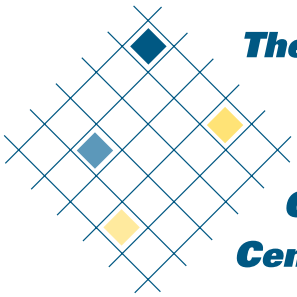

CURRICULUM SUMMARIES

Eighth edition

September 2005

EDC

NATIONAL SCIENCE FOUNDATION

About This Publication

Curriculum Summaries compiles information about 12 comprehensive mathematics curriculum programs that were developed specifically to address the recommendations of the National Council of Teachers of Mathematics' *Curriculum and Evaluation Standards for School Mathematics* (1989) and that are well-aligned with the *Principles and Standards for School Mathematics* (2000). Three of the programs described here are elementary programs, four are for middle school, and five are for high school. All of these programs were developed with support from the National Science Foundation. They are all available as complete and published curricula. Part of our mission at the K–12 Mathematics Curriculum Center (K–12 MCC), and the intention of this document, is to support teachers, schools, and districts in learning about these programs and in considering their use.

This publication is intended to be a source of basic information about the mathematics programs it describes. We have included information that we think will help the reader understand the basic tenets of each of the programs, what distinguishes them from traditional curricula, and what distinguishes them from one another. We have also incorporated information that we hope will help you learn more about these programs, through contact with the publishers, developers, or implementation centers, through print materials, or through websites.

We have tried to describe the programs as the developers and publishers would represent them. The information about each of the curriculum programs was obtained from the materials themselves and was checked by representatives of each of the programs for accuracy. *Curriculum Summaries* is not, therefore, a source of evaluative data or critical analyses of these programs.

We believe the information included in this document to be accurate at the time of publication. However, it is likely that some of this information will eventually become outdated, as we have included contact information and other material that may change over time.

Eighth Edition, September 2005

Cover design — Ronnie DiComo

Design and Layout — Amy May

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This book was developed by the K–12 Mathematics Curriculum Center at Education Development Center, Inc. The work was supported by National Science Foundation Grant No. ESI-0137826. Opinions expressed are those of the authors and not necessarily those of the Foundation.

About the K–12 Mathematics Curriculum Center

Established in 1997 by Education Development Center, Inc., the K–12 Mathematics Curriculum Center (K–12 MCC) supports school districts as they build an effective mathematics program using high-quality curriculum materials aligned with state and national standards. The Center also works with state and regional service providers to build their capacity to support curricular change. With support from the National Science Foundation, the K–12 MCC is committed to helping schools improve student learning and teaching in mathematics through the thoughtful selection and implementation of mathematics curricula.

A number of print resources are available through the K–12 MCC including these *Curriculum Summaries*; *The Changing Mathematics Curriculum: An Annotated Bibliography* featuring articles about *Standards*-based mathematics curricula, as well as implementation and professional development issues related to their use; *Choosing a Standards-based Mathematics Curriculum*, a guide that suggests a process for selecting and implementing curricula and describes the characteristics of *Standards*-based mathematics curriculum programs; and *Perspectives on Curricular Change*, a collection of interviews with teachers and administrators who have used the curricula highlighted in the *Curriculum Summaries*. Many of these resources are also available on our website.

Given the importance of curriculum selection, an applied research project at the K–12 MCC will investigate mathematics curricular decision-making. Specifically, we will identify the factors that are the most influential in decision-makers' curriculum choices and what role research plays in these decisions. This data will serve as a starting point for identifying what type of research is needed by individuals making curriculum decisions and provide a forum for bringing together researchers and practitioners. In addition, the research will inform the development of resources that improve curriculum leaders' access to and use of research on mathematics curricula.

The K–12 MCC website (http://www.edc.org/mcc) contains further information about the center, our research, and upcoming events. It also features downloadable versions of many of our print resources.

For more information about any of our materials or our research, please contact us:

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Education Development Center, Inc.
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Newton MA 02458-1060

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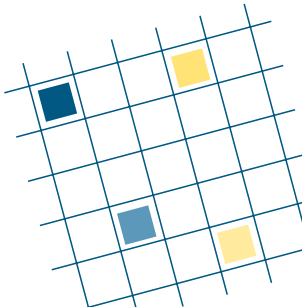

National Grade-Level Implementation Centers

Alternatives for Rebuilding Curricula (ARC)

Contact: Sheila Sconiers
COMAP, Inc.
Suite 210
57 Bedford Street
Lexington, MA 02420
(781) 862-7878, ext. 50
fax (781) 863-1202
sconiers@comap.com
http://www.comap.com/arc

The ARC Center is a collaboration between the Consortium for Mathematics and Its Applications (COMAP) and the three NSF-supported elementary mathematics curriculum projects, *Investigations in Number, Data, and Space* (TERC); *Math Trailblazers* (University of Illinois at Chicago); and *Everyday Mathematics* (University of Chicago). The Center promotes the wide-scale and effective implementation of *Standards*-based elementary mathematics curricula.

Show-Me Center (National Center for Standards-based Middle Grades Mathematics Curricula)

Contact: Barbara Reys
University of Missouri
303 Townsend Hall
Columbia, MO 65211
(573) 884-2099
fax (573) 882-4481
showmecenter@missouri.edu
http://showmecenter.missouri.edu/

The Show-Me Center, in partnership with four NSF-sponsored middle grades mathematics curriculum development Satellite Centers (University of Wisconsin, Michigan State University, University of Montana, and Education Development Center) provides information and resources needed to support selection and implementation of *Standards*-based middle grades mathematics curricula.

The overarching goal of the Show-Me Project is to ensure the opportunity for every middle school student to study important mathematics within a learning environment that challenges their intellect and engages their interest. Show-Me Project staff believe that opportunity to learn depends upon teachers' mathematical knowledge, their ability to organize instruction and interact with students, a well-articulated curriculum framework, and a sound set of curriculum materials. The Show-Me Project's primary work is to support teachers as they implement *Standards*-based curriculum and instructional strategies to better serve their students.

Curricular Options in Mathematics Programs for All Secondary Students (COMPASS)

Contact: Eric Robinson
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Ithaca, NY 14850
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fax (607) 274-3054
compass@ithaca.edu
http://www.ithaca.edu/compass

The COMPASS project is a secondary school implementation project funded in part by the National Science Foundation. The project focuses on the effective implementation of five comprehensive high school curriculum programs that support the NCTM *Standards* and were developed with funding from the NSF. The central site at Ithaca College coordinates requests for information and implementation assistance regarding these innovative programs. It also maintains a network of curriculum project developers and/or publishers that can provide additional program-specific information as well as professional development opportunities.

CONTENTS

Elementary Grades Curricula

Middle Grades Curricula

High School Curricula

EVERYDAY MATHEMATICS®

grades K–6

About the Program

Everyday Mathematics is a Pre-K–6 curriculum intended to enrich the mathematical experiences of teachers and children. It builds on fundamental mathematical strands such as numeration and order; measures and measurement; reference frames; operations; patterns, functions, and sequences; data and chance; geometry and spatial sense; and algebra and the use of variables.

The curriculum integrates mathematics into other subject areas; mathematics becomes part of ongoing classroom routines, outdoor play, and the transitional moments that occur every day. Teachers use *Everyday Mathematics* as a core curriculum during class math time. They also incorporate mathematical ideas and routines throughout the school day and encourage the children to continue the routines at home with their families.

The *Everyday Mathematics* curriculum is based on research that suggests that people rarely learn new concepts or skills the first time they experience them, but fully understand them only after repeated exposures. Students in the program study important concepts over consecutive years; each grade level builds on and extends conceptual understandings established in prior grades.

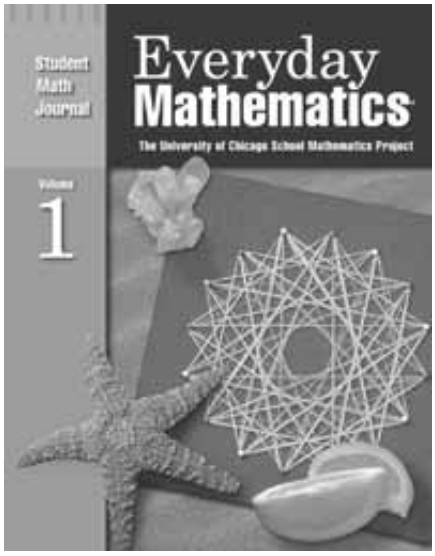
The instructional model blends exposition and discussion, individual and group work, explorations, and projects. In each grade level of the program, students experience hands-on, student-centered, small-group activities which introduce them to various mathematics concepts. Children also learn and practice basic facts throughout the curriculum, in the context of problem solving, choral drills, and a variety of games.

The program includes cross-curricular projects that let children apply mathematics in other subject areas. In grades 4 and 5, children participate in the year-long World Tour and American Tour projects, in which students apply mathematical concepts to learning about the United States and other countries.

It is recommended that each child have slates, measuring tools, and drawing tools, and that teachers have classroom sets of manipulatives. Calculators are an integral part of the program as an aid to concept development and applications.

Every student in grades 1–6 uses two consumable journals throughout the school year to record mathematical ideas and responses to activities and problems. In grades 3–6, students have a hardbound Student Reference Book. Students in grades 4–6 use the Geometry Template for drawing and measuring geometric figures.

