

Introduction: A child may appear to have a disability in math simply because they have _____ instruction, _____ instruction, or an _____ from year of failure (pseudo-dyscalculia).

Dyscalculia includes a wide range of learning disabilities involving math. Observe where your child struggles, not just what kinds of math problems but in these four areas of learning difficulty: _____, integration, _____, and output. Output can be _____, _____, or motor. Math struggles can be a language-based _____ or dyscalculia. The core deficit with dyscalculia is _____.

The 4 A's: 1. Attitude: yours and your child's

Afraid? Focus on your child's _____ and character.

Help your child with their attitude re: math, it can be a source of _____.

Praise their _____.

Why teach math? Galileo: it's "the language in which _____
_____." Steen: it's "the science of _____."

Use puzzles, games, & Denise Gaskin resources to nurture _____.

2. Approach: M _____ - _____ S _____ Language = MSL

Concrete→Representational→Abstract, "_____ it, _____ it, _____ it."

MS math is "not just using manipulative to count, but to build _____."

Coding: using _____ and parentheses to identify parts and patterns. You can also use _____ motions.

It's called Multisensory **Structured Language** because you use the same _____ over and over.

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When you introduce a concept, use examples with _____ calculations.

3. Aids to Learning

12 ways to teach math facts, and some other [ways at LearnDifferently.com](http://ways.atLearnDifferently.com).

Note sources of _____, varieties of notation.

4. **Accommodations: working around weaknesses** in arithmetic to enjoy more math.

Use an ell with a _____ table.

Make a math manual:

Math mnemonics: structured _____ using ditties, rhymes, songs.

Manage the _____.

Resources

To learn more about teaching math to kids using a MSL approach, especially for those with more severe challenges, I recommend:

- the training at ASDEC for those teaching students with language-based learning disabilities, available in person in Rockville MD; online at ASDEC.org.
- Marilyn Zecher's online classes for parents and teachers multisensorymath.online/courses and her older her YouTube videos and site multisensorymath.com Parents can take her Multisensory Math courses online at asdec.org.
- Christopher Woodin, chair of the math dept. at the Landmark School: comprehensive [Primary Numeracy program](http://PrimaryNumeracyprogram). Also see landmarkschool.org/resources/woodinmath including his book *Multiplication and Division Facts for the Whole to Part Visual Learner* and cwoodinmathfacts.tripod.com/sitebuildercontent/sitebuilderfiles/2xfactlearning.pdf

More on learning disabilities affecting math: LDonline.org/indepth/math, and Drs. Brock and Fernette Eide's book, *The Mislabeled Child*.

Learn how to apply these Multisensory Math principles:

- Kathy Kuhl's site, LearnDifferently.com, has more than a dozen blog posts on teaching math, from math facts to algebra.

Nurture curiosity about numbers and enjoy the beauty of pattern:

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- Denise Gaskins has advice on this in her books and journals at DeniseGaskins.com. Read her article, [How to homeschool math](#)
- Explore Fibonacci sequence, Gold Rectangle, Golden Spiral, isometric patterns, perspective, Escher, Celtic knots, etc.

Mastering Math Facts

- Drilling: Give the child several options each day: **Why study math?** Merely to meet a requirement, or to learn, be creative, see patterns, solve problems? Read Denise Gaskins' books, including *Let's Play Math*, *70 Things to Do with a Hundred Chart*, and the *Math You Can Play* series, with books of games on counting and other pre-addition skills, another on addition and subtraction, and a third on multiplication and fractions. flash cards, 100 chart board game with 10-sided dice, Wrap-Ups, bouncing on mini-trampoline.
- Look at DianneCraft.com flashcards or *Addition the Fun Way* and *Multiplication the Fun Way* from citycreek.com.
- Better yet, you and your children can make up your own stories to recall the facts.
- Skip-counting is good preparation and review for multiplication. Skip-counting tapes: *Rap with the Facts*, *Audio Memory*, *Math-U-See*, *Multiplication Rock*.

General Resources for Basic Math

- Marilyn Zecher and Chris Woodin, above.
- Dyslexia, creativity and Woodin's book at dyslexia.yale.edu/math.html
- Teaching math concepts dyslexia.yale.edu/resources/educators/instruction/math-naming-problems/
- Use both **fraction circles** <http://donnayoung.org/math/fraction.htm> and **fraction bars** www.fractionbars.com/OrderInfo.html
- Use memory aids, also called mnemonics, e.g., onlinemathlearning.com/math-mnemonics.html The principles of using mnemonics are LDonline.org/article/13717
- Cindy Neuschwander's stories teach math concepts: *Sir Cumference & the First Round Table*, *Sir Cumference & the Dragon of Pi*, etc.
- Build reasoning skills with *Critical Thinking Books and Software* criticalthinking.com
- M.C. Escher's drawings are fun to see, try to copy, or take inspiration from.
- Games and pattern blocks are available from Timberdoodle.com

Hands-on math curricula

- *RightStart Mathematics*, makes K-3 curriculum. Rightstartmath.com
- *Math-U-See*, Steve Demme's K-12 series, mathusee.com

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Resources for Consumer Math

Boy Scouts Personal Management merit badge pamphlet

Larry Burkett books: *Money Matters for Kids* and *Money Matters for Teens*.

Christine Field, *Life Skills For Kids*, chapter 8.

www.mymoney.gov and choosetosave.org

FDIC has games to teach basic financial topics playmoneysmart.fdic.gov/games

High School Math

- Harold Jacobs, *Mathematics: A Human Endeavor*. Also *Elementary Algebra*, and *Geometry*, 3rd edition. Reviewed at www.pahomeschoolers.com/jacobs.html
- *Geometer's Sketchpad*. Software lets students “construct objects, figures, & diagrams and explore their mathematical properties by dragging objects with the mouse.”
Curricula for algebra 1 & 2, geometry, pre-calculus, www.dynamicgeometry.com/

Video/computer classes:

- ALEKS online self-paced classes. Free hour trial ALEKS.com
- Watch demos on websites such as www.videotext.com (pre-algebra through pre-calculus) and mathusee.com from preschool through Calculus, and TeachingTextbooks.com covers Math 4 through Pre-Calculus. Teaches use of graphing calculators in its Algebra course.

For those with more severe difficulties

Semple Math, www.semplemath.com

Learning Palette: math facts review with less fine motor skill required.

DeAnna Horstmeier's book series and related materials, such as *Teaching Math to People with Down Syndrome and Other Hands-On Learners*, woodbinehouse.com and available used.

See Chris Woodin, above.