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|  | **Math Resources[[1]](#footnote-1)** |
| **Evidence Sources** | **Common Core State Standards: Mathematics  (5-9)** [**http://www.corestandards.org/Math/**](http://www.corestandards.org/Math/)  *These standards define what students should understand and be able to do in their study of mathematics.* Developing Key Math Skills Early Can Affect Later Math Achievement (4-9)<https://www.childtrends.org/videos/math-patterns-skills-success/> *Researchers tested the math skills of preschool and first grade students, including counting, comparing numbers, and patterning. They found that those three skills could predict later math achievement. The researchers noted that these skills can be incorporated into fun activities, such as card games. Learn more from an article and video, both of which are available in English and Spanish.*  **Early Childhood Mathematics: Promoting Good Beginnings** **(0-8)** [**http://www.naeyc.org/files/naeyc/file/positions/psmath.pdf**](http://www.naeyc.org/files/naeyc/file/positions/psmath.pdf)  *This joint position statement of the National Association for the Education of Young Children (NAEYC) and the National Council of Teachers of Mathematics (NCTM) highlights a set of principles for effective early math instruction.*  **Early Math Knowledge Related to Later Achievement (3-9)**  [**https://news.vanderbilt.edu/2016/12/06/early-math-knowledge-related-to-later-achievement/?j=689846&e=camille.catlett@unc.edu&l=329\_HTML&u=24200006&mid=7200908&jb=1**](https://news.vanderbilt.edu/2016/12/06/early-math-knowledge-related-to-later-achievement/?j=689846&e=camille.catlett@unc.edu&l=329_HTML&u=24200006&mid=7200908&jb=1)  *A longitudinal study conducted by Vanderbilt has found that children’s math knowledge in preschool is related to their later achievement—but not all types of math knowledge were related equally. The findings suggest that educators and school administrators should consider which areas of math study they shift attention to as they develop curricula for the early years.*  **Early STEM Matters: Providing High-Quality STEM Experiences for All Young Learners (3-5)** [**https://50.erikAfricson.edu/wp-content/uploads/2017/01/STEM-Working-Group-Report.pdf**](https://50.erikAfricson.edu/wp-content/uploads/2017/01/STEM-Working-Group-Report.pdf)  *This January 2017 report offers guidance around the development and improvement of effective early childhood science, technology, engineering, and math (STEM) education policies and practices. It describes 4 guiding principles related to early childhood STEM education and 6 recommendations for leaders at the local, state, and federal levels.*  **Engaging Diverse Learners Through the Provision of STEM Education Opportunities (3-9)** [**http://secc.sedl.org/resources/briefs/diverse\_learners\_STEM/**](http://secc.sedl.org/resources/briefs/diverse_learners_STEM/)  *This briefing paper highlights methods and materials for supporting an increased understanding of and emphasis on STEM.*  **The Impact of Family Involvement on the Education of Children Ages 3 to 8: A Focus on Literacy and Math Achievement Outcomes and Social-Emotional Skills (3-8)**  [**http://www.mdrc.org/publication/impact-family-involvement-education-children-ages-3-8**](http://www.mdrc.org/publication/impact-family-involvement-education-children-ages-3-8)  *This report summarizes research s on how families’ involvement in children’s learning and development through activities at home and at school affects the literacy, mathematics, and social-emotional skills of children ages 3 to 8.*  **Math and Science in Preschool: Policies and Practice** **(3-5)**  [**http://nieer.org/wp-content/uploads/2016/08/MathSciencePolicyBrief0309.pdf**](http://nieer.org/wp-content/uploads/2016/08/MathSciencePolicyBrief0309.pdf)  *This report addresses the development of mathematics and science understanding in preschool children, reviews the current knowledge base on educational practices in these domains, identifies areas that require further study, and outlines recommendations for early education policy in mathematics and science.*  **Math in the Early Years** [**http://www.ecs.org/clearinghouse/01/09/46/10946.pdf**](http://www.ecs.org/clearinghouse/01/09/46/10946.pdf) **(0-9)**  *This publication reveals five surprising findings about the importance of early math learning, and provides implications and recommendations for state policy.*  **Math Matters: Children’s Mathematical Journeys Start Early (3-8)**  [**http://earlymath.org/earlymath/wp-content/uploads/2012/03/MathMattersExecSummary.pdf**](http://earlymath.org/earlymath/wp-content/uploads/2012/03/MathMattersExecSummary.pdf)  *This summary of the conference “Pathways for Supporting Early Mathematics Learning” offers insights to improve the teaching of early mathematics for children ages 3 through 8 and considerations for how preschool mathematics instruction may be meaningfully linked to a K-3 system that is based on the Common Core State Standards.* |

