreds of thousands of dollars over comparable commercial offerings.

David continued further and wrote the first edition of this textbook, *Math in Society*, after being frustrated by students having to pay \$100+ for a textbook for a terminal course. Together with Melonie Rasmussen, he co-authored *PreCalculus: An Investigation of Functions* in 2010.

Acknowledgements

David would like to thank the following for their generous support and feedback.

- Jeff Eldridge, Lawrence Morales, Mike Kenyon, and Morgan Chase who were kind enough to license me use of their works.
- The community of WAMAP users and developers for creating some of the homework content used in the online homework sets.
- Pierce College students in David's online Math 107 classes for helping correct typos and identifying portions of the text that needed improving, along with other users of the text.
- The Open Course Library Project for providing the support needed to produce a full course package for this book.

Preface

The traditional high school and college mathematics sequence leading from algebra up through calculus could leave one with the impression that mathematics is all about algebraic manipulations. This book is an exploration of the wide world of mathematics, of which algebra is only one small piece. The topics were chosen because they provide glimpses into other ways of thinking mathematically, and because they have interesting applications to everyday life. Together, they highlight algorithmic, graphical, algebraic, statistical, and analytic approaches to solving problems.

This book is available online for free, in both Word and PDF format. You are free to change the wording, add materials and sections or take them away. I welcome feedback, comments and suggestions for future development. If you add a section, chapter or problems, I would love to hear from you and possibly add your materials so everyone can benefit.

New in This Edition

Edition 2 has been heavily revised to introduce a new layout that emphasizes core concepts and definitions, and examples. Based on experience using the first edition for three years as the primarily learning materials in a fully online course, concepts that were causing students confusion were clarified, and additional examples were added. New “Try it Now” problems were introduced, which give students the opportunity to test out their understanding in a zero-stakes format. Edition 2.0 also added four new chapters.

Edition 2.1 was a typo and clarification update on the first 14 chapters, and added 2 additional new chapters. No page or exercise numbers changed on the first 14 chapters.

Edition 2.2 was a typo revision. A couple new exploration exercises were added.

Edition 2.3 and 2.4 were typo revisions.

Edition 2.5 added a chapter on Logic, as well as typo revisions.

Supplements

The Washington Open Course Library (OCL) project helped fund the creation of a full course package for this book, which contains the following features:

- Suggested syllabus for a fully online course
- Possible syllabi for an on-campus course
- Online homework for most chapters (algorithmically generated, free response)
- Online quizzes for most chapters (algorithmically generated, free response)
- Written assignments and discussion forum assignments for most chapters

The course shell was built for the IMathAS online homework platform, and is available for Washington State faculty at www.wamap.org and mirrored for others at www.myopenmath.com. The course shell was designed to follow Quality Matters (QM) guidelines, but has not yet been formally reviewed.