Each grade level of *Everyday Mathematics* has a Teacher Resource Package. Grades 1–6 contain a two-volume Teacher's Lesson Guide, Resource Book (with all blackline masters), a Teacher's Reference Manual, Assessment Handbook, and other teacher support items.



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Chicago, IL 60601
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fax (312) 233-7800
david_willette@mcgraw-hill.com
http://www.wrightgroup.com

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fax (773) 702-4312
em-center@listhost.uchicago.edu
http://everydaymath.uchicago.edu

Student Materials

- Student Math Journals, 2 per year, Grades 1–6
- Student Reference Book, Grades 3–6
- Pattern-Block Template, Grades 1–3
- Geometry Template, Grades 4–6
- *Home Links*, consumable student versions of blackline masters, Grades K–3
- *Study Links*, including parent letters, consumable student versions of blackline masters, Grades 4–6
- Student materials available in Spanish, Grades Pre-K–6

Teacher Materials

- Teacher Materials, Pre–K and Kindergarten:
  Teacher's Guide to Activities
  Program Guide and Masters (Available in Spanish)
  Theme Book, Pre-K only
  Assessment Handbook, Grade K only
  Mathematics at Home, Books 1–3, Grade K only
  Minute Math, Grade K only
  Classroom posters and charts
- Teacher Materials, Grades 1–6:
  Teacher's Lesson Guide
  Assessment Handbook
  Minute Math, Grades 1–3
  Math Masters (Available in Spanish)
  Classroom Posters and Charts
- Cross-grade Teacher Resources:
  Teacher's Reference Manuals, Grades K–3, and 4–6
  Home Connection Handbook: A Guide for Administrators and Teachers, Grades K–6 (Available in Spanish)
- Manipulative Kits for each grade level

Other Resources

- *Skills Links*, cumulative practice sets, Grades 1–6
- Operations Handbook, Grades 3–6
- *Everyday Mathematics: Overview of a Research-Based Program.* Videotape.
- Teacher's Assessment Assistant CD-ROM, Grades 1–6
- Interactive Teacher's Lesson Guide, Grades K–6
- *Everyday Mathematics* Technology Guide and Software Correlation.
- EM Games CD-ROM or online at http://www.wrightgroup.com, Grades Pre-K to 6
- UCSMP Everyday Mathematics Center Email Discussion. To subscribe, follow the directions at http://listhost.uchicago.edu/mailman/listinfo/ucsmp-el.
- National Test Correlations available at http://www.wrightgroup.com/index.php/home/everydaymathematics/emsecondupdate/nationaltestcorr/47.
- *Bridges to Classroom Mathematics*. A professional development curriculum for elementary mathematics. More information at http://www.comap.com/bridges.

Impact Data Compiled to Date

- *The ARC Center Tri-State Achievement Study.* S. Sconiers, J. McBride, A. Isaacs, C. Kelso, and T. Higgins. Lexington, MA: COMAP, 2003.
- "Achievement of Students Using the University of Chicago School Mathematics Project's *Everyday Mathematics*." W. Carroll and A. Isaacs. In S. Senk and D. Thompson, Eds., *Standards-Based School Mathematics Curricula: What Are They? What Do Students Learn?* Mahwah, NJ: Lawrence Erlbaum Associates, 2002.

Available from Wright Group/McGraw-Hill:

- *Student Achievement Studies*, *Volumes one through four.* Booklets from Wright Group/McGraw-Hill presenting results of more than 40 studies and reports on districts using *Everyday Mathematics.*
- *Everyday Mathematics Success Stories.* Available online at http://www.wrightgroup.com/index.php/home/everydaymathematics/emsecondupdate/emsuccessstories/54.
- *A Research Based Curriculum: The Research Foundations of the UCSMP Everyday Mathematics Curriculum.*

Available from UCSMP:

- Implementation stories, student achievement and research papers at http://everydaymath.uchicago.edu/educators/index.shtml.

Investigations in Number, Data, and Space®

grades K–5

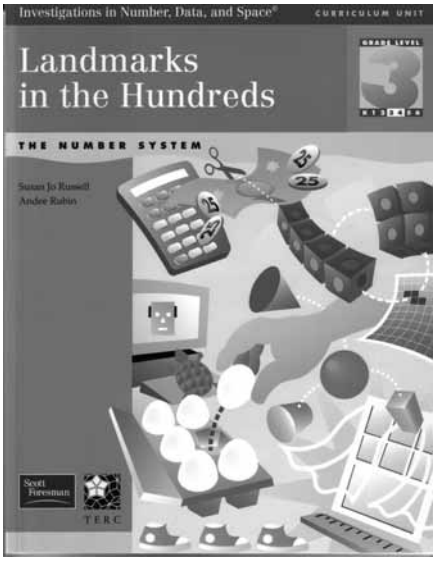
About the Program

Investigations in Number, Data, and Space® provides a complete mathematics program for grades K-5. It is designed to help all elementary children understand the fundamental ideas underlying number and arithmetic, geometry, data, measurement, and algebraic thinking. Mathematics content includes computational fluency with whole number operations, the structure of the base ten number system, the meaning of fractions, representing and describing data, examining 2D and 3D shapes, measuring, and change over time. The *Investigations* program, developed at TERC, embodies the vision of the rigorous national standards for mathematics developed by the National Council of Teachers of Mathematics (NCTM). *Investigations* is based on an extensive body of research on how students learn mathematics. It is carefully organized around key ideas to invite all students into mathematics, providing opportunities and experiences to develop mathematical proficiency.

In each unit, students explore the central topics in depth through a series of investigations, encountering and using important mathematical ideas. Students actively engage in mathematical reasoning to solve complex mathematical problems and represent their thinking using models, diagrams, numbers, and graphs. They represent, explain, and justify their thinking, using mathematical tools and appropriate technology, including calculators, as a natural part of their work. The *Investigations* curriculum provides meaningful, repeated practice of basic facts and skills through the use of activities and games. The investigations allow significant time for students to think about the problems and to model, draw, write, and talk with peers and the teacher about their mathematical thinking. Students work in a variety of groupings: as a whole class, individually, in pairs, and in small groups.

Investigations is infused with teachers' practical suggestions and strategies, based on the extensive field-testing of the curriculum in diverse classrooms and provides all the information teachers need to implement a complete mathematics curriculum. The main teaching tools are the grade-level teacher resource books, called curriculum units. Each *Investigations* grade-level unit offers from two to eight weeks of mathematical work in three strands: number, data, and geometry; the number of units per year varies by grade level. Because of the many connections among mathematical ideas, units may revolve around two or three related areas—for example, addition and subtraction or geometry and fractions.

Each curriculum unit includes student dialogues, lesson plans, teacher notes about mathematics and pedagogy, reproducible student materials, assessments, materials lists, and other support materials for teaching the unit. Assessment Sourcebooks offer end of unit assessments for grades 1–5. The Kindergarten Assessment Checklist is available on the Scott Foresman website. Some units at each grade level include computer software. Optional Student Activity books provide the reproducible pages from the curriculum units in a booklet for each student. Investigations at Home booklets, designed to inform and involve families in mathematics, are available for each unit. Scott Foresman has also developed a booklet, Today's Math, which provides daily practice.



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Student Materials

- Student Activity Booklets
  One for Grade K
  One per unit, Grades 1–5
- Student Materials Kit, Grades K–5
- Spanish Vocabulary Package includes:
  Student Activity Sheets, Grades K–5
- *Investigations at Home*. Family involvement booklets
  One for Grade K, One per unit, Grades 1–5
- *Today's Math:* Daily Practice, Mixed Review and Test Prep, Grades 1–5

Second edition of *Investigations in Number, Data, and Space* will be available in 2007.

Teacher Materials

- Curriculum Teacher Guides: from 6 to 11 units per grade, K–5
- *Implementing the Investigations in Number, Data, and Space Curriculum*, Grades K–2 or 3–5
- Teacher Resource Package: manipulatives, overhead transparencies, blackline masters, Grades K–5
- *Assessment Sourcebooks*: End-of-unit assessment tasks, Grades 1–5
- Spanish Teaching Companions: Teacher dialogue and instructions. One per unit, Grades K–5.
- Family Letters explain the mathematics of each unit. Available in English, Spanish, Vietnamese, Cantonese, Hmong, and Cambodian

Other Resources

- Assessment Checklists available at http://investigations.scottforesman.com.
- *Schools and Families: Creating a Math Partnership*. Available from Scott Foresman.
- *Relearning to Teach Arithmetic*, *Developing Mathematical Ideas* (DMI)*, and Lenses on Learning.* Video-based professional development package available from Scott Foresman.
- *Beyond Facts and Flashcards: Exploring Math with Your Kids*. J. Mokros. Available from Heinemann.
- *Ten-Minute Math*. C. Tierney and S. Russell. Available from Pearson Learning.
- *Beyond Arithmetic.* J. Mokros, S. Russell, and K. Economopoulos. Available from Pearson Learning.
- Math Packs (sets of investigations adapted for use in a wide range of settings, available through Pearson Learning): *Counting Games: How Many in All?* (ages 5–8); *Number Games from 10 to 20: More, Less or Equal?* (ages 5–8); *Data Games: Use the Clues!* (ages 5–12); *Computational Games: How Close Can You Get?* (ages 8–12).
- *Bridges to Classroom Mathematics*. A professional development curriculum for elementary mathematics. More information at http://www.comap.com/bridges.
- Software downloads, handbook, concept maps, checklists, rubrics, practice pages, and lesson planner templates. Available at http://investigations.scottforesman.com.
- CESAME support website: http://www.alliance.brown.edu/investigations.