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|  | **Math Resources** |
| **Evidence Sources** | **Mathematics Education Through the Lens of Social Justice: Acknowledgment, Actions, and Accountability (0-9)** [**https://toma.memberclicks.net/assets/docs2016/2016Enews/3.pospaper16\_wtodos\_8pp.pdf**](https://toma.memberclicks.net/assets/docs2016/2016Enews/3.pospaper16_wtodos_8pp.pdf)  *This position statement provides the rationale for and characteristics of a systemic approach that includes fair and equitable teaching practices, high expectations for all students, access to rich, rigorous, and relevant mathematics, and strong family/community relationships to promote positive mathematics learning and achievement.*  **Mathematics in Early Childhood Learning (0-6)**  [**http://www.nctm.org/Standards-and-Positions/Position-Statements/Mathematics-in-Early-Childhood-Learning/**](http://www.nctm.org/Standards-and-Positions/Position-Statements/Mathematics-in-Early-Childhood-Learning/)  *This position statement from the National Council of Teachers of Mathematics addresses the question, “Why is mathematics important for early learners?”*  **Principles and Standards for School Mathematics** [**http://www.nctm.org/standards/content.aspx?id=16909**](http://www.nctm.org/standards/content.aspx?id=16909) **(5-9)**  *This document from the National Council of Teachers of Mathematics outlines the essential components of a high-quality school mathematics program. It emphasizes the need for well-prepared and well-supported teachers and administrators, and it acknowledges the importance of a carefully organized system for assessing students’ learning and a program’s effectiveness.*  **What’s Past is Prologue: Relations Between Early Mathematics Knowledge and High School Achievement** **(4-9)**  [**http://www.psy.cmu.edu/~siegler/Watts-earlybird.pdf**](http://www.psy.cmu.edu/~siegler/Watts-earlybird.pdf) *This paper relates mathematical skills measured at 54 months to adolescent mathematics achievement.*  **Strengthening the Math-Related Teaching Practices of the Early Care and Education Workforce: Insights from Experts** [**http://www.irle.berkeley.edu/cscce/wp-content/uploads/2015/02/Math-Expert-Paper-Report.pdf**](http://www.irle.berkeley.edu/cscce/wp-content/uploads/2015/02/Math-Expert-Paper-Report.pdf) **(0-5)**  *This report by Sharon Ryan, Marcy Whitebook, and Deborah Cassidy explores the perspective of nationally recognized experts in math and early care and education about three main issues: 1. The knowledge and competencies that practitioners need in order to teach mathematics to young children; 2. Effective strategies for educating practitioners to support young children's mathematical development; and 3. Challenges and successes in math-related ECE workforce development efforts.* |
| **Print Sources** | **Children’s Development of Mathematical Concepts: Ages 0-4**  [**http://www.norwood.k12.ma.us/curriculum/documents/childrensdevelopmentofmathconcepts-ages0-4.pdf**](http://www.norwood.k12.ma.us/curriculum/documents/childrensdevelopmentofmathconcepts-ages0-4.pdf)  *This resource highlights both developmentally appropriate math and fun ways to support the development of those concepts.*  **Children’s Development of Mathematical Concepts: Ages 4-6**  [**http://www.norwood.k12.ma.us/curriculum/documents/childrensdevelopmentofmathconcepts-ages4-6.pdf**](http://www.norwood.k12.ma.us/curriculum/documents/childrensdevelopmentofmathconcepts-ages4-6.pdf)  *This resource highlights both developmentally appropriate math and fun ways to support the development of those concepts.*  **Early Childhood Teachers’ Misconceptions About Mathematics Education for Young Children in the United States** [**http://www.earlychildhoodaustralia.org.au/wp-content/uploads/2014/06/AJEC0904.pdf**](http://www.earlychildhoodaustralia.org.au/wp-content/uploads/2014/06/AJEC0904.pdf) **(0-8)**  *This article discusses nine common and widespread misconceptions about learning and teaching mathematics for young children. These misconceptions often interfere with understanding and interpreting recommendations for mathematics education and become subtle (and sometimes overt) obstacles to implementing effective practices in early childhood classrooms.