Alabama's Standards *for* Early Learning and Development

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ALABAMA DEPARTMENT OF Early Childhood Education

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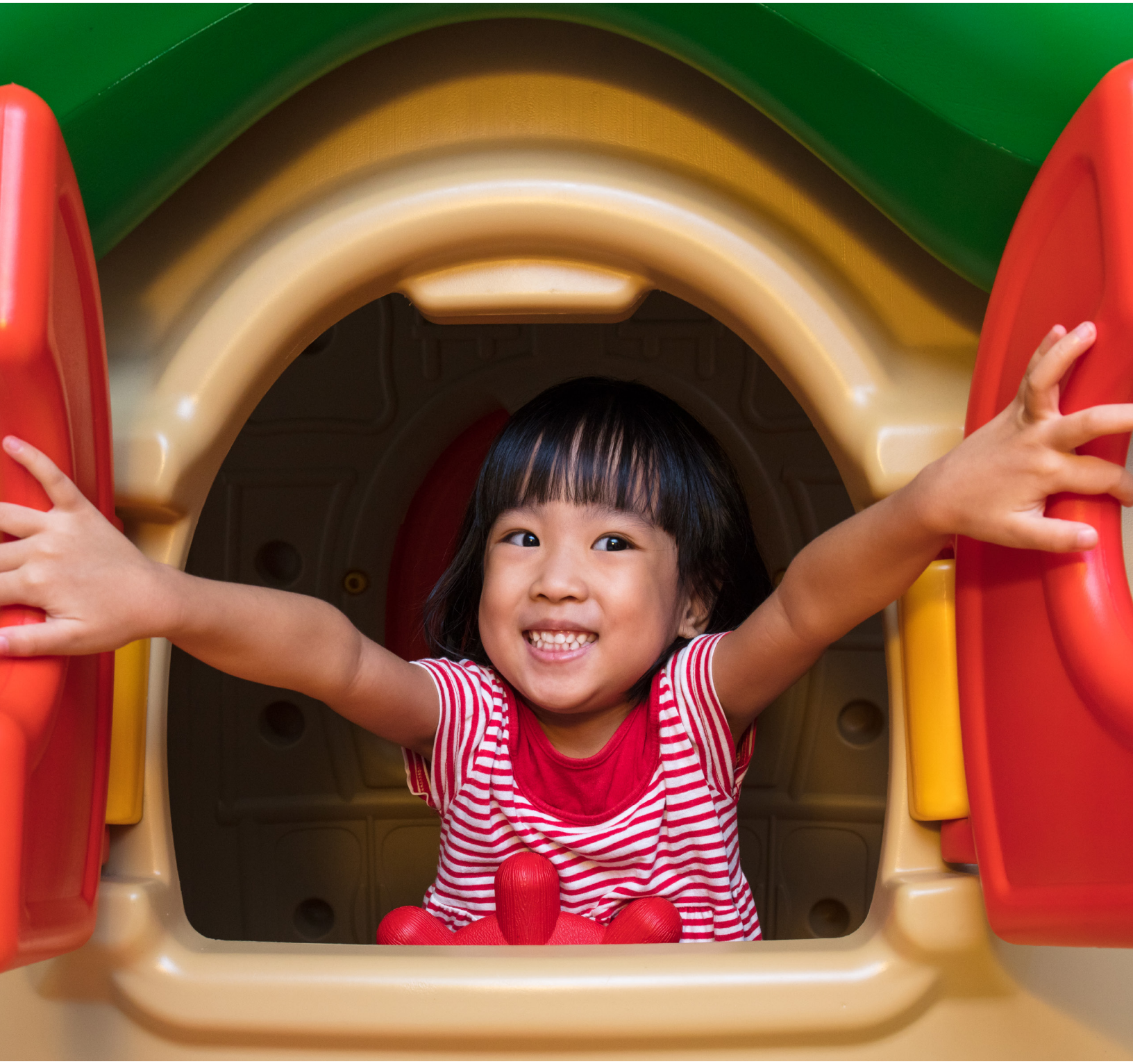
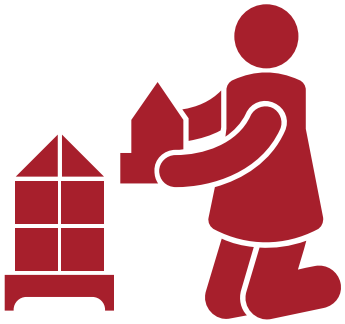