Impact Data Compiled to Date

- *The ARC Center Tri-State Achievement Study.* S. Sconiers, J. McBride, A. Isaacs, C. Kelso, and T. Higgins. Lexington, MA: COMAP, 2003.
- "Learning to Reason Numerically: The Impact of *Investigations.*" J. Mokros. In S. Senk and D. Thompson, Eds., *Standards-Based School Mathematics Curricula: What Are They? What Do Students Learn?* Mahwah, NJ: Lawrence Erlbaum Associates, 2003.

Results of pilot studies and other data available from the *Investigations* web site at TERC:

- *The Investigations Curriculum and Children's Understanding of Whole Number Operations*. J. Mokros. Paper describing four important studies concerning the impact of *the Investigations* curriculum. 2000.
- *A Comparison of Fourth Graders' Proportional Reasoning in Reform and Traditional Classrooms*. J. Flowers and K. Kline. Paper presented at the Annual Conference of the American Education Research Association, San Diego, California. 1998.
- *Modes of Teaching and Ways of Thinking.* A. Goodrow. Paper presented at the International Society for the Study of Behavioral Development. 1998.
- *Learning Operations: Invented Strategies That Work*. J. Mokros, M. Berle-Carman, A. Rubin and K. O'Neil. Paper presented at the annual meeting of the American Educational Research Association. 1996.
- *Full Year Pilot Grades 3 and 4, Investigations in Number, Data, and Space*. J. Mokros, M. Berle-Carman, A. Rubin and T. Wright. 1994.

Available from Scott Foresman:

- *Investigations Validation and Research.* Available at http://www.investigations.scottforesman.com.

MATH TRAILBLAZERS™
grades K–5

About the Program

A fundamental principle of *Math Trailblazers* is that mathematics is best learned through active solving of real problems. Lessons are grounded in everyday situations, so abstractions build on experience. Skills, procedures, and concepts emerge and develop as students solve complex problems. At every grade level challenging content is introduced: computation, measurement, data collection, statistics, geometry, ratio, probability, graphing, simple algebra, estimation, mental arithmetic, and patterns and relationships.

A central tenet of *Math Trailblazers* is that real problems are naturally interdisciplinary. The curriculum integrates mathematics with many disciplines, especially science and language arts. Scientific investigations embedded in many units use the TIMS Laboratory Method, an organized method of investigation appropriate for elementary school children. Students explore situations by drawing pictures, gathering, organizing, and graphing data, and analyzing their results. The science content in *Math Trailblazers* is intended to supplement, not replace, a school's existing science curriculum.

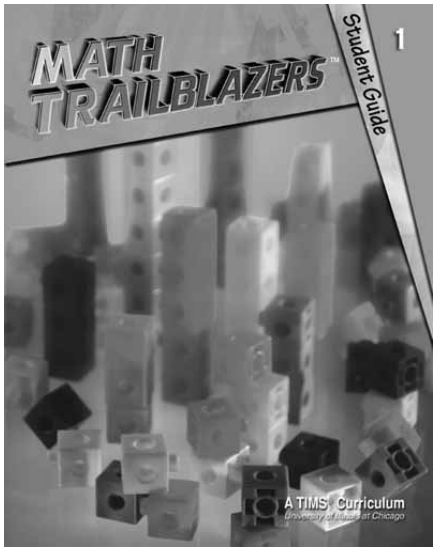
Math Trailblazers also makes strong connections to language arts. As part of every lesson, students discuss and write about mathematics. Many lessons use trade books to launch or extend mathematical investigations.

Many of the assessment activities in *Math Trailblazers* are incorporated into daily lessons; others are included in formal assessment units. Assessments include a mix of short, medium-length, and extended activities. *Math Trailblazers* provides a scoring rubric for assessing students' work. An adaptation of this rubric allows students to assess their own work.

Each grade level has 16–20 units; ranging from one to three weeks long. Components of the curriculum vary across grades. For grades 1–2, the Student Guide is a two volume set, containing core student materials, student activities, and homework pages. Also available is a consumable Adventure Book, a collection of original stories showing applications of concepts or sketch episodes from the history of mathematics and science. For grades 3–5, Student Guides are hardcover and Adventure Books are spiral-bound; both are non-consumable full-color books. Student materials for grades 3–5 include Discovery Assignment Books containing consumable pages for activities, labs, practice, and homework. Reproducible pages for Kindergarten are contained in the teacher materials; these are also bound in a consumable Kindergarten Activity Book.

For every grade level, Math Trailblazers includes a Teacher Implementation Guide providing support for teachers on pedagogy and content. For grades 1–5, Unit Resource Guides contain teacher support materials for each unit. Kindergarten teacher materials also include a Teacher Resource Book. Teacher materials for Grades 2–5 include a Facts Resource Guide that provide a single location for all math facts materials for the grade.

Math Trailblazers requires the use of manipulatives. Calculator use is also integrated into the program, and is required for some activities.



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fax (312) 413-7411
tims@uic.edu
http://www.math.uic.edu/IMSE/MTB/mtb.html

Student Materials

- Student Guide, Grades 1–5 (consumable, Grades 1–2)
- Discovery Assignment Book, Grades 3–5 (consumable)
- Adventure Book, Grades 1–5 (consumable, Grades 1–2)
- Adventure Big Books, Grades 1–2
- Math Manipulative Kit, Grades K–5
- Kindergarten Activity Book
- Spanish editions of all student materials, Grades 1–5

Teacher Materials

- Unit Resource Guide Files, Grades 1–5
- Teacher Resource Book, Grade K
- Kindergarten Resource Package including:
  Laminated ready-made charts and
  materials designed to save teacher prep time
- Teacher Implementation Guides, Grades K–5
- Teacher Resource CD-ROM, including:
  Letter Home in English and Spanish, Grades 1–5
  Daily Practice and Problems
  Observational Assessment Record pages
  Individual Assessment Record Sheets
  Blackline and Transparency Masters
  Teacher and Student Rubrics
  Scope and Sequence
  selections from Facts Resource Guide, Grades 2–5
- Facts Resource Guide, Grades 2–5
- Wall Charts
- Transparencies books, Grades K–5
- Examination package, Grades 1–5

Other Resources

- *Teacher Enhancement Resource Modules (TERMS), 2nd edition*. Presenters' guides to be used in professional development programs. Most include accompanying videotapes. Available from Kendall/Hunt Publishing.
- Correlations with state standards available at http://www.mathtrailblazers.com.
- *Math Trailblazers: Research Base and Student Achievement.* Available from Kendall/Hunt Publishing.
- Math Trailblazers Professional Development Catalog. Available from Kendall/Hunt Publishing.
- Electronic Teacher Community (ETC) support site at http://www.etc.kendallhunt.com.
- *Math Trailblazers* Online Initiative courses, including:
  Focus on Assessment, Grades K–2
  Focus on Assessment, Grades 3–5
  Professional Developer's Workshop
- A Teacher's Guide to Practice and Assessment
  Grades 3–5. CD-ROM available from Kendall/Hunt Publishing.

Impact Data Compiled to Date

- "Case Studies of the Implementation of the *Math Trailblazers* Elementary Mathematics Curriculum." Welch, R., Brown, S., and Kelso, C.R.. In *Implementation Stories and Case Studies: A Report of the ARC Center at the Consortium for Mathematics and Its Applications.* Lexington, MA: COMAP, 2003.
- *The ARC Center Tri-State Achievement Study.* S. Sconiers, J. McBride, A. Isaacs, C. Kelso, and T. Higgins. Lexington, MA: COMAP, 2003.
- "Student Learning and Achievement with *Math Trailblazers.*" A. Carter, J. Beissinger, A. Cirulis, M. Gartzman, C. Kelso, and P. Wagreich. In S. Senk and D. Thompson, Eds., *Standards-Based School Mathematics Curricula: What Are They? What Do Students Learn?* Mahwah, NJ: Lawrence Erlbaum Associates, 2003.

Available from the TIMS Project:

- *Understanding the Explanation: Effects of a New Mathematics Curriculum on Teacher Explanation and Student Learning*. M. Kelly, M. Perry, J.L. Lewis, and M. McConney.
- *Learning Mathematics in the 21st Century: Lessons From a New Curriculum in the Close of the 20th Century*. M. Whiteaker and M. Perry.
- *Washington State Math Trailblazers Student Achievement Report.*

Available from Kendall/Hunt Publishing:

- *Student Achievement: Results, Reactions and Success Stories from the Users of Math Trailblazers*. Available at http://www.mathtrailblazers.com.