*  **Early Math Collaborative** [**http://earlymath.erikson.edu/ideas/?fwp\_formats=article**](http://earlymath.erikson.edu/ideas/?fwp_formats=article) **(3-9)**  *Search this website to find articles based on grade level, math concept, or Common Core alignment.*  **Formula for Success: Engaging Families in Early Math Learning (0-9)**  [**https://globalfrp.org/content/download/83/561/file/Early%20Math%20FINE.pdf**](https://globalfrp.org/content/download/83/561/file/Early%20Math%20FINE.pdf)  *Early math ability is one of the best predictors of children’s later success in school. This compilation of articles written by researchers and program developers was designed to provide families with guidance, inspiration, and motivation to support their young children’s mathematical development effectively. Taken together, they show that math is part of our everyday lives, and as such, is conditioned by relationships, culture, and values; math can be an enjoyable parent-child experience; and digital media can be harnessed to promote math learning—for children and parents.*  **Help! They Still Don’t Understand Counting** [**http://files.eric.ed.gov/fulltext/EJ875422.pdf**](http://files.eric.ed.gov/fulltext/EJ875422.pdf) **(3-5)**  *This article describes a developmental framework for counting and weaves within it helpful activities derived from recent research as well as a few activities based on long-established best practices. The article briefly discusses how difficulty with counting may or may not be indicative of a math disability.* |
|  | **Math Resources** |
| **Print Sources** | **Helping Teachers of Mathematics Integrate the Knowledge and Culture of Families into Their Practice** **(0-9)**  [**https://globalfrp.org/content/download/83/561/file/Early%20Math%20FINE.pdf**](https://globalfrp.org/content/download/83/561/file/Early%20Math%20FINE.pdf)  *This chapter highlights four key considerations for making math more relevant to each young child and family.*  [**Integrating Mathematical Thinking into Family Engagement Programs**](https://www.mathematica-mpr.com/our-publications-and-findings/publications/integrating-mathematical-thinking-into-family-engagement-programs) **(0-5)**  [**https://www.mathematica-mpr.com/download-media?MediaItemId={568EA66E-CD65-43DD-AE82-41D0F2F04BC9}**](https://www.mathematica-mpr.com/download-media?MediaItemId=%7b568EA66E-CD65-43DD-AE82-41D0F2F04BC9%7d)  *The brief explains how exposing young children to early math concepts supports their development of reasoning and problem solving skills and later success in and out of school. It lays out seven practical tips that emerged from the grantees’ experiences that can guide practitioners and other stakeholders who are interested in integrating early math into their own family engagement programs, and sheds light on issues that programs may want to keep in mind while doing so.*  **Let’s Talk, Read, and Sing About STEM: Tips for Families with Young Children (3-5)**  [**http://www2.ed.gov/about/inits/ed/earlylearning/talk-read-sing/stem-toolkit-families.pdf**](http://www2.ed.gov/about/inits/ed/earlylearning/talk-read-sing/stem-toolkit-families.pdf) (English)  [**http://www2.ed.gov/about/inits/ed/earlylearning/talk-read-sing/stem-toolkit-families-es.pdf**](http://www2.ed.gov/about/inits/ed/earlylearning/talk-read-sing/stem-toolkit-families-es.pdf) (Spanish)  *You can discover STEM with your child in many ways. Talk, read, sing, play, sign or use other ways to communicate – whatever works best for your family. Here are some tips to help you get started.*  **Let’s Talk, Read, and Sing About STEM: Tips for Preschool Teachers and Providers (3-5)**  [**http://www2.ed.gov/about/inits/ed/earlylearning/talk-read-sing/stem-toolkit-preschool-teachers.pdf**](http://www2.ed.gov/about/inits/ed/earlylearning/talk-read-sing/stem-toolkit-preschool-teachers.pdf)(English)  [**http://www2.ed.gov/about/inits/ed/earlylearning/talk-read-sing/stem-toolkit-preschool-teachers-es.pdf**](http://www2.ed.gov/about/inits/ed/earlylearning/talk-read-sing/stem-toolkit-preschool-teachers-es.pdf)(Spanish)  *Here are some tips for using daily routines* *to build math and science concepts and skills through play and exploration.*  **Making Math Count More for Young Latino Children (5-9)**  [**https://www.childtrends.org/wp-content/uploads/2017/02/Early-Math-Report-2.8.pdf**](https://www.childtrends.org/wp-content/uploads/2017/02/Early-Math-Report-2.8.pdf)  *One in four U.S. kindergarteners today is Latino. How these children do in school has far-reaching implications for the country's future economy. This February 2017 report shares that Latino kindergartners' early math skills lag behind those of white kindergartners at the beginning of school - a disparity that is likely to persist or increase over time without intervention. The report discusses the implications of these findings and offers research-based recommendations to address the issue.