APPROACHES TO PLAY AND LEARNING (APL)

Developing Skills and Attitudes for Success



Children approach play and learning in different ways. Some children dive right in while others may be a little slower and more deliberate. But, all children benefit from opportunities to discover new ideas and information through play and active exploration. Their growing curiosity, creativity and enthusiasm for learning work in tandem with their developing-engagement through persistence, attentiveness and problem solving to acquire knowledge and accomplish goals and tasks. These emerging skills or dispositions focus on how children learn and are known as approaches to learning. They help children become successful in school and in life.

Play motivates and encourages children to become and stay engaged in learning. Developmental theorists and practitioners alike all agree that play is the foundational method for children to build those approaches to learning (or executive function) and make connections. When professionals offer a variety of experiences, facilitate a sense of "wonderment" and curiosity, and encourage actions and interactions with objects and individuals, children are activating their executive function that leads to more thoughtful reflections, more self-reliance, and increasing independence.

APL 1 **Play**
- APL1a: Imaginative Play
- APL1b: Collaborative Play

APL 2 **Constructing and Gathering Knowledge**
- APL2a: Persistence, Engagement, and Attention
- APL2b: Task Analysis
- APL2c: Reasoning and Problem Solving

APL 3 **Wonderment and Curiosity**
- APL3a: Curiosity, Invention, and Initiative
- APL3b: Risk-Taking and Flexibility

Did you know?

Children's temperament or personality can influence the way in which they learn and behave.

Traits such as activity level, mood, adaptability, intensity, sensitivity, and persistence join together to define children's temperament, Some children may be easy or flexible. Others may be active or feisty, and still others may be slow to warm, cautious or fearful.

Easy children are typically happy and calm with regular habits and can generally adapt to change quickly. **Active** children may be considered difficult. They have strong reactions to things and are often bothered by too much noise or stimulation. Children who are **cautious** approach the world with hesitation and may be reluctant to try new things. They may be described as shy, needing time to become accustomed to new things or people.

When professionals observe and interact with children to understand how they demonstrate these temperament traits, they can match learning experiences and expectations, often called "goodness of fit."

APL 1: PLAY

APL1a: Imaginative Play: Children will use their imaginations to learn about the world around them.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**1aI-1** Use a familiar object for a different purpose or in a different way	**1aYT-1** Use objects for a real or imagined purpose	**1aOT-1** Use objects to represent something different
	1aI-2 Imitate observed actions	**1aYT-2** Imitate or act out real life events	**1aOT-2** Pretend to be somebody or something other than self
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Tap wooden spoon on floor to make sounds • Pour water from cup during bath time • Attempt to hide face with blanket for peekaboo • Watch adult wave bye-bye and try the same action	• Fill and dump blocks into a cardboard box • Open mouth to say "aah" like at the doctor • Pretend to brush doll's teeth • Put a car on top of a ramp to watch it go down	• Hold and comfort a doll as if it were a baby • Crawl around on the floor, barking like a dog • Fly like an airplane with arms outstretched, saying vroom, vroom • Wear a scarf as a cape and fly through the sky like a super hero
SAMPLING OF PROFESSIONALS' PRACTICES	• Have varied types of objects in the environment for children to manipulate • Interact back and forth with child to encourage their response with familiar movements • Model different actions and activities and wait for child to repeat them, such as peekaboo or hand clapping	• Sing songs and finger plays that include actions • Talk about the characters' actions in books • Use puppets or stuffed animals to imitate actions or tell a story • Help children pretend with invisible objects such as pretending to drink milk with your hand • Pretend to rock a doll and say, "Baby is tired; night-night baby."	• Stock the dramatic play area with dolls and stuffed animals and related props • Ask questions or talk about children's play, "How is your baby feeling today?" or "That elephant looks really sad." • Encourage children to move creatively during transitions, "Let's jump like bunnies to the table." • Interact with children in the dramatic play area as they take on different roles, "Are you the doctor or the nurse?" "Can you fix my hair? It's a mess!" • Model pretend play in the block area, "This block is going to be my hammer."