CONNECTED MATHEMATICS 2™

grades 6–8

About the Program

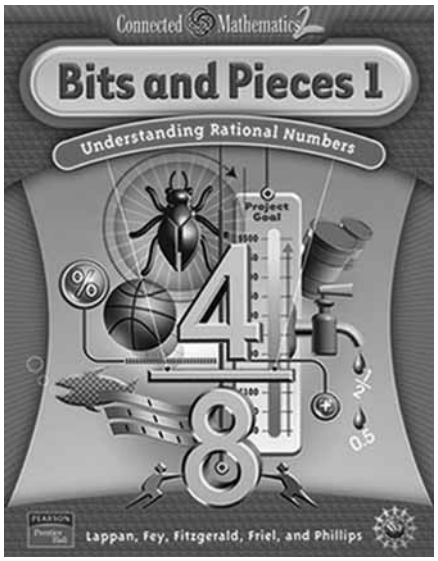
The philosophy of *Connected Mathematics 2* (CMP2)* is the same as *Connected Mathematics 1*: all students should be able to reason and communicate proficiently in mathematics. This next generation of CMP is designed to help students develop knowledge and skill in vocabulary use, forms of representation, materials, tools, techniques, and intellectual methods of the discipline of mathematics. This knowledge should include the ability to define and solve problems with reason, insight, inventiveness, and technical proficiency. "Skill" is much more than proficiency with computation and symbol manipulation: it encompasses the ability to use mathematical tools, resources, procedures, knowledge, and ways of thinking to make sense of new situations.

Connected Mathematics 2 is organized around important mathematical ideas, each of which is studied in depth. To help students develop understanding and skill, mathematical concepts are embedded in the context of interesting problems. The curriculum emphasizes significant connections among various mathematical ideas and between mathematics and other disciplines. Information is represented in numeric, graphic, symbolic, and verbal forms to help students learn to reason effectively and move flexibly among these representations. Exploring rich problem situations promotes instruction based on inquiry and discovery of mathematical ideas. To help the teacher orchestrate such a classroom, instruction consists of three phases: launching, exploring, and summarizing the problem.

The mathematics in CMP2 is organized into 24 carefully sequenced units; each unit contains three to five investigations. These investigations provide one to five major problems for students to explore in class. Extensive problem sets called Applications, Connections, and Extensions (ACE) help students practice, apply, connect, and extend their understandings. Investigations culminate in Mathematical Reflections, helping students articulate their understandings and connect "big" mathematical ideas and applications.

Student materials are available in softcover, non-consumable modular form, and as single volume, hard cover books (1 per grade). Students need access to calculators: a four-function calculator in grade 6, and a graphing calculator in grades 7 and 8. Optional computer software programs enhance some of the units.

A Teacher's Guide accompanies each unit and contains a discussion of the mathematics underlying the investigations and the instructional role of the teacher in orchestrating the classroom investigations. The Guide also includes a list of the materials needed, suggested pacing, homework assignment choices, essential vocabulary, and tips for differentiating instruction. Assessment Resources include check-ups, partner quizzes, projects, unit tests, self-assessments, and question banks. The program also suggests that students keep journals for mathematical reflections, vocabulary, assessment, and other class work.



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http://www.math.msu.edu/cmp

Student Materials

- Student Units, Grades 6–8
  8 units per grade
- Spanish Student Units, Grades 6–8
  8 units per grade
- Additional Practice and Skills Workbook, Grades 6–8 (one per grade)
- Math Test Prep Workbook, Grades 6–8 (one per grade)
- Student Inter-Activities CD-ROM

Teacher Materials

- Teacher's Guides, Grades 6–8
  8 units per grade
- Implementing and Teaching *Connected Mathematics 2*
- Parent Guide for *Connected Mathematics 2*
- Special Needs Handbook for Teachers
- Teacher Transparencies, Grades 6–8 (one per grade)
- Math Test-Taking Strategies with Transparencies, Grades 6–8 (one per grade)
- ExamView® Test Generator CD-ROM

Additional Teacher Support

- Assessment Resources, Grades 6–8 (one per grade)
- Teacher's Guide for Additional Practice and Skills Workbook, Grades 6–8 (one per grade)
- Teacher EXPRESS® CD-ROM, Grades 6–8 (one per grade)
- Prentice Hall Companion Website for Students and Teachers at http://www.PHSchool.com/CMP2

Other Resources

- LessonLab Breakthrough Mathematics for *Connected Mathematics 2*
- *Implementing Standards-Based Mathematics Curricula: Preparing the Community, the District, and Teachers.* Available at http://www.mth.msu.edu/cmp/ImplementingCMP/Preparing.htm.
- *Consultant Overview Sessions*: Successful implementation suggestions from administrator/teacher consultants.
- Other resources are available and continuously updated at the CMP website: www.math.msu.edu/cmp. Recent additions and updates include: implementation strategies, management strategies, grading schemes for assessment, suggestions for parents and professional development, as well as recent news.

*The *Connected Mathematics* (CMP) curriculum has just completed a five-year revision process with funding from the National Science Foundation. Each unit went through at least three cycles of reviews, revision, field-testing and evaluation. Forty-nine schools, approximately 150 teachers and 20,000 students were involved in the revisions. Three new units were created, one for each of the grades 6, 7 and 8. *Connected Mathematics 2* has 8 units per grade level. In addition, three units from *Connected Mathematics* (2004) edition will be in print.

Impact Data Compiled to Date

- "Student Attainment in the *Connected Mathematics* Curriculum." J. Ridgway, J. Zawojewski, M. Hoover, D. Lambdin. In S. Senk and D. Thompson, *Standards-Based School Mathematics Curricula: What Are They? What Do Students Learn?* Mahwah, NJ: Lawrence Erlbaum Associates, 2003.
- "The Impact of Two Standards-Based Mathematics Curricula on Student Achievement in Massachusetts." J. Riordan and P. Noyce. *Journal for Research in Mathematics Education, 32*(4), 368–398.
- "Assessing the Impact of Standards-Based Middle Grades Mathematics Curriculum Materials on Student Achievement." R. Reys, B. Reys, R. Lapan, G. Holliday, and D. Wasman. *Journal for Research in Mathematics Education,* 34(1), 74–95.
- "A Study of Proportional Reasoning Among Seventh and Eighth Grade Students." D. Ben-Chaim, J. Fey, W. Fitzgerald, C. Benedetto, and J. Miller. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, IL. 1997.
- "Proportional Reasoning Among 7th Grade Students with Different Curricular Experiences." D. Ben-Chaim, J. Fey, W. Fitzgerald, C. Benedetto, and J. Miller. *Educational Studies in Mathematics, 36(3)*, 247–273.
- "An Evaluation of the Connected Mathematics Project." J. Cain. *Journal of Educational Research, 95(4),* 224–233.

Available from Prentice Hall:

- *Connected Mathematics Project: Research and Evaluation Summary* references and reports on both qualitative and quantitative data, as well as samples of student work.

Available from the *Connected Mathematics Project* website:

- Reports on student achievement and teacher professional development.

MATHEMATICS IN CONTEXT®
grades 6–8

About the Program

The significantly revised *Mathematics in Context,* a comprehensive middle-school mathematics curriculum for grades 6–8, was developed by the Wisconsin Center for Education Research at the University of Wisconsin-Madison and the Freudenthal Institute at the University of Utrecht, The Netherlands.

Connections are a key feature of the program—connections among mathematical strands, to other disciplines, and to meaningful problems in the real world. *Mathematics in Context* emphasizes the dynamic, active nature of mathematics and the way it enables students to make sense of their world.

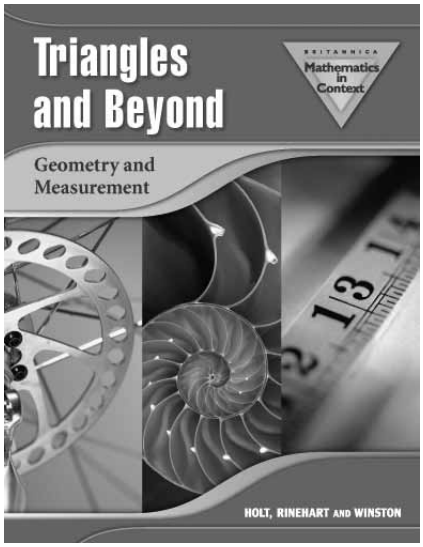
Mathematics in Context consists of mathematical tasks and questions designed to stimulate mathematical thinking and to promote student discussion. Students explore mathematical relationships; develop and explain their reasoning and strategies for solving problems; use problem-solving tools appropriately; and listen to, understand, and value others' strategies. Throughout the program, realistic contexts support mathematical abstraction.

The complete *Mathematics in Context* program contains 27 units, 9 at each grade level. The units address four content strands: number, algebra, geometry, and data analysis and probability. Every unit consists of a Teacher's Guide and a non-consummable softcover student booklet.

The Teacher's Guides contain solutions to the exercises, a list of unit goals and objectives, comments about the mathematics, and suggestions for accommodations for reaching all learners. The guides have assessment activities for each unit, including tests, quizzes, and suggestions for ongoing assessment. They also provide black-line masters for student activities.

Three supplementary products are available: the Teacher Implementation Guide (TIG), *Number Tools,* and *Algebra Tools*. The TIG addresses suggested sequence of units, preparing families, assigning homework, and preparing students for standardized achievement tests. It also contains information about administrative support for successful implementation. *Number Tools* gives students more exposure to number concepts, including fractions, decimals, percents, and number sense. Activity sheets are similar in context to the curriculum units and can be used as homework and/or quizzes. *Algebra Tools* is a series of focused problems that "anchor" algebraic skills by combining problem solving with skill development and maintenance. Activities in both workbooks include a variety of problem types with many puzzle-like formats to motivate student engagement and exploration. Visual models and geometric patterns are used to promote student insight, mathematical connections, and retention.

