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| **Supporting Children’s Math Skills**  Young children are naturally eager to learn math and preschool is a critical time to capitalize on their interest and build strong foundations. Children use math skills every day in their environment to make sense of their world. For example, from an early age, children enjoy sorting their toys by putting all the little ones in a pile or all the blue toys together or comparing things in their environment. “I have 3 fruit snacks and you have 4!” Below are some interaction and instruction strategies that provide opportunities for children to develop and expand their early math skills. |

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| **Interaction and Instruction (I&I) Strategies** | **Description** | **Aligned CLASS® Dimensions** |
| 1. **Notice, prompt and use math language** | Model and create opportunities to use math language in everyday conversations. Listen for math language children say and prompt further use by elaborating on their responses. Highlight everyday examples where math language can be used to describe what is happening. | image.png |
| 1. **Use open-ended questions to promote math thinking** | Use questions that encourage children to explain their mathematical thinking or extend a mathematical conversation using their own words. | image.png |
| 1. **Encourage children to play mathematically** | Child-guided play provides a natural opportunity for children to explore and practice a wide range of math skills. Try to take these activities further by asking open-ended questions to encourage children to explain their mathematical thinking. | image.png |
| 1. **Integrate math across early learning domains and activities** | Math is everywhere! Incorporate math into activities that span early learning domains – communication, movement – and content areas – language, literacy, science. | image.png |

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| 1. **Notice, Prompt and Use Math Language** | **Description:** Model and create opportunities to use math language in everyday conversations. Listen for math language children say and prompt further use by elaborating on their responses. Highlight everyday examples where math language can be used to describe what is happening. | | | | **Aligned CLASS Dimensions:** | | |
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|  | **Choose one of the following sets of resources and individualize to your needs.**  **Determine which aspects you’d like to use (or not).** | | | | | |
| Resources for creating an environment rich in math language:   * [Use The Language of Math](http://resourcesforearlylearning.org/educators/module/20/9/34/)   Describes ways teachers can “flood the environment” with mathematical talk and concepts to help children develop mathematical ideas and be able to express them naturally.   * [One, Two, Buckle My Shoe](https://www.readingrockets.org/article/one-two-buckle-my-shoe-math-and-literacy-preschoolers)   This article describes the concept of math-mediated language and provides practices that teachers can plan to do and say to enhance children's understanding of age-appropriate math concepts such as “Teacher Math Talk.” | | Resources for supporting math language in the context of games and play:   * [We're Going on a Math Walk, Going to Find Some Math Talk](https://earlymath.erikson.edu/were-going-on-a-math-walk-were-going-to-find-some-math-talk/)   Describes easy ways to incorporate math talk into everyday activities such as taking a walk or exploring the playground.   * [Using Math Talk in the Classroom](https://www.youtube.com/watch?v=TLmm3U0eYX4&feature=youtu.be)   Discusses the importance of talking with children in regular conversations about math concepts and encouraging them to explain their mathematical processes so they can gain mathematical and general cognitive skills. | | | | |
|  | **Select one or two video(s) to watch focusing on:**  **What does the teacher say and do related to promoting *math language*?**  **How do the children respond?** | | | | | |
| * [Operations for Breakfast](http://prek-math-te.stanford.edu/operations/classroom-videos-operations) | | | * [Shape in a Bag](http://eclkc.vzaar.me/4501659) | | | |
| * [Discussing Monkey Bars during Transition](http://prek-math-te.stanford.edu/operations/classroom-videos-operations) | | | * [Amounts on a Graph](http://eclkc.vzaar.me/4501719) | | | |
|  | **Ideas for SMART goals. Pick one Do strategy to try as is or modify to better fit your goals.** | | | | | |
| * During outdoor time, prompt use of math language by asking children to count rocks or sticks and arrange them into piles. Extend this math talk by asking children to compare which has more or fewer and asking them how they figured it out. * During morning circle time and 1 transition time, ask children to point out the shapes they see (in the classroom, hallway). Ask them to describe each of the shapes and the ways they are similar and different. | | | | | | |

