

Living Math!

"One can invent mathematics without knowing much of its history. One can use mathematics without knowing much, if any of its history. But one cannot have a mature appreciation of mathematics without a substantial knowledge of its history." Abe Schenitzer, *Five Fingers to Infinity*.

BOOK LIST FOR LIVING MATH LESSON PLANS

Cycle 1, Unit 1 (C1U1) Advanced / High School Levels

Ancients and Early World Cultures

Resources Used In Multiple Lessons and Units

The **parent introduction letter** has a great deal of information on math activity books used in multiple units. It is not necessary to purchase all of these. Use this information to determine which resources are appropriate for your family.

Note: This Unit's book list is lengthier than any other unit. There are many quality literature sources available for early mathematics history topics, and there are more topical themes in this unit than others (**Money, Time, Addition and Subtraction are themes with teaching book lists included**). How much of the topical literature you use will be your decision, based on time and availability. The lists include many options to provide choices for individuals limited by library selections or purchasing restrictions.



Best done with two or more people



Book resource in print and/or online



Contains printable handout(s)



Highly visual resource, pictures




Video resource



Contains hands on activity(s)

Advanced Level resources are in sections color coded red/orange. High School+ are color coded light orange. Note that many resources overlap levels.



Joy of Mathematics and  **Math Talk Poetry in Two Voices** by Theoni Pappas, and




Mathematicians Are People, Too Volume 1 by Luetta Reimer are used in all four Units of Living Math Through History, Cycle 1.



Marvels of Math by Kendall Haven has stories that apply to both Cycle 1 and 2.

Living Math Through History

C1U1 Advanced and High School Levels Book List

 **Math history readers** used across multiple units - again, it is not necessary to purchase all of these. There are a number of different styles, choose what fits.

The Wonderful World of Mathematics Lancelot Hogben. This is a classic you'll see listed on many math reading lists, older style of writing


Pantheon Story of Mathematics For Young People by James T. Rogers, for older kids in this level.

Mathematics: The World of Science by Irene Fekete

The Story of Science Volume 1 by Joy Hakim



High School on up




 **Euclid's Window** by Leonard Mlodinow. This is about 8th grade level on up.

 **HS+ From Five Fingers to Infinity, A Journey Through the History of Mathematics**, Frank Swetz - A series of essays through the history of mathematics emphasizing the human element of math. This text is more readable than most math histories I've run across, with numerous clear diagrams / pictures.

 **HS+ Mathematics: From the Birth of Numbers** by Jan Guillberg, this is a BIG book and heavy on the math.

 **HS+ Men of Mathematics** by E.T. Bell

  **Africa Counts**, by Claudia Zaslavsky is a unique resource for understanding other cultures and math development. Adult text, but quite readable, activities suggested.

   **Math Activity books** suggested in Unit 1, and used in future units, see Introduction Letter for information on which to use:

Historical Connections In Mathematics by Wilbert and Luetta Reimer:

Volume 1 - Pythagoras and Archimedes; Volume 2 - Thales

Volume 3 - Eratosthenes

Living Math Through History


C1U1 Advanced and High School Levels Book List

Algebra Activities from Many Cultures by Beatrice Lumpkin, most of these apply to Unit 1, some to Unit 2. Most of the referenced activities can be found on Google Books, or the book is available for purchase.


Famous Problems and Their Mathematicians by Art Johnson - some activities are accessible to middle school, many are high school level

Famous Experiments You Can Do by Robert Gardner - high school level

Agnesi to Zeno, Over 100 Vignettes from the History of Math by Sanderson Smith - high school level


 **The Story of 1** (PBS Home Video/BBC) One hour video on the history of the number "1" presented with humor by Terry Jones. For all ages. Available at Blockbuster, Netflix and some libraries, or can be viewed online (not as good quality) at YouTube or <http://video.google.com/>


Lecture series from The Teaching Company - college level, high school accessible:

 **The Queen of Sciences: A History of Mathematics and Zero to Infinity: A History of Numbers**

 **History of Science: Antiquity to 1700**

 **The Joy of Thinking** *The Beauty and Power of Classical Mathematical Ideas*

 **String, Straightedge & Shadow** by Julia Diggins Classic early math history book written in a story style for middle school level.

 **Realm of Number** by Isaac Asimov. Highly readable, simple and clear. (Out of print, nice if you can find it, middle school level+ text)

 **The Pantheon Story of Mathematics for Young People** by James T. Rogers



  **The Story of Science** by Joy Hakim

  **Megaliths, Calendars, Incas and Aztecs** - *Discoveries Series* by Abrams.


Wonderful pictures in these small format books.


Living Math Through History

C1U1 Advanced and High School Levels Book List

 Optional Historical Context -  **Before Writing: From Counting to Cuneiform** by Denise Schmandt-Besserat - adult text, contains many vivid, detailed pictures of artifacts such as tokens.