Manipulatives used in the program are items commonly found in the classroom, such as scissors, graph paper, string, and integer chips. Also available is a classroom manipulatives kit. As students progress to later units, the need for a personal calculator increases. The 8th-grade units were written with the expectation that students would have access to graphing calculators. A set of applets designed by the Freudenthal Institute are also available.



Mathematics in Context is published by Encyclopædia Britannica and distributed by Holt, Rinehart and Winston.

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Student Materials

- Student Edition, softcover for each unit
  Nine units each for grades 6-8
- Student Edition, hardcover for each grade level
- Algebra Tools Workbook
- Number Tools Workbook
- Key to Success: A Curriculum for Summer School, After School, and Exploration Programs
- MiC Online Student Access
- All student materials are available in Spanish

Teacher Materials

- Teacher's Guides for each unit
- Teacher's Implementation Guide
- Algebra Tools Workbook Teacher's Guide
- Number Tools Workbook Teacher's Guide
- Key to Success: A Curriculum for Summer School, After School, and Exploration Programs Teacher's Guide
- Teaching Transparencies, Levels 1-3
- Manipulatives Kit
- Test and Practice Generator with ExamView CD-ROM
- MiC Online Teacher Access

Impact Data Compiled to Date

- "*Mathematics in Context*—Preliminary Evidence About Student Outcomes." T. Romberg and M. Shafer. In S. Senk and D. Thompson, Eds., *Standards-Based School Mathematics Curricula: What Are They? What Do Students Learn?* Mahwah, NJ: Lawrence Erlbaum Associates, 2003.

Available from Holt, Rinehart and Winston:

- "Summary Report of Student Achievement Data for *Mathematics in Context*; A Connected Curriculum for Grades 5–8." Austin, TX: Holt, Rinehart and Winston.
- "A Longitudinal Study of the Instructional Effectiveness of *Mathematics in Context*, March 2005," Austin, TX: Holt, Rinehart and Winston.

MathScape™: *Seeing and Thinking Mathematically*

grades 6–8

About the Program

MathScape is a comprehensive, three-year middle school mathematics curriculum that focuses on mathematics in the human experience. Throughout the 21 units of this curriculum, students experience mathematics as fundamental to human endeavors throughout the world and throughout history—endeavors such as planning, predicting, designing, creating, exploring, explaining, coordinating, comparing, and deciding.

The curriculum focuses on four mathematical strands that develop across the three grade levels: number, algebra, geometry and measurement, and statistics and probability. *MathScape* supports students in learning mathematics by having them do mathematics, use and connect mathematical ideas, and actively construct their own understandings.

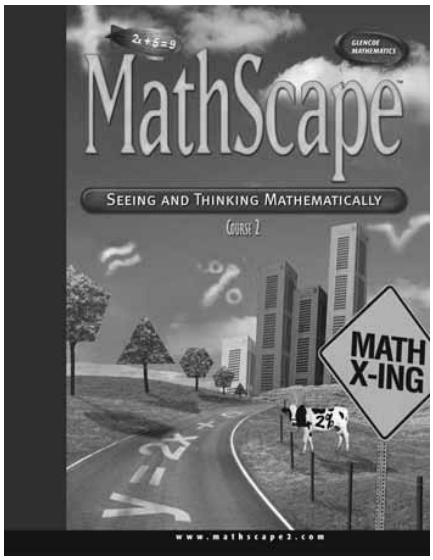
There are seven *MathScape* units at each grade level. Each unit provides five to six weeks of material and explores several mathematical topics in depth, such as "what is a function?" or "how do you interpret information on Cartesian graphs?" The mathematics is presented in contexts designed to appeal to middle school students, such as music, sports, and architecture, as well as in purely mathematical contexts. The curriculum engages students in hands-on investigations that involve mathematical concepts, skills, and processes, and provides opportunities for practice and application of basic skills. Lessons prompt students to work collaboratively with their classmates, communicate about mathematics in class discussions and writing, and reflect on their thinking and learning.

Each unit of the program features an assessment package with options that allow teachers to choose when and how to assess students. Resources include embedded assessment tasks with detailed rubrics and sample student work; skill quizzes; final projects; pre-assessment tasks; and portfolio suggestions.

MathScape teacher materials support teachers in using the materials flexibly to meet the needs of their students. The Teacher's Guides include detailed lesson plans; reproductions of the student pages; sample student work; homework options; reproducibles; and comments and tips from teachers who have taught the program. Each guide also provides Math Background pages where teachers can find information about the mathematics of the unit.

Calculators are used throughout the curriculum. Each unit identifies Technology Options, appropriate junctures for the use of spreadsheets and other optional computer software programs, and links to related web tools.

Each *MathScape* unit consists of a Teacher's Guide and a non-consumable student book. The student books are also available as a hardcover consolidated text (one per grade). The units are supplemented by an optional student reference book with definitions, examples, and practice problems for basic skills, called *Quick Review Math Handbook: Hot Words, Hot Topics* (one student book and one teacher's book per grade level). Most of the units involve the use of manipulatives.



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Student Materials

- Student Guides for each unit

  7 units per grade

  OR

  Consolidated Student Text: 1 per grade
- *Quick Review Math Handbook: Hot Words, Hot Topics* for Students, 1 book per grade

Teacher Materials

- Teacher Guides for each unit

  7 modular units per grade
- *Quick Review Math Handbook: Hot Words, Hot Topics* Teacher's Guide
- Manipulative Kits available for each unit
- Reproducible Skill Quizzes and Answers
- CD-ROMs of student guides, interactive teacher guides, testmaker, and virtual activities

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Other Resources

Available at http://www.edc.org/mathscape:

- Technology options for calculators, computer software, internet use.
- Implementation Strategies Index, for customizing *MathScape* to district's needs and for help designing professional development.
- Recommendations for *MathScape* Professional Development.
- Teaching Tips, unit-specific suggestions for beginning or experienced users of *MathScape.*
- Resources for Trainers.

Impact Data Compiled to Date

- *Research Done During Development of the Math Scape Curriculum.* Available at http://www.edc.org/mathscape.

MIDDLE GRADES MATH *THEMATICS*

grades 6–8

About the Program

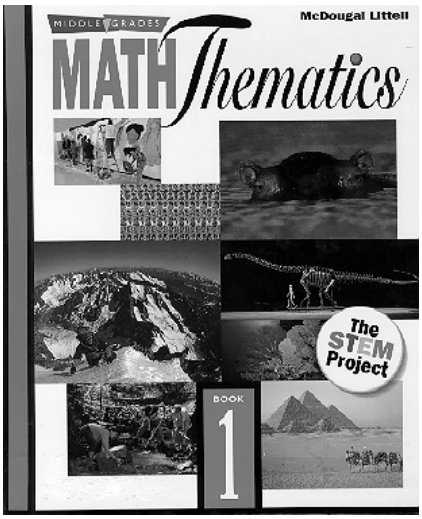
MATH *Thematics* is a complete three-year mathematics curriculum for students in grades 6–8. This program presents mathematics in relevant and meaningful contexts; each module focuses on a theme that extends throughout the module. The goals of this program are to help all students develop their abilities to reason logically, apply mathematical skills to real-life activities, communicate mathematically, and feel confident in using quantitative and spatial information to make decisions. Major mathematical strands of the program include: number concepts, measurement, probability, statistics, algebra, geometry, and discrete mathematics.

The instructional approach engages students in doing mathematics in a variety of settings. It encourages active learning, and students work both independently and in cooperative groups to investigate mathematics and solve real-life problems. Not all instruction, however, is through discovery learning; the program includes direct instruction in concepts and skills as well. The curriculum includes practice, review, and extension exercises that reinforce and extend learning.

Assessment is an integral part of the MATH *Thematics* materials. Each grade-level course begins by introducing students to assessment criteria that are used for assessing problem solving and mathematics communication on open-ended problems and projects throughout the modules. Other assessment tools include "checkpoint" questions that check students' understanding as they are exploring mathematics; reflection exercises that ask students to describe, summarize, and extend mathematical ideas; module assessments that ask students to reflect on a module as a whole; and portfolio projects that can be used to assess whether students can apply what they have learned.

MATH *Thematics* assumes that students have access to a scientific calculator. Graphing calculators can benefit students in the 8th-grade modules, but are not required. Web-based links are provided for each module at http://www.mlmath.com. These links provide up-to-date applications, data sets, and activities related to the module. Also, each module is coordinated with a series of interactive web-based activities. In addition to these web-based activities are tools for topics such as box plots and histograms.

Each of the three grade levels of MATH *Thematics* includes eight modules; each module requires about four weeks of instruction. The modules are available as a consolidated text for each grade level. Accompanying each grade level is a Teacher's Resource Package, which includes an annotated Teacher's Edition (with warm-up activities, closure questions, and answers to all student text exercises and questions), a Professional Development Handbook (which outlines program philosophy, assessment, and scoring rubrics), Teacher's Resource Books (which provide module-by-module teaching strategies, classroom management tips, and blackline masters), and Spanish Resources (which includes sections on Home Involvement, Practice and Applications, and Assessments).



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Student Materials

- Pupil's Editions
  One book per grade, Grades 6–8
- Student Workbooks, Grades 6–8 including:
  Labsheets
  Practice and Applications pages
  Study Guide pages
- Student Manipulative Kits, Grades 6–8
- Notetaking Masters, Grades 6–8

New edition of MATH *Thematics* will be available in 2007.