*  **Math Learned Best When Children Move (5-9)**  [**http://nexs.ku.dk/english/news/2017/math-learned-best-when-children-move/**](http://nexs.ku.dk/english/news/2017/math-learned-best-when-children-move/)  *This article summarizes research findings on the connections between movement and mastery of math concepts.*  **Math, Science, and Technology in the Early Grades** [**https://muse.jhu.edu/article/641244/pdf**](https://muse.jhu.edu/article/641244/pdf) **(3-9)**  *Douglas H. Clements and Julie Sarama document that young children possess a sophisticated informal knowledge of*  *math, and that they frequently ask scientific questions, such as why questions. Discover new ways of seeing math emerge, e.g., preschoolers’ free play involves substantial amounts of foundational math as they explore patterns, shapes, and spatial relations; compare magnitudes; and count objects.*  **Mathematical Structure and Error in Kindergarten (5-6)**  [**http://www.naeyc.org/yc/article/mathematical-structure-error-kindergarten**](http://www.naeyc.org/yc/article/mathematical-structure-error-kindergarten)  *This article focuses on choices educators make and draws attention to a little-recognized benefit of children’s errors. With stories of two children, this article shows how wrong answers can reveal children’s attention to mathematical structure. It also looks at how young children use patterns in language to make mathematical meaning.*  **More, All Gone, Empty, Full: Math Talk Every Day in Every Way** **(0-3)**  [**http://readyforlearning.net/sites/readyforlearning.drupal.ku.edu/files/docs/Greenberg2012.pdf**](http://readyforlearning.net/sites/readyforlearning.drupal.ku.edu/files/docs/Greenberg2012.pdf)  *This article highlights how being aware of early mathematical concepts can help educators to be more thoughtful and intentional about using these concepts in everyday experiences and interactions with infants and toddlers.*  **Positive Early Math Experiences for African American Boys: Nurturing the Next Generation of STEM Majors(3-5)**  [**https://www.naeyc.org/resources/pubs/yc/may2018/positive-early-math-af-am-boys**](https://www.naeyc.org/resources/pubs/yc/may2018/positive-early-math-af-am-boys)  *This article argues that creating engaging early math-learning opportunities is critical, especially for African American boys, and recommends choosing materials and designing environments to optimize early math learning.* |

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|  | **Math Resources** |
| **Print Sources** | **The Roots of STEM Success: Changing Early Learning Experiences to Build Lifelong Thinking Skills (0-9)**  [**http://centerforchildhoodcreativity.org/wp-content/uploads/sites/2/2018/02/CCC\_The\_Roots\_of\_STEM\_Early\_Learning.pdf**](http://centerforchildhoodcreativity.org/wp-content/uploads/sites/2/2018/02/CCC_The_Roots_of_STEM_Early_Learning.pdf)  *This 2018 report from The Center for Childhood Creativity reviewed more than 150 studies and found that young children are capable of developing complex thinking skills before they are able to speak. The report is organized by six research-backed findings, one of which is that children need more play to become strong STEM thinkers (pages 12-16). Practical tips in each section make this a useful resource for families and professionals.*  **STEM Resources and Materials for Engaging Learning Experiences (2-8)**  [**http://www.naeyc.org/yc/stem-engaged-learning**](http://www.naeyc.org/yc/stem-engaged-learning)  *This article offers suggestions and examples to guide teachers’ selection of classroom STEM resources and materials.*  **With Math, Seeing Is Understanding  (4-9)** [**http://www.ascd.org/ascd-express/vol12/1215-strayton.aspx**](http://www.ascd.org/ascd-express/vol12/1215-strayton.aspx)  *Visual cues stick and show that envisioning math helps children learn in lasting ways. Teachers can do more to give students internal ways to see the structure of mathematics—to understand types of units and what it means to move between them, and to pull apart and combine numbers. This articles shares examples of how to do that.*  **1, 2, 3, 4, Foundations to Early Numeracy and More!** [**http://home.edweb.net/foundations-to-early-numeracy/**](http://home.edweb.net/foundations-to-early-numeracy/) **(3-6)**  *Developing a conceptual understanding of numbers and how they work is critical for continued success in mathematics throughout a child’s academic career. This webinar reviews and discusses the knowledge and skills — in particular those related to verbal counting, enumeration, cardinality, and small number recognition — which develop in the preschool years and lay the foundation for good number sense.* NOTE: Free registration with the edWeb community is required to view these materials |