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| 1. **Use open-ended questions to promote math thinking** | **Description:** Use questions that encourage children to explain their mathematical thinking or extend a mathematical conversation using their own words. | | | | **Aligned CLASS Dimensions:** | | |
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|  | **Choose one of the following sets of resources and individualize to your needs.**  **Determine which aspects you’d like to use (or not).** | | | | | |
| * [Teaching Math Through Games](https://aeiionline.org/advancing-effective-interactions-and-instruction-2/tools-resources/for-use-in-professional-development/professional-development-workshop-suites/)   This learning module explores ways to promote math learning through different game-based and play experiences. One practice of focus is “asking open-ended questions.” | | | * [Early Childhood Math Questioning Strategies](https://www.youtube.com/watch?v=VF2r_CCYuYQ)   This quick instructional video focuses on actionable strategies to increase the quality of math instruction in the early years and to improve general language and broad cognitive competencies for learners. | | | |
|  | **Select one or two video(s) to watch focusing on:**  **What does the teacher say and do related to promoting *math thinking*?**  **How do the children respond?** | | | | | |
| * [What Can We Measure?](http://eclkc.vzaar.me/4501726) | | * [Almost Even](http://eclkc.vzaar.me/4501718) | | * [Comparing Capacity at the Sand Table](https://www.youtube.com/watch?v=e0WOe36X5ls&list=PLRY-hkA40X05fa4b8Ju6o89quJ3H9o1kK&index=2) | | |
|  | **Ideas for SMART goals. Pick one Do strategy to try as is or modify to better fit your goals.** | | | | | |
| * During a math activity, have a few open-ended prompts ready to use as you monitor children’s work. For example, ask, “How did you know that?” “What do you notice about your ...?” “How can you tell (this tower is the biggest, that is a square)?” * Pick a transition time and extend the use of math language by asking 2 or more open-ended questions. For example, while children line up for an activity ask them to arrange themselves in a pattern (green shirt, green shirt, blue shirt, blue shirt or girl, boy, girl, boy) and then ask, “How can you tell this is a pattern?” or “How can we make another pattern?” or “Do we have enough to add to our pattern?” | | | | | | |

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| **3. Encourage children to play mathematically** | **Description:** Child-guided play provides a natural opportunity for children to explore and practice a wide range of math skills. Try to take these activities further by asking open-ended questions to encourage children to explain their mathematical thinking. | | | **Aligned CLASS Dimensions:** | | |
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|  | **Choose one of the following resources and individualize to your needs.**  **Determine which aspects you’d like to use (or not).** | | | | |
| * [Teaching Math Through Games](https://aeiionline.org/advancing-effective-interactions-and-instruction-2/tools-resources/for-use-in-professional-development/professional-development-workshop-suites/)   This learning module explores ways to promote math learning through different game-based and play experiences. | | * [Math Play: How Young Children Approach Math](https://www.scholastic.com/teachers/articles/teaching-content/math-play-how-young-children-approach-math/)   This short article provides suggestions for exploring math in play and includes a *Math and Play Age-by-Age Developmental Chart*. | | | |
|  | **Select one-two video(s) to watch focusing on:**  **What does the teacher say and do related to *encouraging children to play mathematically*?**  **How do the children respond?** | | | | |
| * [Meaningful Learning Hoops](http://vzaar.com/videos/4501730) | | * [Stacking Peg Towers](https://www.youtube.com/watch?v=5AqL4BgyFPo&list=PLRY-hkA40X05fa4b8Ju6o89quJ3H9o1kK&index=11) | | | |
|  | **Ideas for SMART goals. Pick one Do strategy to try as is or modify to better fit your goals.** | | | | |
| * Intentionally set up a play area and interact to promote math thinking. For example, use a play kitchen to have children create different shapes of food and ask them to compare their shapes. “I made a circle cake and you made triangle cookies.” Use your open-ended math-mediated language to further prompt children to explain their thinking and knowledge. * When using a water or sand table, have children pour water into cups and prompt them to think about how many cups they think it will take to fill up a bucket. Or, have them build sand castles and ask them which is biggest. Take it further by having children use linking cubes to measure their castles and prompt them to think about how many more links one castle has compared to another. | | | | | |