Teacher Materials

- Teacher's Resource Packages, Grades 6–8 including:
  Annotated Teacher Edition
  Resource Books for Modules 1–8
  Professional Development Handbook
  Spanish Resources
- Teacher Overhead Manipulatives

Other Resources

- *Preparation for Middle School Math*. Teacher's and Pupil's Editions
- Spanish Resources, Books 1–3
  Home Involvement
  Practice and Applications
  Assessments
- Multi-Language Glossary
- Interactive Transparencies, Books 1–3
- Computer Test and Practice Generator
- Personal Student Tutor Software
- *Math Tutor Place.* 100 cards for practice of topics in arithmetic, geometry, and algebra.

Impact Data Compiled to Date

- "Middle Grades MATH *Thematics*: The STEM Project." R. Billstein and J. Williamson. In S. Senk and D. Thompson, Eds., *Standards-Based School Mathematics Curricula: What Are They? What Do Students Learn?* Mahwah, NJ: Lawrence Erlbaum Associates, 2003.

Available from McDougal Littell:

- *McDougal Littell Middle Grades MATH Thematics: Research-Based Framework,* 2005.
- *McDougal Littell Middle Grades MATH Thematics: Learner Verification Studies,* 2005.

CONTEMPORARY MATHEMATICS IN CONTEXT©

grades 9–12

About the Program

Contemporary Mathematics in Context, developed by the Core-Plus Mathematics Project, is a four-year, integrated mathematics program that includes a three-year core curriculum for all students, plus a flexible fourth-year course that continues the preparation of students for college mathematics. The curriculum builds on the theme of mathematics as sense making.

Each course advances students' mathematical understanding along interwoven strands of algebra and functions, geometry and trigonometry, statistics and probability, and discrete mathematics. Each of these strands is developed within focused units connected by fundamental themes, common topics, and mathematical ways of thinking. The program emphasizes mathematical modeling and modeling concepts, including data collection, representation, interpretation, prediction, and simulation. Graphing calculators are assumed and appropriately used throughout the curriculum.

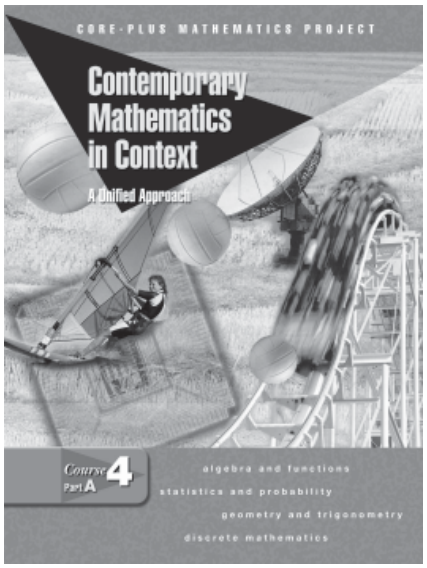
Courses 1–3 consist of seven units each and a capstone experience. Each unit has three to six multi-day lessons which develop major ideas through investigations of applied problems. Typically, four to six weeks are needed to complete units. The final Capstone is a thematic, two-week project that enables students to synthesize and apply the important mathematical concepts and methods developed in the course. Course 4 consists of 10 units that permit tailoring courses as preparation for various undergraduate programs.

Lessons are organized in a four-phase cycle: Launch—a whole-class discussion of a real-world situation establishing a context for the lesson; Explore—small-group investigations of more focused problems; Share and Summarize—a whole-class discussion in which groups summarize results of investigations and construct a shared understanding of important concepts and methods; and Apply—a task to be completed individually to assess student understanding.

In addition to classroom investigations, the program provides sets of MORE tasks, which engage students in Modeling with, Organizing, Reflecting on, and Extending their mathematical understanding. These tasks are intended for individual work outside of class. Reference and Practice student handbooks help students review and polish mathematics they encountered in previous courses.

Hardcover student texts and corresponding Teacher's Guides are available in two parts, A and B, for each of Courses 1–4. The Teacher's Guides provide for each unit: an overview, background on mathematical content, objectives, instructional notes and suggestions for promoting student investigation and collaborative work, solutions, and possible student responses. An Implementation Guide supports teachers in using the program effectively.

Other support materials include an Interactive Lesson Planner, Assessment Resources, and Teaching Resources for each course. Assessment and Maintenance Builder CD-ROMs provide for customization of assessments and practice sets for each of Courses 1–4. Downloadable software for graphing calculators supports student exploration, and is required for some investigations.



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Student Materials

- Student Text, Courses 1–3
  Part A (Units 1–4)
  Part B (Units 5–7 plus Capstone)
- Student Text, Course 4
  Part A (Units 1–5)
  Part B (Units 6–10)
- Reference and Practice Books, Courses 1–3
- Spanish Student Text, Courses 1–2
  Part A (Units 1–4)
  Part B (Units 5–7 plus Capstone)

New edition of *Contemporary Mathematics in Context* will be available Fall 2007.

Other Resources

- *A Balanced Approach to Mathematics Education.*
- *Contemporary Mathematics in Context Scope and Sequence.*
- Information about the CPMP curriculum and its development, evaluation, and implementation. Available on the CPMP website at http://www.wmich.edu/cpmp.
- Correlation to state frameworks available at http://www.wmich.edu/cpmp.
- Parent Support: An overview of the curriculum, unit summaries, and resources for helping with homework. Available on the CPMP website at http://www.wmich.edu/cpmp/parentsupport.
- District Achievement Reports at http://www.wmich.edu/cpmp/districtreports.html.
- Alignment of the *Core-Plus* Mathematics courses with the College Board's recommended topics as preparation for AP Calculus. Available on the CPMP website at http://www.wmich.edu/cpmp/cpmpfaq.html#APcalc.
- Program Reviews. Links to reviews by the U.S. Department of Education, AAAS, and mathematics educators. Available from http://www.wmich.edu/cpmp.
- CPMP_Users, a *Core-Plus Mathematics Project* listserv.

Teacher Materials

- *Implementing the Core-Plus Mathematics Curriculum*
- Teacher's Guide, Courses 1–4, Parts A & B
- Teaching Resources, Courses 1–4, Parts A & B
- Assessment Resources, Courses 1–4, Parts A & B
- Calculator Software and Guide, Courses 1–4
- Assessment and Maintenance Worksheet Builder CD-ROMs, Courses 1–4
- Teacher Works CD-ROMs, Courses 1–4

Impact Data Compiled to Date

Selected book and journal publications:

- "Teacher Variables that Relate to Student Achievement when Using a Standards-Based Curriculum." H. Schoen, K. Finn, K. Cebulla, and C. Fi. *Journal for Research in Mathematics Education, 34(3),* 228–259.
- "Responding to Calls for Change in High School Mathematics: Implications for Collegiate Mathematics." H. Schoen and C. Hirsch. *The American Mathematical Monthly, 110*(2), 109–123.
- "Effects of Standards-Based Mathematics Education: A Study of the Core-Plus Mathematics Project Algebra and Functions Strand." M. Huntley, C. Rasmussen, R. Villarubi, J. Santong, and J. Fey. *Journal for Research in Mathematics Education, 31*(3), 328–361.
- "The Core-Plus Mathematics Project: Perspectives and Student Achievement." H. Schoen and C. Hirsch. In S. Senk and D. Thompson, Eds., *Standards-Based School Mathematics Curricula: What Are They? What Do Students Learn?* Mahwah, NJ: Lawrence Erlbaum Associates, 2003.

Selected papers presented at annual meetings of the American Educational Research Association:

- *Preparation of Students in a Standards-Oriented Mathematics Curriculum for College Entrance Tests, Placement Tests, and Beginning Mathematics Courses.* H. Schoen, K. Cebulla, and M. Winsor, 2001.
- *An Emerging Profile of the Mathematical Achievement of Students in the Core-Plus Mathematics Project.* H. Schoen, C. Hirsch, and S. Ziebarth. 1998.

Reports available from the *Core-Plus Mathematics Project*:

- *Developing Mathematical Literacy: A Core-Plus Mathematics Project Longitudinal Study Progress Report*. C. Hirsch and H. Schoen, May 2002.
- *Contemporary Mathematics in Context Evaluation Results*. 2000.
- *Contemporary Mathematics in Context Student Achievement Results, Volume I.* 1998.
- *Mathematical Achievement on Standardized Tests: A Core-Plus Mathematics Project Field Test Progress Report*. H. Schoen and S. Ziebarth, January 1998.

INTERACTIVE MATHEMATICS PROGRAM™

grades 9–12

About the Program

The *Interactive Mathematics Program (IMP)* is a four-year curriculum of problem-based, integrated mathematics designed to replace the traditional Algebra I, Geometry, Algebra II/Trigonometry, Pre-Calculus sequence. IMP integrates traditional mathematics with additional topics recommended by the NCTM *Curriculum and Evaluation Standards*, such as statistics, probability, discrete mathematics, and matrix algebra. By combining traditional concepts and newer material in an integrated setting, and by placing these ideas in meaningful contexts, the IMP curriculum meets the needs of both college-bound students and those headed directly into the workforce.

Most units begin with a central problem that students explore over the course of six to eight weeks. Some of these central problems are based on practical, real-world situations, such as maximizing profits for a business or studying population growth. Others are more fanciful, involving situations like a pennant race or a circus act. As students work through smaller problems in the unit, they develop the mathematical concepts and techniques they need to solve the central problem. A particular unit may combine several branches of mathematics so that students see how important ideas are related to one another.