| **Audiovisual Sources** | **Building Mathematical Competencies in Early Childhood (3-6)**  [**http://earlymath.erikson.edu/building-mathematical-competencies-in-early-childhood/**](http://earlymath.erikson.edu/building-mathematical-competencies-in-early-childhood/)  *This video deals with the “whys,” “whats,” and “hows” of including rich, developmentally appropriate mathematics experiences for young children in pre-kindergarten classrooms. It features Early Math Collaborative instructors discussing measurement.*  **Curious Minds: Incorporating STEM into Early Childhood Classrooms** [**http://vimeo.com/16738701**](http://vimeo.com/16738701) **(0-9)**  *This webinar explores effective strategies for engaging young children though science, technology, engineering and math in preschool and early elementary classrooms. Did you know that by ten months of age, babies can distinguish a set of 2 items from a set of 3, or that providing young children with high‐quality STEM experiences early on can provide a foundation for later success in reading? Watch to learn more about how STEM may be incorporated into ECE settings.*  **Double-Column Addition Using Piaget’s Theory** [**https://sites.google.com/site/constancekamii/videos**](https://sites.google.com/site/constancekamii/videos) **(6-9)**  *Using an approach based on Piaget’s theory, teacher Leslie Baker Housman encourages her first-grade students to think critically about mathematics. The compelling results include a room of students who have faith in their own deliberative skills, and a teacher who does not correct students, but instead encourages them to question answers and subsequently express their viewpoints. Watch to see children who have a genuine understanding of mathematics rather than a superficial one.*  **Early Math Collaborative Videos** [**http://earlymath.erikson.edu/ideas/#/formats=11**](http://earlymath.erikson.edu/ideas/#/formats=11) **(3-9)**  *Search this website to find videos based on grade level, math concept, or Common Core alignment.*  **Early Mathematics: What’s a Big Idea?** **(0-9)**  [**http://www.erikson.edu/wp-content/uploads/NAEYC-2011-Big-Ideas-HynesBerry-Ginet.pdf**](http://www.erikson.edu/wp-content/uploads/NAEYC-2011-Big-Ideas-HynesBerry-Ginet.pdf)  *This PowerPoint presentation offers clear and thought-provoking ideas about what and how to teach math to young children.*  [**Let's Talk About STEM Video Series**](https://www.zerotothree.org/resources/series/let-s-talk-about-stem-video-series) **(0-5)**  [**https://www.zerotothree.org/resources/series/let-s-talk-about-stem-video-series**](https://www.zerotothree.org/resources/series/let-s-talk-about-stem-video-series)  *Young children begin to learn about early science, technology, engineering and math (STEM) through play and everyday routines, activities and interactions. These videos, illustrating the development of STEM skills in the first five years of life, are essential to understanding are available in new highlighting the development of STEM skills in the first 5 years of life. Each video is available in both English and Spanish. The URL for the Spanish version is* [**https://www.zerotothree.org/resources/series/hablemos-de-las-matematicas**](https://www.zerotothree.org/resources/series/hablemos-de-las-matematicas) |
|  | **Math Resources** |
| **Audiovisual Sources** | **Math Ideas for Teachers** [**http://view.vzaar.com/4772941/download**](http://view.vzaar.com/4772941/download) **(3-5)**  *This video highlights ways to teach preschoolers math concepts using nature and play.*  **Students Create Song for Learning Long Division (8-9)** [**https://www.youtube.com/watch?v=CWB0CNl8RK4**](https://www.youtube.com/watch?v=CWB0CNl8RK4)  *Here’s an example how Universal Design for Learning can be used to help students learn long division.