APL 1: PLAY

APL1a: Imaginative Play: Children will use their imaginations to learn about the world around them.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**1aYP-1** Engage in make-believe play that mimics real-life experiences	**1aOP-1** Use props and create characters as part of pretend play
	1aYP-2 Coordinate play with another, beginning to assign roles	**1aOP-2** Engage in elaborate and sustained imaginative play
	1aYP-3 Invent an imaginary friend	**1aOP-3** Distinguish between real life and fantasy
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Pretend to cook a meal with pots and pans • Tell a friend, "You be the mommy and I'll be the baby, and you put me to bed." • Ask, "Can I take your order please?" when pretending to work at a fast food restaurant • Talk about a pretend character as if it were a friend, "Shhh…my piggy is sleeping." • Tell an adult, "My dog, Spot, and I are going to go on a walk now."	• Tell you that monsters are not real • Act out a scenario with a sick dog who needs to go to the vet, get a shot, and go home and rest • Re-enact a favorite story, such as The Three Bears • Work with a friend to build a house with people, pets and furniture • Engage in pretend play that extends over time, such as creating an ice cream shop with customers and sales clerk, pretend ice cream and toppings, money, etc
SAMPLING OF PROFESSIONALS' PRACTICES	• Stock a family living area with costumes and props • Encourage participation in dramatic play as an option during free play • Ask children, "What would you do if…" while reading a story • Join children's play in the dramatic play area, responding to their directions and asking questions to extend their thinking, "What toppings do you have for my pizza? How much will it cost? Do you do take-out?" • Rotate the materials in the dramatic play area using prop boxes that have the materials to help children act out real life experiences such as a veterinarian clinic, pet shop, fast food restaurant, doctor's office or grocery store	• Involve children in the selection or creation of dramatic play scenarios. After reading a book about a pizza shop, ask them what they'd need to create a pizza shop, then have them help make the props • Encourage children to continue the dramatic play scenario from one day to another, leaving the materials set up • Retell a story asking children to act it out as they become familiar with it • Talk about things that are real and make believe • Read books about imaginary characters, asking children questions like, "Do you think cows really fly?"

APL1b: Collaborative Play: Children will learn to work and play together to achieve a common goal.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**1bI-1** Observe and seek to be near another baby or child	**1bYT-1** Play near another child with different toys or activities	**1bOT-1** Play alongside other children
	1bI-2 Engage in simple turn-taking	**1bYT-2** Seek adult or peer audience during play	**1bOT-2** Share toys or materials with adult support
	1bI-3 Engage in imitative play actions with adults	**1bYT-3** Initiate imitative play games	**1bOT-3** Help a friend during a play experience
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Watch other children during meal time • Crawl near another child and observe • Remove blanket from face during peekaboo • Imitate adult's sounds or facial gestures	• Play with a shape sorter while another child plays with stacking cups nearby • Hold up a picture and say or gesture, "Look." • Tell an adult to "Watch me" while riding a bike. • Reach for an adult's hand to engage in play together • Show interest in an action song and attempt to imitate hand motions	• Build a block structure while another child is playing with cars • Create play dough snakes and worms next to a child who is making play dough cookies • Share a truck after adult helps identify a timeframe, "In two minutes it will be time to share the truck with Lindsay." • Hand another child a block to use
SAMPLING OF PROFESSIONALS' PRACTICES	• Engage infant in shared, back and forth play, like peekaboo or "how big is baby?" • Make eye contact when communicating with baby • Listen to baby's sounds and repeat them back • Model how to hold and rock doll as if it were a baby • Place infant near other babies or children	• Provide more than one of the same or similar toys in a play area • Respond to children's gestures that request your involvement in their play • Acknowledge children's accomplishments or play, "You are making that car go really fast." • Read books about children playing together	• Supply learning areas with more than one of the same toy • Help children share, "Stevie would like to join us for play dough but there isn't any dough left. How can we give her some?" • Join in children's play, encouraging children to interact to perform a play scenario or accomplish a shared project • Ask a child, "Campbell needs another peg; can you find her one to use?"

