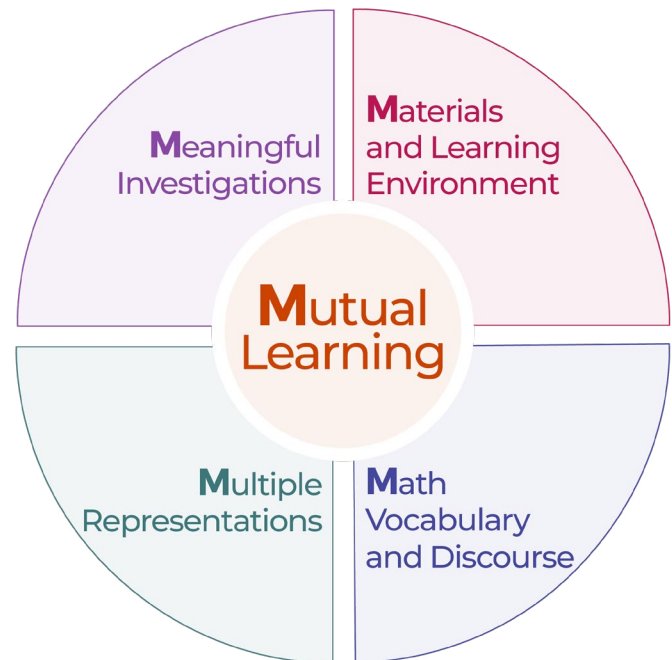


Using M⁵ to Support Adding and Subtracting

This handout provides specific examples for each practice in the M⁵ Early Math Approach to help educators support children in their understanding of addition and subtraction.

The M⁵ Early Math Approach is grounded in supporting positive math mindsets in all children through playful early math experiences. Educators hold the belief that all children have the capacity to learn math and that opportunities for math learning are everywhere—in learning settings, homes, communities, and play spaces.



Mutual Learning

Observe and learn about how individual children develop their abilities to add and subtract.

- **Observe children's emerging and growing knowledge of addition and subtraction and support learning in ways that are responsive to children's varying abilities.**
 - ◇ Provide opportunities for children to use concrete objects to add and subtract. Notice the different ways children use concrete objects or their fingers to add and subtract.
 - ◇ Notice what counting strategies they use when adding and subtracting (for example, count all, count on, or count down). Some children might understand the concept of adding or taking away but may still be developing their knowledge of the count sequence or number words. Strong counting skills can support children to add and subtract. Visit the Number and Counting suite to learn more about supporting children to count.
 - ◇ Some children might use words or gestures to describe their adding or subtracting. Others might show their knowledge by drawing or using objects.

- **Highlight children’s understandings or even partial understandings about addition and subtraction to build their self-concept as mathematicians and as a way for their peers to learn from each other.**
- **Notice the languages and vocabulary children use to discuss addition and subtraction.**
 - ◇ Children who are multilingual learners might add and subtract in their home languages, English, or both.
 - ◇ Consider using words to describe addition and subtraction in both English and the child’s home language.
 - ◇ Provide opportunities for children to show their understanding in nonspeaking ways (for example, using gestures and objects to demonstrate addition or subtraction), or use gestures as a scaffold to practice new math vocabulary.
- **Learn about children’s cultures and daily experiences. Use what you learn to offer meaningful addition and subtraction experiences that are related to children’s cultures or lived experiences.**
 - ◇ Children might add and subtract using culturally relevant items that they bring from home (for example, beads, buttons, natural materials collected from the neighborhood, or recycled materials such as empty boxes or containers).
 - ◇ Children might solve addition and subtraction problems involving contexts they are familiar with (for example, subtracting to find out how many dominoes are left or adding to figure out how many more eggs they need to bake a cake).
 - ◇ Learn about addition and subtraction songs or stories that might be unique to children’s cultures (for example, “Brinca la tablita” or “Ten Green Bottles”).
- **Observe how children interact with others. Provide opportunities for children to choose how they want to work—collaboratively or individually. Individual work time can reduce the demand on children’s executive functions (for example, helping children focus on math learning instead of managing social interactions).**



Meaningful Investigations

Offer opportunities for children to question, experiment, and use math to solve authentic problems of interest.