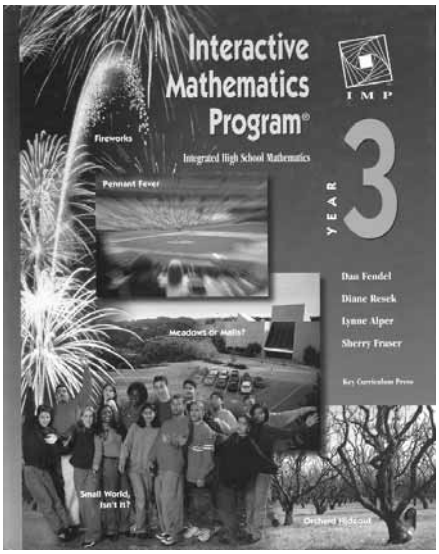
There are three main types of student assignments in IMP: in-class activities, daily homework, and Problems of the Week (POWs). Students examine new concepts through in-class activities, working in groups and individually. Homework assignments reinforce and extend concepts introduced in class. POWs are open-ended problems, often mathematical classics, that cannot be solved easily in a very short period of time. In POW write-ups, students describe how they worked on the problem and explain their reasoning.

Each unit includes a collection of supplemental problems, to reinforce concepts and skills and to extend ideas beyond the basic curriculum. These problems provide a way to tailor the curriculum to meet the needs of individual students.

IMP requires the use of a graphing calculator during class. There are many IMP activities in which computer programs could provide valuable enrichment, but there are no activities that require computer use.

Teachers assess individual students in IMP using a variety of tools, including daily homework assignments, oral presentations, contributions to the group or whole-class discussions, Problems of the Week, in-class and take-home unit assessments, end-of-semester examinations, self-assessments, and portfolios.

Student materials for IMP are available in one hardcover textbook for each of the four years of the program. Accompanying Teacher's Guides are published in softcover for each of the units in a grade level. Additional teacher support materials include *Introduction and Implementation Strategies for the Interactive Mathematics Program*; a teaching handbook written by experienced teachers of the program; a writing supplement; and the *Guide to Using TI Calculators with IMP*.



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lisa@meaningfulmath.com
http://www.mathimp.org

Student Materials

- Student Texts, Grades 9–12
  5 units per year
- Optional softcover unit textbooks available for:
  Patterns (a unit from Year 1)
  Shadows (a unit from Year 1)
  The Overland Trail (a unit from Year 1)
  Solve It! (a unit from Year 2)
  Fireworks (a unit from Year 3)
- *Guide to Using TI Calculators with IMP Years 1–4*
  One book for each year

Teacher Materials

- Modular Teacher's Guides, Grades 9–12
  5 units per year
- *Introduction and Implementation Strategies for the Interactive Mathematics Program: A Guide for Teacher-Leaders and Administrators.* Available as a booklet and at http://www.mathimp.org.

Other Resources

- Years 1 and 2 available in Spanish from IMP regional centers, http://www.mathimp.org.
- Years 1–4 available in French from Cheneliere McGraw-Hill, 7001 Boulevard St-Lauren, Montreal (Québec), H2S 3E3 Canada.
- Years 1 and 2 available in Hawaiian from Loren Ayresman at loren_ayresman@notes.k12.hi.us.
- *It's All Write: A Writing Supplement for High School Mathematics Classes*. Teacher's Guide and student blackline masters for this one-week unit.
- *Teaching Handbook for the Interactive Mathematics Program: A Teacher-to-Teacher Guide*
- *Baker's Choice—A Unit of High School Mathematics*. Student Text, Teacher's Guide and student blackline masters for this three-week unit.
- *IMPressions* Newsletter
- Two brochures to share with parents are available at http://www.mathimp.org/publications/Parent_brochures.html.

Impact Data Compiled to Date

- "The Impact of the *Interactive Mathematics Program* on Student Learning." N. Webb. In S. Senk and D. Thompson, Eds., *Standards-Based School Mathematics Curricula: What Are They? What Do Students Learn?* Mahwah, NJ: Lawrence Erlbaum Associates, 2003.

Available from the *Interactive Mathematics Program*:

- *Research Supporting the Interactive Mathematics Program,* available at http://www.mathimp.org/downloads/IMPWhitePaper.pdf.
- *Assessing the Costs/Benefits of an NSF "Standards-Based" Secondary Mathematics Curriculum on Student Achievement: The Philadelphia Experience: Implementing the Interactive Mathematics Program (IMP).* J. Merlino and E. Wolff. April 2001. The Greater Philadelphia Secondary Mathematics Project. Visit http://www.gphillymath.org/StudentAchievement/Reports/AssessCostIndex.htm.
- College Acceptance of IMP Students. A list of four-year colleges and universities at which IMP students have been accepted since 1993. Available at http://www.mathimp.org/research/college.html.
- Evaluation and Research updates available at http://www.mathimp.org/research.

MATH CONNECTIONS:®

A SECONDARY MATHEMATICS CORE CURRICULUM

grades 9–11

About the Program

The vision of MATH *Connections* is that all students can learn mathematics. MATH *Connections* is a complete three-year high school curriculum for all students that has as its mission the conceptual development of the learner. Students who successfully complete the program are prepared for Pre-Calculus, Calculus, AP Statistics, or any senior-level mathematics course.

Using the NCTM *Standards* as a guideline and replacing traditional Algebra I, Geometry and Algebra II, MATH *Connections* blends the mathematics of algebra, geometry, trigonometry, probability, statistics, and discrete mathematics. The curriculum bridges connections of all sorts: between different mathematical areas; mathematics and science; mathematics and other subject areas; and mathematics and the world of people, business, and everyday life.

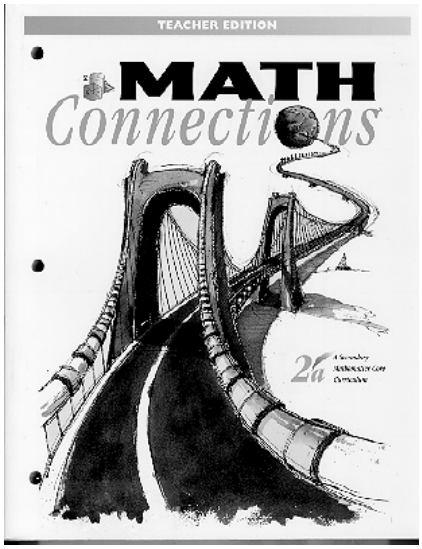
MATH *Connections* is concept-driven. That is, concepts are introduced in the context of real-world applications, problems and projects. Rather than teaching a single topic, MATH *Connections* uses broader concepts to link topics together in a unified, interconnected approach.

MATH *Connections* is designed to provide students with experiences that excite their curiosity, stimulate their imagination, and challenge their skills. The pedagogical approach of MATH *Connections* is flexible. It is intended to meet the needs of all students by accommodating a variety of student learning styles and levels. The materials support a combination of teacher-student and student-student interaction, hands-on investigations with prompts for class discussion, individual activities, student writing and justification of results.

Student assessment in MATH *Connections* includes written, oral, and demonstration formats that assess higher order thinking skills. In this way, students demonstrate their mathematical skills, their approach to non-routine, real world problems, and their understanding of mathematics concepts and how they relate to one another.

The curriculum integrates technology through the use of graphing calculators, computers, and the Internet. Students make conjectures, then use these tools to validate findings and investigate concepts, problems, and projects in greater depth. Access to the Internet provides opportunities for interactive lessons and activities that correlate to and augment the MATH *Connections* curriculum. Discussions of how the tools work, why they work, and whether or not they are appropriate for a particular task occur throughout the course. For MATH *Connections* teachers, Internet applications provide support and opportunities to share ideas and develop collegial relations with peers.

The Student Edition is published in six half-year, hardbound textbooks. The Teacher Edition, a replica of the Student Edition, is also organized in half-year books that include a Teacher Commentary coordinated to the Student Edition.



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Student Materials

- Student Edition (3 years)
  6 half-year hardbound color textbooks
- Student Workbooks
  Bound booklets of supplements for students

Teacher Materials

- Teacher Edition, 6 half-year texts
- Blackline Masters
- Form A and Form B Student Assessments with Solution Keys and Scoring Guides

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Other Resources

- *Introduction to* MATH *Connections with Sample Lessons and Assessments*.
- *Welcome to* MATH *Connections*. Introductory video highlighting classrooms, students, teachers, and administrators.
- *Extensions.* Problems, simulations, and projects with teacher commentary, designed for students to explore mathematical topics in greater depth and breadth.
- *Supplements.* Problem solving and mathematics skill-building activities with student masters and teacher commentary. Developed by high school teachers.
- *Test Banks*. Designed for teachers to develop midyear and final exams. 10–15 problems and solutions per chapter. Correlated to chapter learning outcomes.

Impact Data Compiled to Date

- "The Effects of MATH *Connections* on Student Achievement, Confidence, and Perception." D. Cichon and J. Ellis. In S. Senk and D. Thompson, Eds., *Standards-Based School Mathematics Curricula: What Are They? What Do Students Learn?* Mahwah, NJ: Lawrence Erlbaum Associates, 2003.