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| **4. Integrate math across early learning domains and activities** | **Description:** Math is everywhere! Incorporate math into activities that span early learning domains – communication, movement – and content areas – language, literacy, science. | | | **Aligned CLASS Dimensions:** | | |
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|  | **Choose one of the following sets of resources and individualize to your needs. Determine which aspects you’d like to use (or not).** | | | | |
| Resource set for integrating math with literacy and movement:   * Development and Research in Early Math Education (DREME) links for using math in picture books (pick 1-2 math areas of focus):   [Using Picture Books: Counting](http://prek-math-te.stanford.edu/counting/using-picture-books-counting)  [Using Picture Books: Spatial Relations](http://prek-math-te.stanford.edu/spatial-relations/using-picture-books-spatial-relations)  [Using Picture Books: Addition and Subtraction](http://prek-math-te.stanford.edu/operations/using-picture-books-addition-and-subtraction)  [Using Picture Books: Patterns](http://prek-math-te.stanford.edu/patterns-algebra/using-picture-books-patterns)  [Using Picture Books: Measurement](http://prek-math-te.stanford.edu/measurement-data/using-picture-books-measurement)  [Analyzing Picture Books: An Overview](http://prek-math-te.stanford.edu/overview/analyzing-picture-books-overview)   * [Focus on the Lesson – Walk with Rosie](https://www.youtube.com/playlist?list=PLRY-hkA40X06_F98oBe7So1pmpMjmMLGA)   Series of 4 videos demonstrating teaching of directional prepositions through an extension activity for the book “Walk with Rosie” | | Resource set for integrating math with art, music, and movement:   * [Patterns in Everyday Activities](http://prek-math-te.stanford.edu/patterns-algebra/patterns-everyday-activities)   Discusses the many daily-life activities in which children in patterns in their everyday lives   * [Making Circle Time Count](https://dreme.stanford.edu/news/making-circle-time-count)   Provides suggestions for a variety of math related circle time activities   * [Math and Gross Motor Play](https://www.youtube.com/watch?v=8FKull4V4qk&feature=youtu.be)   Features a teacher’s creative activities to combine  math and movement | | | |
|  | **Select one-two video(s) to watch focusing on:**  **What does the teacher say and do related to *integrating math across early learning domains*?**  **How do the children respond?** | | | | |
| * [Counting During Transition](http://eclkc.vzaar.me/4501727) | | * [Mealtime Geometry](http://eclkc.vzaar.me/4501658) | | | |
| * [Dot Card Transition Activity](https://earlymath.erikson.edu/dot-card-transition-activity/) | | * [Leaf Pattern](http://eclkc.vzaar.me/4501794) | | | |
|  | **Ideas for SMART goals. Pick one Do strategy to try as is or modify to better fit your goals.** | | | | |
| * Select 2-3 books that incorporate math to read during this week. As you select these books, think about 3 open-ended questions you want to ask during reading. Also think about how you can get children involved in the reading—Can one student count as you turn the pages? Can you encourage children to arrange themselves in a pattern in a circle as they listen to the reading? * Promote math discussions during 3 or more mealtimes. For example, have children sit in pairs and when passing out a snack like raisons or crackers and ask children how many of each they have and how many they have altogether. Or, ask children to identify the shapes of their snack items (e.g., a square or triangle shaped sandwich). Prompt children to talk through their ideas. | | | | | |

**Sample Action Plan:**

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| Action Plan: Notice, prompt and use math language (I&I Strategy) | |
| KNOW  Week of 10/07/20 | Learn ways to incorporate more math language in routines, play, and everyday conversation so that children are exposed to and can engage more in various math concepts.  Resources: [Use The Language of Math](http://resourcesforearlylearning.org/educators/module/20/9/34/) and [One, Two, Buckle My Shoe](https://www.readingrockets.org/article/one-two-buckle-my-shoe-math-and-literacy-preschoolers)  As you are reviewing these resources, consider how “flooding the environment” with more math enhances children’s understanding of age-appropriate math concepts |
| SEE  Week of 10/07/20 | Watch: [Operations for Breakfast](http://prek-math-te.stanford.edu/operations/classroom-videos-operations) and [Discussing Monkey Bars during Transition](http://prek-math-te.stanford.edu/operations/classroom-videos-operations) |
| DO  Week of 10/14/20 | During outdoor time, prompt use of math language by asking children to count rocks or sticks and arrange them into piles. Extend this math talk by asking children to compare which has more or fewer and asking them how they figured it out. |
| Follow Up  Week of 10/21/19 | Feedback provider:   * Will observe during center time (10/17 from 9:30-10:30) * Will listen for how the teacher incorporates math language while interacting with children in typical center time activities to enhance their understanding of math concepts (10/17 from 9:30-10:30) * Will have a reflective conference with teacher following observation (10/24/19 from 2:15 - 3:00) |