*  **Supporting the Development of Children's Mathematics** [**https://www.youtube.com/watch?v=6GYWBHz6Fak**](https://www.youtube.com/watch?v=6GYWBHz6Fak) **(5-9)**  *Megan Franke’s video presentation highlights what young children know about math and how effective teachers can build on those capabilities. A companion research fact sheet is available at* [**http://www.aera.net/Portals/38/docs/Annual\_Meeting/ 2016%20Annual%20Meeting/2016%20Knowledge%20Forum/Franke.pdf**](http://www.aera.net/Portals/38/docs/Annual_Meeting/2016%20Annual%20Meeting/2016%20Knowledge%20Forum/Franke.pdf)  **Teaching Fractions Made Easy (7-9)** [**https://www.childtrends.org/videos/teaching-fractions-made-easy/**](https://www.childtrends.org/videos/teaching-fractions-made-easy/)  *This video offers recent research on ways to effectively teach fractions to 2nd and 3rd graders, along with suggestions for how work with families to build an understanding of fractions at home.*  **UDL Guidelines in Practice: Grade 1 Mathematics** [**http://www.youtube.com/watch?v=KuTJJQWnMaQ**](http://www.youtube.com/watch?v=KuTJJQWnMaQ) **(6-8)**  *Watch as a panel of UDL experts takes you inside a diverse Language Arts classroom to show master teachers applying the principles and guidelines of UDL to first grade math.* |
| **Online Sources** | [**Bedtime Math**](http://bedtimemath.org/) **(0-8)** [**http://bedtimemath.org/**](http://bedtimemath.org/)  *This website offers families and children fun math stories and problems they can share together. Each days daily activity offers versions for “wee ones,” “little kids,” and “big kids.” Afterschool instructors and librarians can also find a curriculum for running math clubs.*  **Building Blocks of Math Skills** **(3-5)**  [**http://www.communityplaythings.com/resources/articles/2018/building-blocks-of-math-skills**](http://www.communityplaythings.com/resources/articles/2018/building-blocks-of-math-skills)  *Well-arranged, neatly labeled, and fully stocked block shelves are all the inspiration some children need for building. A teacher’s presence draws in others. More motivation comes from posting photographs of children’s structures, images of well-known buildings, and words and images in books about building. The mathematical thinking involved in block building continues as children “unbuild” and shelve. These tasks involve matching, counting, and estimating. This online article describes the many ways in which environments and interactions can support math learning and build connections to other domains, like literacy.*  **Early Childhood NEWS: The Professional Resource for Teachers and Families (3-9)**  [**http://www.earlychildhoodnews.com/earlychildhood/articles.aspx?ArticleID=195**](http://www.earlychildhoodnews.com/earlychildhood/articles.aspx?ArticleID=195)  *This website is a source for many math activities.*  **Early Math Collaborative Videos** [**http://earlymath.erikson.edu/ideas/#/formats=11**](http://earlymath.erikson.edu/ideas/#/formats=11) **(3-9)**  *Search this website to find resources based on grade level, math concept, or Common Core alignment. This is a great source of information for non-foundational mathematics – what it is, how it develops in children, and how best to teach it.*  **Early Math Matters (3-6)** [**http://mathathome.org/early-math-matters/**](http://mathathome.org/early-math-matters/)  This free 8-course online curriculum introduces teachers and caregivers t mathematical concepts such as math literacy, num-ber sense, patterns, geometry, measurement, data collection and math processes. Each lesson includes tips on setting up a math-enriched environment, as well as interviews with math experts and videos of classroom settings.  **Helping Your Child Learn Mathematics** [**http://www2.ed.gov/parents/academic/help/math/index.html**](http://www2.ed.gov/parents/academic/help/math/index.html) **(3-9)**  This booklet is made up of fun activities that parents can use with children from preschool age through grade 5 to strengthen their math skills and build strong positive attitudes toward math.  **Making Math a Family Thing (3-6)** [**https://www.gse.harvard.edu/news/uk/18/01/making-math-family-thing**](https://www.gse.harvard.edu/news/uk/18/01/making-math-family-thing)  *This web article offers strategies for families and teachers on closing the math gap between home and school. Check out the resources at the end.*  **Making Math Meaningful for Diverse Learners (3-6)**  [**https://www.naeyc.org/resources/pubs/tyc/oct2017/make-math-meaningful-diverse-learners**](https://www.naeyc.org/resources/pubs/tyc/oct2017/make-math-meaningful-diverse-learners)  *Children with different levels of exposure to math vocabulary and math activities may enter a classroom from diverse language, cultural, and experiential backgrounds. When mathematical learning at school connects to familiar experiences and objects in children’s lives, the math can seem more interesting and make more sense to children! This web article shares how to make that happen.* |
