

APPENDIX B

DISCIPLINARY LITERACY IN MATH

When mathematicians read, they

- Isolate information they have been given and look for information they need
- Identify patterns and relationships
- Decipher symbols and abstract ideas
- Apply mathematical reasoning and number sense
- Seek accuracy
- Analyze, formulate, and interpret
- Evaluate data
- Ask questions
- Consider the unique vocabulary, language, and word parts specific to math

When mathematicians write, they

- Explain, justify, describe, estimate, or analyze
- Use representations
- Seek precision
- Utilize real-world situations
- Communicate ideas clearly
- Draw conclusions
- Use symbols and abstractions
- Include reasons and examples

When mathematicians think, they

- Use all available information to solve problems
- Consider generalizations, exceptions, and patterns
- Bring forth previous understandings
- Know when to estimate and generalize
- Create a plan for solving problems
- Determine relevance of given information

Websites for Teaching Math

<http://www.nytimes.com/section/learning>

This Learning Network site is an excellent resource for teachers and has activities, articles, and contests for students.

<http://www.educationworld.com/acurr/mathchat/mathchat019.shtml>

Once on this website, click on professional development, then Math Chat, which will connect math to real-life uses.

<http://www.mathalicioius.com>

Great site that provides real-world problems and more.

<http://www.RealWorldMath.org>

This site uses Google Earth to showcase math activities in real-life situations.

Book Recommendations for Starting a Classroom Library

The Boy Who Reversed Himself by William Sleator. Laura's weird neighbor has the ability to travel to the fourth dimension. This science-fiction thriller keeps the reader involved.

Do the Math: Secrets, Lies and Algebra by Wendy Lichtman. An easy-to-read novel about an eighth-grade girl who finds new meanings for algebra. This book can spark interest in students who don't see themselves as mathematicians. If you like this one, look at Lichtman's second book, *Do the Math #2: The Writing on the Wall*.

The Great Divide: A Mathematical Marathon by Dayle A. Dodds, illustrated by Tracy Mitchell. In this crafty story of a cross-country race, numerical division accounts for the narrowing of the field. Students say they enjoy math presented in this way.

The Magic of Math by Arthur Benjamin. Solving for x and figuring out why. The author uses examples from ice-cream scoops and poker hands to measuring mountains. Arithmetic, algebra, geometry, and calculus, plus Fibonacci numbers and infinity are explained in interesting, real-life situations.

The Man Who Counted: A Collection of Mathematical Adventures by Malba Tahan. A fun read for younger students, this classic helps readers engage in mathematical thinking. A gifted resource teacher in North Carolina created a unit for fifth-grade students around this book that she will share. Contact Kristy Cossett at kcossett@chccs.k12.nc.us.

Math Talk: Mathematical Ideas in Poems for Two Voices by Theoni Pappas. This readers' theater script for math students allows them to explore mathematical concepts while having a bit of fun in the process. Check out another of this author's books: *The Joy of Mathematics: Discovering Mathematics All Around You*.

Mathematical Curiosities: A Treasure Trove of Unexpected Entertainments by Alfred Posamentier. The authors explore the unusual in math while making it fun for readers. Their examples are both engaging and thought provoking. Older readers will embrace the challenges while also being entertained by in this text.

Mathematics, an Illustrated History of Numbers: 100 Ponderables by Tom Jackson. Quick summaries of 100 math ideas from integers to chaos, all explained in one- or two-page essays and diagrams. The wonderful illustrations add to the appeal of this book.

The Mathematics Lover's Companion: Masterpieces for Everyone by Edward Scheinerman. This book includes ideas from number theory to geometry to probability.

Math Talk: Mathematical Ideas in Poems for Two Voices by Theoni Pappas. This readers' theater script for math students allows them to explore mathematical concepts while having a bit of fun in the process. Check out another of this author's books: *The Joy of Mathematics: Discovering Mathematics All Around You*.

Multiplying Menace: The Revenge of Rumpelstiltskin (A Math Adventure) by Pam Calvert, illustrated by Wayne Geehan. The story is based on Rumpelstiltskin with a magic stick. Whimsical illustrations make multiplying whole numbers and fractions entertaining for younger students.

The Number Devil: A Mathematical Adventure by Hans Magnus. A whimsical read that explores numbers of all types: infinite, prime, Fibonacci, and more. This book would make a great read-aloud for younger students.

Secrets of Mental Math by Arthur Benjamin and Michael Sherman. The mathemagician's guide to speedy calculation and amazing math tricks.

Sir Cumference and the Dragon of Pi by Cindy Neuschwander, illustrated by Wayne Geehan. This book plays with math and language. Join Radius on his quest to solve a riddle and discover the magic number. Be sure and look up other titles by this author and illustrator.

A Slice of Pi: All the Math You Forgot to Remember from School by Liz Strachan. This book includes interesting math stories, quirky calculations, and funny anecdotes about algebra, geometry, and trigonometry. Will appeal to anyone with an inquiring mind.