APL 1: PLAY

APL1b: Collaborative Play: Children will learn to work and play together to achieve a common goal.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**1bYP-1** Interact with others to create play scenarios	**1bOP-1** Develop and sustain complex play themes and roles in cooperation with peers
	1bYP-2 Begin to develop friendships, showing preferences for specific children	**1bOP-2** Seek out specific children to engage in play experiences
	1bYP-3 Communicate interest in others' ideas through verbal and nonverbal means	**1bOP-3** Take another's perspective
	1bYP-4 Express knowledge of everyday lives and culture through play	**1bOP-4** Articulate values and "rules" through play
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Engage with others to care for a sick child, assigning self as the mother, a child to be sick and another to be the doctor • Tell a friend, "Let's be firefighters and put out that fire." • Seek out a child asking, "Do you want to play at the water table with me?" • Draw a picture of two children, "That's Jimmy and me playing on the swings." • Ask another, "What are you building?" • Walk up to the art easel to watch another paint	• Work with other children to build a block city with houses, stores, roads, etc. • After reading a story about pets, create a pet store in the dramatic play area using stuffed animals, boxes for cages and the doctor kit • Ask, "Angie, do you want to do that puzzle with me again like we did yesterday?" • Try a different way to finish a block tower based on a suggestion from another • Remind others, "You need to take turns."
SAMPLING OF PROFESSIONALS' PRACTICES	• Join in children's dramatic play, extending their play through open-ended questions and connecting children's play • Invite children to play alongside each other • Offer opportunities for children to share their work/play with others • Ask for children's opinions or "How do you feel when you hear them say that?" • Create play scenarios that reflect daily living experiences or culture	• Allow children's creations to remain in the play area from day to day to encourage extended play • Read books about a topic that may provide new ideas to expand play • Ask a child who they are going to play with • Encourage children to help each other when initial play experiences aren't successful • Involve children in the development of the rules

APL 2: CONSTRUCTING, ORGANIZING, AND APPLYING KNOWLEDGE

APL2a: Persistence, Engagement, and Attention: Children will develop the ability to focus their attention and concentrate to complete tasks.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**2aI-1** Focus attention on people or objects nearby	**2aYT-1** Focus attention on activities or people for a short period of time	**2aOT-1** Focus on a task but may lose interest
	2aI-2 Deliberately try to make things happen	**2aYT-2** Repeat tasks and activities over and over again to achieve a goal	**2aOT-2** Repeat actions or events to gain mastery
	2aI-3 Attend to different sights, sounds or people in the environment	**2aYT-3** Show interest in activities going on in the environment	**2aOT-3** Attend to a selected activity in the environment
	2aI-4 Repeat action multiple times for enjoyment	**2aYT-4** Show delight after a completed activity or act	**2aOT-4** Show delight in accomplishing a challenging task
		2aYT-5 Demonstrate desire to complete tasks by self	**2aOT-5** Complete a task from start to finish with adult support
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Examine a toy • Make eye contact with an adult • Drop a spoon over and over to watch adult's response • Push a button to make noise • Work the parts of a pop-up toy	• Fill and dump blocks in a bucket over and over • Watch others at play • Say, "I do it" when adult tries to help • Clap or smile after accomplishing a task • Work at a simple puzzle until completed • Allow children to use toys or materials in their own way, perhaps unconventionally	• Concentrate on completing a painting • Start to build with blocks, then walk away to play somewhere else • Work on stringing beads into a necklace • Ask to wear a finished bead necklace with pride • Work at fitting puzzle pieces to complete a puzzle • Clap and tell adult after finishing a difficult task, "Look, I put that puzzle together!"
SAMPLING OF PROFESSIONALS' PRACTICES	• Engage an infant in an action multiple times while child is attentive • Describe what is happening as infant tries something new • Describe objects or people that are in the environment • Provide simple toys that require an action	• Encourage children to stay engaged in tasks by asking questions or showing interest in their work • Provide time in the daily schedule for children to complete a task, then try to do it again • Leave the same materials in learning areas for more than one day for children to go back to multiple times • Praise a child's attempts and accomplishments • Give children time to complete a task independently	• Break tasks into small steps to maintain children's interest • Provide time for sustained work on a task • Arrange areas in the room to minimize distractions • Praise children's accomplishments using descriptive and specific words, "You worked hard to put that puzzle together!" • Talk about children's work, "How did you do that?" or "That must have been hard to do." • Add new materials or ideas to expand children's thinking