- **Encourage children to add and subtract in the context of daily routines and real-world problems.**
 - ◇ “You have 2 orange slices on your plate. How many will you have if you add 2 more slices?”
 - ◇ “We need to collect all the toy animals in the block area. We should have 5 animals, but I only count 3 in the basket. How many more do we need to add to our basket to make sure we have all 5 animals?”
 - ◇ “We have 5 children lined up for lunch. How many more children need to join the line so that we have all 10 friends ready to go?”
- **Encourage children to add and subtract during play.**
 - ◇ “How many blocks did you use to build your house? How many blocks will you use if you add two more?”
 - ◇ “She put in 2 tomatoes, and I am adding 1 more tomato to the pretend soup. How many tomatoes in all do we have in our pretend soup?”
 - ◇ Create a pretend store for children to add and subtract as they “buy” different items. Use tokens, tickets, or counting chips for children to use as money.
 - ◇ Support children to play board games or games with dice that might encourage them to add or subtract.



Materials and Learning Environment

Provide open-ended materials that support children to add and subtract.

- Offer materials that respond to children’s interests, lived experiences, strengths, and areas for growth. Some appropriate materials for this age group might include the following:
 - ◇ loose parts and collections of objects (for example, buttons, beads, pom-pom balls, popsicle sticks, dominoes)
 - ◇ recycled materials and natural items shared from children’s homes and neighborhoods (for example, leaves, sticks, rocks, shells, bottle caps, recycled food containers such as empty cereal boxes)
 - ◇ math manipulatives, such as rekenreks (similar to an abacus), counting chips, number lines, and dice
- Read books that include opportunities to add and subtract in children’s home languages, English, or both.
 - ◇ [*Pete the Cat and His Four Groovy Buttons*](#) (or [*Pete the Cat y sus cuatro botones Groovy*](#) in Spanish) by Eric Litwin
 - ◇ [*Animals on Board*](#) (or [*Animales a bordo*](#) in Spanish) by Stuart J. Murphy
 - ◇ [*One Is a Snail, Ten Is a Crab*](#) by April and Jeff Sayre



Math Vocabulary and Discourse

Encourage children to communicate about addition and subtraction.

- Use phrases that describe adding and subtracting in the children’s home languages, English, or both.
 - ◇ “How many more . . .”
 - ◇ “Add . . .”
 - ◇ “Take away . . .”
 - ◇ “How many are left?”
 - ◇ “How many all together?”

- **Use open-ended questions and prompts to encourage children to explain their reasoning as they add and subtract. Consider modeling or orally practicing language frames together to support all children to answer open-ended questions.**
 - ◇ “How many will be left? How do you know?”
 - ◇ “How many do we have all together? How might we find out?”
- **Provide opportunities for children to work collaboratively. Encourage them to explain their thinking to each other.**
 - ◇ “Tell your partner how you figured out how many _____ [objects] you have all together.”
 - ◇ “My partner taught me that . . .”

Multiple Representations

Offer multiple ways for children to explore addition and subtraction.

- **Use different representations of addition and subtraction problems:**
 - ◇ rhymes and songs (for example, “Five Little Speckled Frogs”)
 - ◇ fingerplay
 - ◇ problems as part of stories
 - ◇ drawings
 - ◇ written numerals
 - ◇ movement and dance
- **Encourage children to use various ways to represent their strategies for solving addition and subtraction problems.**
 - ◇ “How can you use the counting chips to show me how you subtracted three from seven?”
 - ◇ “Can you draw how many you added?”
 - ◇ “What is another way you can add these groups?”