From Five Fingers to Infinity, a collection of math history essays edited by Frank Swetz or **How Writing Came About** by Denise Schmandt-Besserat are more abbreviated sources of token images if you cannot find the **Before Writing** book, it has gone out of print.



 **The Story of Money** by Betsy Maestro - This book is used in younger levels but is highly informational and is recommended. Alternate is **The Calendar: Inventions That Shaped the World** by Patricia K. Kummer.


 **Realm of Number** by Isaac Asimov, pp. 7-17 "Pebble Codes"

 Optional Historical Context - **Ten Kings and the Worlds They Rule** by Milton Meltzer

High School Mathematics and History Reading

 **Nine Chapters on the Mathematical Art** - *Ancient Chinese math text*
http://www-gap.dcs.st-and.ac.uk/~history/HistTopics/Nine_chapters.html and
http://www-gap.dcs.st-and.ac.uk/~history/HistTopics/Chinese_problems.html Browse and try these - many are classic puzzles that appear in more than one culture.

  **The Art of Money** by David Standish, *The History and Design of Paper Currency From Around the World*, for those interested in a deeper study of the topic

 **Oracle Bones, Stars, and Wheelbarrows: Ancient Chinese Science and Technology** by Frank Ross Jr. - for those interested in a deeper study of the topic

 *Reading to complement the Finance/Money Theme*

The High School Money Book by Don Silver

Motley Fool Investing Guides by David and Tom Gardner, there is one specifically for Teens.




A Mathematician Plays the Stock Market, John Allen Paulos

Living Math Through History

C1U1 Advanced and High School Levels Book List

 *Math History Readers*, one or more as desired:

The following books are written for younger kids, but the graphics, pictures and information are very good. You may wish to use them if the advanced reading is difficult and /or younger siblings are using the course:

   **Secrets in Stone: All About Maya Hieroglyphs** and/or **The Story of Clocks and Calendars: Marking a Millennium**, by Betsy Maestro through page 29, for younger kids in this level



 Middle School Level Readers on Time theme:


This Book is About Time, Marilyn Burns - Time history and what makes time


The Terrible Truth About Time (Horrible Science) by Nick Arnold, time history

The Thirteen Clocks by James Thurber, Fun story

High School Mathematics and History Reading

  **Multicultural Mathematics** by Claudia Zaslavsky and **Native American Mathematics** by Michael P. Closs - very good information, suggested activities. Portions available online at Google Books.

 If you are interested in the world history of time and calendars, the following are recommended: **Calendar, Humanity's Epic Struggle to Determine a True and Accurate Year** by David Ewing Duncan; **Mapping Time, the Calendar and its History**, by E. G. Richards. Both are dense and only for those interested in a deeper study of the topic.





 **The Living Clock: The Orchestrator of Biological Rhythms** by John Palmer - if interested, on biological timepieces (approximately 8th grade level up)

  **Pyramid and Unbuilding** by David Macaulay and/or **Kingfisher World of Pyramids** (all are excellent)






 Optional Historical Context - **The Egyptian News** by Scott Steedman (fun tabloid-style book)



Living Math Through History

C1U1 Advanced and High School Levels Book List

-  **The Sand Reckoner**, Lillian Gish - novelization of Archimedes' life
-  **The Joy of Pi** by David Blatner - Interesting, small format book with lots of illustrations.
-   National Geographic's **Milestones of Science** - good pictures


High School Mathematics and History Reading

-  **The Sand Reckoner**, Lillian Gish - novelization of Archimedes' life, nice read
-  **HS+ Archimedes: What Did He Do Besides Cry Eureka?** by Shermain Stein.
-  **HS+ Mathematics: From the Birth of Numbers**
-  **HS+ The Manual of Greek Mathematics**, Sir Thomas L. Heath
-  **HS+ The Works of Archimedes**, The Book of Lemmas

  **Famous Experiments You Can Do** by Robert Gardner - if you like to recreate experiments by famous scientists, there are many in this book that you can do for this and the third Living Math units.

 **The Greek News** by James Putman (fun tabloid-style book)

 **Reader's Theatre: Great Moments in Science** by Kendall Haven

 **MathFocus Algebra** by I. M. Gelfand and A. Shen - For those wishing to cover or review Algebra 1 over the remainder of the Cycle, this resource will be scheduled http://www.singaporemath.com/Algebra_by_Gelfand_and_Shen_p/algb.htm over Units 2, 3 and 4.

The book is recommended for serious mathematics students because it is not a simplified approach, nor a typical textbook approach to algebra, but a theoretical and problem solving approach. Emphasis is on few problems of high quality and difficulty, rather than banks of repetitive practice problems.