APL 2: CONSTRUCTING, ORGANIZING, AND APPLYING KNOWLEDGE

APL2a: Persistence, Engagement, and Attention: Children will develop the ability to focus their attention and concentrate to complete tasks.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**2aYP-1** Maintain focus on a project over a period of time with adult support	**2aOP-1** Stay focused on activities and tasks until completion
	2aYP-2 Try different ways to complete a task when something doesn't work	**2aOP-2** Persist with task completion even after previous efforts have failed
	2aYP-3 Stay engaged in an activity or task while other activities are occurring in the environment	**2aOP-3** Stay engaged in an activity or task despite interruptions
	2aYP-4 Express satisfaction in a completed task	**2aOP-4** Generalize the success to another task
	2aYP-5 Express goals and follow through with them.	**2aOP-5** Set simple goals that extend over time, make plans and follow through
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Try a different way to stack blocks after a tower falls over • Look for the missing piece in a puzzle • State, "I worked hard on that picture." • Tell an adult, I'm going to get dressed after I eat my breakfast." • Finish reading a book while others move to play in a different area • State, "I was really strong to lift that box." or "Look at the picture I made!" • Tell an adult, "I'm going to write my brother a letter", then go to the writing area and complete a letter	• Work on a puzzle until all pieces have been placed • Tell a child, "I'll be right there, I'm almost finished." • Rebuild a block tower after the initial attempt fell • Try to cut around a shape again after first one was cut in half • Keep painting at the easel even after a friend approaches to show a new object or toy • Make a plan to create a train from cartons and be the conductor, driving to Disney World, and work on this project for several days
SAMPLING OF PROFESSIONALS' PRACTICES	• Play background music to minimize distractions • Include sustained play time within the daily schedule • Encourage children to continue working on a project from one day to the next (not requiring clean-up on specific creations) • Ask questions that encourage children to finish a task, "What will you do next?" • Ask probing questions about a child's work	• Comment on children's attentiveness or persistence to a task • Use strategies to help children pay attention, such as clapping hands or saying "Look at me." • Create opportunities for children to develop a project that will last over time. Include research, input on design and finally, the creation. For example, with the children, research ways to create a garden; decide what flowers or vegetables to plant; prepare the soil and plant the seeds; water and weed; and observe growth over time