|  | **Math Resources** |
| **Online Sources** | **Math and Science Resources (0-5)**  [**https://eclkc.ohs.acf.hhs.gov/school-readiness/effective-practice-guides/cognition**](https://eclkc.ohs.acf.hhs.gov/school-readiness/effective-practice-guides/cognition)  *This website offers teaching practices, ideas for individualizing, videos, and more in five areas for infants/toddler (exploration and discovery, memory, reasoning and problem-solving, emergent mathematical thinking, and imitation and symbolic representation and play) and six areas for preschoolers (counting and cardinality, operations and algebraic thinking, measurement, geometry and spatial sense, scientific inquiry, and reasoning/problem-solving.*  **Math at Home (0-5)** [**http://mathathome.org/**](http://mathathome.org/)  *This website is designed to help foster the development of early math skills in children between the ages of birth and five. Visit to learn how to set up* [*math-rich environments*](http://mathathome.org/set-up-your-environment/) *for infants, toddlers and preschoolers, download early math* [*lesson plans*](http://mathathome.org/find-a-math-lesson/)*, view* [*videos*](http://mathathome.org/increase-your-knowledge/) *about early math concepts and activities, find links to a wide variety of early math* [*resources*](http://mathathome.org/resources/)*, read* [*weekly blog posts*](http://mathathome.org/blog/) *by early math experts, enroll in free online courses, and learn high-impact strategies for teaching early math.*  **Math at Home Toolkit (2-8)** [**https://www.naeyc.org/math-at-home**](https://www.naeyc.org/math-at-home)  *This collection of online resources includes articles, printable math games, videos and activities, all of which may be downloaded. A number of the resources are available in Spanish.*  **Math Concepts in Children’s Books** [**http://www2.ed.gov/pubs/EarlyMath/appendix.html**](http://www2.ed.gov/pubs/EarlyMath/appendix.html) **(3-9)**  *Reading is a great way to communicate mathematical concepts to a child. It also is a wonderful opportunity to spend time together. These books, some of which are available in Spanish, can build math, language, and literacy simultaneously.*  **Math Is Fun Resources** [**http://www.mathsisfun.com/links/index.html**](http://www.mathsisfun.com/links/index.html) **(6-9)**  *This online repository has resources and activities for supporting math development in children from first to seventh grade.*  **Math Resources for Teacher Educators (0-9)** [**http://prek-math-te.stanford.edu/**](http://prek-math-te.stanford.edu/)  *The Development and Research in Early Math Education network of scholars has launched a website of free resources for teacher educators. These resources include modules, videos, activities, handouts, and articles designed to support teacher educators in training preservice and inservice early childhood educators.*  **Math Through Songs and Music (3-5)**  [**https://eclkc.ohs.acf.hhs.gov/hslc/tta-system/teaching/docs/math-do-tools-songs-music.pdf**](https://eclkc.ohs.acf.hhs.gov/hslc/tta-system/teaching/docs/math-do-tools-songs-music.pdf)  *Singing songs and engaging in musical activities are fun and engaging ways to experience and learn early mathematical concepts. This resource includes a list of songs with corresponding mathematical concepts that teachers can emphasize within the song. English and Spanish songs are included.*  **Mathematics  (5-9)** [**http://education.vermont.gov/student-learning/content-areas/mathematics**](http://education.vermont.gov/student-learning/content-areas/mathematics)  *As part of the Vermont Agency of Education’s commitment to supporting schools in the delivery of effective K-12 mathematics instructional programs, this site provides teachers, administrators, expanded learning providers, higher education faculty, parents and community members with a broad range of resources.*  **One, Two, Buckle My Shoe: Understanding Number Development in Young Children (2-7)**  [**http://www.communityplaythings.com/resources/articles/2017/understanding-number-development**](http://www.communityplaythings.com/resources/articles/2017/understanding-number-development)  *This web article reviews eight number concepts that provide the foundation of later mathematics and higher order thinking.*  **Science and Math: Resources from the Educational Equity Center (3-9)**  [**http://www.edequity.org/programs/science-and-math-programs/**](http://www.edequity.org/programs/science-and-math-programs/)  *The resources and practices shared through this site are designed to promote math skills for diverse young boys and girls.