MATHEMATICS: MODELING OUR WORLD

grades 9–12

About the Program

Mathematics: Modeling Our World is an integrated core curriculum for high school based on the premise that students learn best when they are actively involved in the process. In this program, students do not first learn mathematics and then apply what they've learned. Rather, important questions about the real world come first. Students analyze situations and apply the mathematical concepts needed to solve problems. Contextual questions drive the mathematics. In each unit, students build, test, and present models that describe a real-world situation or problem, such as deciding where to build a fire station. Mathematical modeling is a central focus throughout the curriculum.

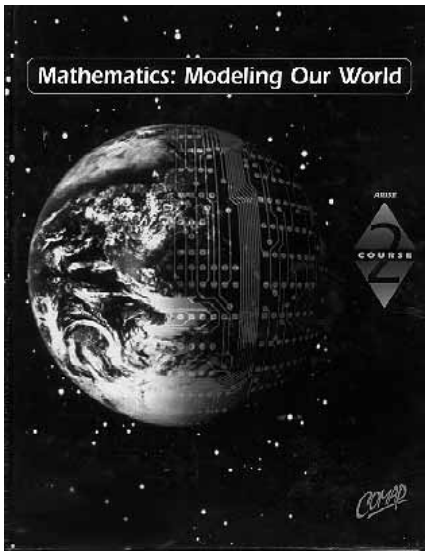
Each course covers the mathematical content found in the NCTM *Principles and Standards*. Each of the first three courses of *Mathematics: Modeling Our World* contains seven or eight units. Units are divided into four to seven lessons; each may take several days to complete. Each lesson contains a Lesson Opener, which provides the context for the lesson; Activities, which students work on in pairs or small groups using hands-on mathematical investigation; and Individual Work, items that review, reinforce, extend, practice, and foreshadow concepts developed in the lesson.

Course 4 is comprised of eight chapters and is intended to be a bridge between Courses 1, 2, and 3 and collegiate mathematics. The student text contains eight chapters divided into three to six lessons. Each lesson contains an activity designed for group work, expository readings, and exercises. Each chapter ends with a set of review exercises.

Assessment is an integral part of *Mathematics: Modeling Our World*. Both Activities and Individual Work offer embedded opportunities to assess student progress. The Teacher's Resources provide Assessment Problems for use with each unit/chapter.

The units of *Mathematics: Modeling Our World* begin with a real situation or problem to be solved during the course of the unit. In Courses 1–3, a short video segment may be used to introduce the theme or problem. Students use both graphing calculators and computers extensively throughout the curriculum to assist in carrying out computations of real problems and to enhance concept development. While it is strongly recommended that students use computers with this curriculum, material is provided to teach the lessons without computers as well. Use of the graphing calculator is essential throughout the program.

Student materials for *Mathematics: Modeling Our World* are available in four hardcover texts, one for each course. Teacher materials for Courses 1–3 include an Annotated Teacher's Edition, a Solutions Manual, and Teacher's Resources containing additional teaching suggestions, background readings, reproducible handouts, assessment problems, supplemental activities, and transparencies. Course 4 has all teacher materials, including the Solutions Manual, in the Teacher's Resource Binder. Other materials include a video with segments for each unit (Courses 1–3) and a CD-ROM with calculator and computer programs written specifically for *Mathematics: Modeling Our World*.



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fax (781) 863-1202
info@comap.com
http://www.comap.com/highschool/projects/mmow/introduction.html

Student Materials

- Student Editions, Courses 1–4 (Grades 9–12)

Revised Year 1 available in downloadable format (PDF)

Year 2 in revision — Contact info@comap.com for more information

Teacher Materials

Included for each course:

- Annotated Teacher's Edition (Courses 1–3)
- Teacher's Resources: a binder containing a teacher's guide with additional notes and background reading, supplemental activities, assessment problems, handouts, and transparencies. (Courses 1–4)
- Solutions Manual (Courses 1–4)
- Video with a documentary for each unit (Courses 1–3)
- CD-ROM with programs for graphing calculators and computers (Courses 1–4)

Other Resources

Teacher Support website at http://www.comap.com/highschool/projects/mmow/ includes:

- Support Library of downloadable materials and software for each individual unit
- Web Links to support individual units
- Email support for individual units

Impact Data Compiled to Date

- *Mathematics: Modeling Our World Evaluation Report* (2001), prepared by Learning Innovations, a division of WestEd Regional Educational Laboratory. A summary of student achievement in several districts including impact on students and teachers. Available from COMAP or at http://www.comap.com/highschool/projects/mmow/webeval.pdf.

SIMMS INTEGRATED MATHEMATICS
grades 9–12

About the Program

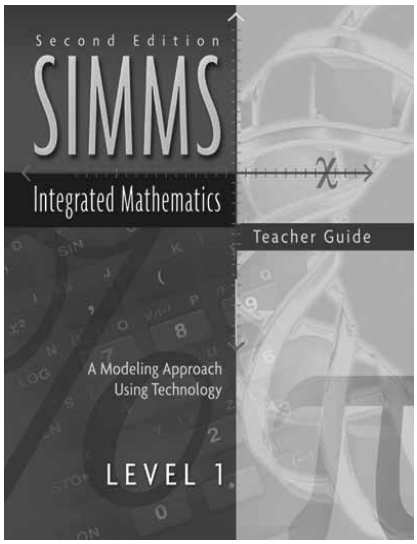
SIMMS Integrated Mathematics (SIMMS IM) is a complete 9–12 mathematics curriculum that uses real-world contexts in an integrated approach for all students. It is designed to replace all secondary mathematics courses, with the possible exception of advanced placement courses. SIMMS IM considers mathematical topics in a different order than a traditional curriculum, and teaches some mathematical topics not usually encountered at the high school level. The curriculum includes work in algebra, geometry, trigonometry, analysis, statistics, probability, matrices, and data analysis, as well as less traditional high school topics such as graph theory, game theory, and chaos theory.

SIMMS IM materials are partitioned into six levels; each level is a year's worth of material. All students take Levels 1 and 2 as a core curriculum. In the third and fourth years, SIMMS IM offers a choice of options. Level 3 is suitable for all students; Level 4 is intended for those planning careers in mathematics or science. Levels 5 and 6 offer options for students in the fourth year: Level 5 focuses more specifically on applications from business and the social sciences; Level 6 continues the presentation of mathematics through applied contexts while embracing a broader mathematical perspective. Each level contains 13–16 modules; each module takes between two and three weeks.

SIMMS IM invites the use of a variety of instructional formats, including individual and cooperative group work, whole-class discussions, and individual and group projects. Each module has a central theme, and includes three to four activities. The activities use hands-on explorations, discussions, and assignments to guide students to a common understanding of the mathematics within it. "Mathematics Notes" sections in the text furnish students with definitions, symbolism, and appropriate examples. Additional features of the curriculum include research projects and brief sets of problems called "flashbacks" for additional practice of procedural skills.

Assessment materials—including alternative assessments that emphasize writing and logical argument—are an integral part of the curriculum. Suggested assessment items for use with a standard rubric are identified in all teacher editions. Assessment is an essential part of the Exploration, Discussion, Assignment, and Flashback sections of every module. In addition, each module has a Summary Assessment that is open-ended and often project-oriented, as well as a Module Assessment.

Technology is an important part of the SIMMS IM curriculum. Students must have ready access to the functionality of a graphing utility with spreadsheet-like features, geometric visualization, and a statistics program. Access to a science-interface device (such as Texas Instrument's Calculator-Based Laboratory™; CBL) is also helpful in allowing electronic data collection from classroom experiments. In some modules it is also useful to have access to a symbolic manipulator and a word processor but the curriculum can be successfully implemented without those options.



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http://www.simms-im.com

Student Materials

- Student Editions, 1 textbook per level
  Level 1 (9th grade)
  Level 2 (10th grade)
  Level 3 or 4 (3rd Year)
  Level 5 or 6 (4th Year)

Teacher Materials

- Teacher Editions, 1 Teacher Edition per level
  Level 1 (9th grade)
  Level 2 (10th grade)
  Level 3 or 4 (3rd Year)
  Level 5 or 6 (4th Year)

The third edition of *SIMMS Integrated Mathematics* will be available in 2006.

Other Resources

- Supplementary Materials: Levels 1 and 2
- *SIMMS Resource Guide for Administrators, Counselors and Other Educators*
- *Restructuring Mathematics Assessment: Suggestions from the Classroom*
- Curriculum Sampler
- Objectives/Content Outline
- Content Matrix
- Materials List
- Video: *Empowering Students*
- *Curriculum Toolkit: Making Curriculum Decisions*

Impact Data Compiled to Date

- "Curriculum and Assessment in SIMMS Integrated Mathematics." J.W. Lott, J. Hirstein, G. Allinger, S. Walen, M. Burke, M. Lundin, T.A. Souhrada, and D. Preble. In S. Senk and D. Thompson, Eds., *Standards-Based School Mathematics Curricula: What Are They? What Do Students Learn?* Mahwah, NJ: Lawrence Erlbaum Associates, 2003.

Available from the SIMMS Integrated Mathematics Implementation Center:

- *SIMMS Monographs 4 and 5: Assessment Reports I and II*. Collections of articles summarizing research about SIMMS.
- The Assessment section of the SIMMS Implementation Center website lists assessment outcomes from schools using the SIMMS curriculum, as well as pilot-test data from 1993–1997.

For more information, contact:

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