CORE SKILL: THINK – MATH

Numeracy

What You Need to Know

Numeracy is the ability to work with and understand numbers. In early childhood, key numeracy skills include:

- Subitizing – quickly identifying the number of objects in a small set
- Counting and cardinality – determining the quantity of objects in a group and understanding that the last number said when counting tells how many objects there are altogether
- Comparing and ordering numbers – knowing whether a number is greater than, less than, or equal to another number, and figuring out which of two numbers is larger than the other
- Recognizing and writing numbers – understanding that written numbers represent quantities, and learning how to correctly form numerals

Things to Consider

Numbers provide us with a way to describe the world around us, and numeracy skills set the foundation for almost every other area of math. Keep in mind that a child verbally counting to a very high number does not necessarily translate into that same child being able to actually count a large number of objects. It's far more important for children to practice one-to-one correspondence; in other words, accurately counting each object in front of them, than it is for them to successfully recite a string of numbers that they have likely only memorized. Additionally, be sure to practice multiple representations of quantities to avoid over-generalization (i.e., when some children hear 'two' when counting buttons, they think two means 'two buttons.').

Development of Numeracy

Between 36 and 48 months, children may:	Between 48 and 60 months, children may:
Say or sign a few number words in sequence (up to 10) starting with one.	Say or sign 10 or more number words in sequence.
Begin to recognize a small number of objects in a group without counting (subitizing).	Quickly subitize or recognize the number of objects in a small set.
Begin to coordinate verbal counting with objects laid in a line (one-to-one correspondence).	Understand that number words refer to quantity.
Begin to understand that the last number represents how many objects are in a group (cardinality).	Point to or move objects while counting objects to 10 and beyond (one-to-one correspondence).
With adult assistance, begin to count and compare objects in small groups, such as counting a pile of 2 blocks and a pile of 4, and determining whether they have the same or different number of blocks.	Understand that the last number represents how many objects are in a group (cardinality).
	Match small sets (1-5) with the corresponding numbers and represent and recall the size of sets using those numerals.

Setting the Stage

Activities and materials that support the development of numeracy skills:

- Use what you have: you don't need special materials for numeracy learning to happen. Instead, call attention to numeracy skills all around you across the day (e.g., counting out plates for snack, counting seconds for teeth brushing, or identifying numbers they see around them within the learning environment or the school).
- Games involving numbers: play games that encourage children to count, recognize numerals, or subitize. Provide visuals/manipulatives (e.g., fingers, objects).
- Routines, transitions, and meals: incorporate opportunities for students to count and compare numbers into regular classroom activities, such as counting children in a small group, counting as they pass out snack, or figuring out whether there are more, fewer, or the same number of children at each table during lunch.
- For children with visual disabilities: provide opportunities for practice with tactile and high contrast materials.

Intentional Teaching Practices to Support Numeracy

OBSERVE	**Observe** Observe children to see if they are using one-to-one correspondence to try to count a set of objects or using number words in their daily conversations or interactions during play. Are children using counting or cardinality as they determine how many friends are in a particular center? Are they able to figure out the number they roll if they use a die during a game? Do you observe them counting when they play hide-and-seek on the playground during Outdoor Time?
FOCUS	**Use Comparison and Number Words and Label Numbers and Cardinality** Regularly use the language of numeracy in formal and less formal ways throughout the day. Incorporate visuals (including gestures, such as two fingers to show 'two') and manipulatives to support children's understanding and use of the language, as well. ♦ Comparison: "Your tower has a lot more blocks than mine does. I counted 9 blocks in your tower and only 5 in mine. No wonder your tower is taller!" ♦ Number words: "We noticed that there are some friends missing today. We are missing Janae, Simone, and Christopher. We are missing three students!" ♦ Label numbers: "You are standing on the number 6 hopscotch square. This is what a number 6 looks like. See how it looks similar to a 9 but the circle is on the bottom instead of the top?" ♦ Cardinality: "Let's count how many steps it takes you to get from here to the door. 1-2-3-4. It took you 4 steps."
SCAFFOLD I	**Prompt Children to Compare and Prompt Children to Count a Set of Objects** Encourage children to compare quantities and produce and count objects in sets: ♦ Encourage children to vote on upcoming activities, comparing the results based on more, fewer, or the same amount. ♦ Outside, if a child is trying to kick a ball into a net, support them to compare the number of times the ball went into the net to the number of times it did not. ♦ Support children to count objects in the learning environment (e.g., "Let's figure out which basket has more baby dolls in it. Can you count the dolls in that basket, and I'll count this one? Which one has more?"). ♦ Provide additional support by offering visuals of 'more,' 'few,' and 'same' to scaffold children's understanding. Or, practice comparisons using concrete examples, such as one bead compared to a jar of beads.
SCAFFOLD II	**Model One-to-One Correspondence and Promote Subitizing** Support one-to-one correspondence by modeling and narrating. ♦ While children play in the dramatic play area, count out the coins they have, touching each coin as you count. ♦ Across the day, focus on using one-to-one correspondence in a few different ways (e.g., count out 5 children to move into a particular center, tapping each one on the head as you say the number, or line up trucks and count them with a child, touching each truck as you go). ♦ If children make an error in their counting, model how to count the set. "I heard you count six cars. When I count, I only got four, 1, 2, 3, 4 (*touching each object*)." Support subitizing by modeling, narrating, and encouraging practice: ♦ Use 5-frames and 10-frames to familiarize children with what a set of small numbers looks like. ♦ Play "think fast" when transitioning children from one activity to the next, using large dot cards (with dots arranged similarly to their arrangement on dice or 5-frames). Quickly show a card and ask the child to tell you the number of dots without counting.
KEEP IT GOING	Consider what you learned from observing children on Monday as well as their reaction to your Focus and Scaffolds. Find ways to build the activities from Setting the Stage into your regular routines.