*  **Science, Technology, Engineering and Math Resources for Early Childhood** [**http://www.naeyc.org/STEM**](http://www.naeyc.org/STEM) **(0-8)**  *This collection, from online articles to websites to project reports, is for educators and families. The resources illuminate the wide range of activities that are available to help foster children's curiosity about how the world around them works.*  **STEM for Early Learners (2-5)** [**https://pdg.grads360.org/?utm\_content=&utm\_medium=email&utm\_name=&utm\_source=govdelivery&utm\_term=#program/stem-in-early-childhood**](https://pdg.grads360.org/?utm_content=&utm_medium=email&utm_name=&utm_source=govdelivery&utm_term=#program/stem-in-early-childhood)  *This series of free webinars, research readings, and practical application activities was designed to enhance professionals’ understanding and confidence in supporting children’s intellectual learning. The eleven sequential modules offers research, practical application for classroom and home and provides examples of experiences that build scientific, technology, engineering, and mathematical learning for older toddlers and preschool children.* |

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|  | **Math Resources** |
|  | **STEM Sprouts Science, Technology, Engineering, & Math Teaching Guide (3-5)**  [**http://www.bostonchildrensmuseum.org/sites/default/files/pdfs/STEMGuide.pdf**](http://www.bostonchildrensmuseum.org/sites/default/files/pdfs/STEMGuide.pdf)  *The STEM Sprouts Teaching Kit is the product of a collaboration between National Grid, Boston Children’s Museum, and WGBH. The goal of this curriculum is to assist preschool educators in focusing and refining the naturally inquisitive behaviors of three to five-year-olds on science, technology, engineering, and math (STEM).*  **Successful STEM Education (5-9)** [**https://successfulstemeducation.org/**](https://successfulstemeducation.org/)  *This site provides information, events, and resources that highlight promising practices and tools in support of effective K-12 STEM education in schools and programs.*  **Teaching Math to Young Children Practice Guide** **(3-6)** [**https://ies.ed.gov/ncee/wwc/PracticeGuide/18**](https://ies.ed.gov/ncee/wwc/PracticeGuide/18)  *This* *practice guide provides five* *recommendations for teaching math to children in preschool, prekindergarten, and kindergarten. Each recommendation includes implementation steps and solutions for common roadblocks. The recommendations also summarize and rate supporting evidence. The guide is geared toward teachers, administrators, and other educators who want to build a strong foundation for later math learning.*  [**TODOS: Mathematics for ALL**](http://www.todos-math.org/parent-and-family-resources)**: Equity and Excellence in Mathematics (0-9)**  [**https://www.todos-math.org/parent-and-family-resources**](https://www.todos-math.org/parent-and-family-resources)  *This website features publications on the teaching of mathematics and resources for parents and families, some of which are in Spanish. The commitment of the organization behind this website (Teaching Equity and Excellence in Mathematics/TEEM) may be seen a variety of ways, including an article in Special Issue #7 of their journal entitled* “That’s not fair and why: Developing social justice mathematics activists in Pre-K.”  **The Ultimate Guide to Math Resources** **(5-9)**  [**http://arealonlinedegree.com/college-resources/the-math-resources-ultimate-guide/**](http://arealonlinedegree.com/college-resources/the-math-resources-ultimate-guide/)  *The following is an array of resources for all levels of math students to use to make their experience with the subject both enjoyable and rewarding.*  **Young Mathematicians (3-5)** [**http://youngmathematicians.edc.org/**](http://youngmathematicians.edc.org/)  *The Young Mathematicians website has tools and resources aimed at improving young children’s* ***mathematics learning*** *and* ***mastery motivation*** *and examining the effectiveness on preschoolers’ school readiness skills.* *It features activities for fostering persistence at challenging activities, math games for teachers and parents to engage young children, and printable math books with suggestions for use.* |

1. This collection was compiled and annotated by [Camille Catlett](mailto:camille.catlett@unc.edu) for the Vermont Agency of Education and funded by the Vermont Race to the Top Early Learning Challenge Grant. It is current as of August 2018. Highlighted resources are available in English and Spanish.

   [↑](#footnote-ref-1)