APL2b: Task Analysis: Children will identify the steps needed to achieve a goal.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**2baI-1** Demonstrate familiarity with routines, objects, and materials	**2bYT-1** Observe another's actions and replicate	**2bOT-1** Notice similarities and differences between tasks
		2bYT-2 Anticipate the next step of a familiar routine or activity	**2bOT-2** Describe the sequence of a familiar routine
		2bYT-3 Use a variety of ways to meet a goal	**2bOT-3** Make choices to achieve a goal
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Show recognition of a specific toy or object • Quiet when comforted with a familiar doll or stuffed animal • Lift legs for diaper changing • Reach for familiar adult or object	• Watch others' actions and use simple phrases to describe • Make a block tower after watching another child build with blocks • Hold out hands to be dried after washing • Imitate hand movements to a song or finger-play after watching adult or other children	• Describe what we do first, next, last • "First, I'm going to fill this cup with sand and then I'm going to dump it into this bucket." • Tell another child, "We go outside after we eat snack." • Tell an adult, "Last time we had cheese crackers, now we're eating pretzels."
SAMPLING OF PROFESSIONALS' PRACTICES	• Offer objects that are familiar to calm or soothe • Remind infant of past uses while playing or experiencing an activity "Remember, you tasted this yesterday." • Provide toys that can be used in more than one way • Talk to children during routines, describing the steps you are taking to complete the task • Provide a variety of safe and interesting toys for exploration	• Describe actions as they are being completed • Talk about the steps to an activity, "First we'll turn on the water, then we'll put on soap…." • Model positive behaviors or actions • Praise child or others for positive actions • Use self talk to describe consideration of a different way to do things, "Hmmm, that didn't work, I think I'll try to do it this way."	• Describe how actions are alike or different, "This boat floated just like the other one." or "I used the red crayon for this circle and the blue crayon on this circle." • Describe the steps to a routine, leaving out the end of a step to allow children to complete it, "First, we sing our good morning song, then we…" (ask children to tell you what's next) • Remind children of the daily schedule, "After lunch we read a story, then take a nap." • Use self talk to describe ways to achieve a goal, "I wonder what I can use to make this taller?"

APL 2: CONSTRUCTING, ORGANIZING, AND APPLYING KNOWLEDGE

APL2b: Task Analysis: Children will identify the steps needed to achieve a goal.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**2bYP-1** Consider different ways to approach the same task with adult help	**2bOP-1** Demonstrate understanding that a task can be achieved in multiple ways
	2bYP-2 With adult support, develop the steps needed to complete a simple task	**2bOP-2** Break down multi-part tasks into steps
	2bYP-3 Express short term goals or plans and follow through with them	**2bOP-3** Independently identify and seek things needed to complete activities or tasks
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• State "I'm going to make a snake." with play dough • Tell an adult the types of blocks needed to build a house, "I need the long blocks to make the walls and the short ones to make the windows." • Tell an adult an idea for completing a task, "We could put this on the baby to make a hat." • State, "I'm going to play with the babies after I take my nap."	• Identify an easier way to complete a task • Gather needed supplies to make a block town or a birthday cake • Say, "Now I'm going roll the playdough with my hands instead of the rolling pin." • Look for the last puzzle piece to add • Say, "I need to add one more tree on this picture."
SAMPLING OF PROFESSIONALS' PRACTICES	• Ask questions like, "What should we do next? What's the first thing we need to do? What's the last thing we need to do?" • Introduce new materials to children before putting them in learning centers for play • Ask children where they are going to play before free play begins • Ask children where they played and what they did there (after play time) • Write about the steps of an activity as you describe them, then check them off with the children as they are completed, "OK, we just got out our paper and crayons, next it says we are going to draw our families…"	• Introduce children to new materials and how they might use them • Seek children's ideas and accept different perspectives and ideas, indicating all are valuable • Ask what materials might be needed to complete an activity, "The table's almost set. What else do we need? What's missing?" • Use self-talk to describe the steps to a goal, "I am going to make scrambled eggs. "First we break the eggs, then we beat them, next they go in the pan…." • Create a book with children that describes an experience with each page representing a part or step of the experience

APL2c: Reasoning and Problem Solving: Children will identify and develop strategies for solving simple problems.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**2cI-1** Notice effect of own actions when interacting with a variety of objects and people	**2cYT-1** Observe others' actions with objects and materials	**2cOT-1** Repeat action to obtain a specific effect
	2cI-2 Use an object in more than one way	**2cYT-2** Use trial and error to complete a task	**2cOT-2** Try a new way to solve a problem
	2cI-3 Purposely complete actions to make something happen	**2cYT-3** Repeat action to produce an effect or response	**2cOT-3** Purposely complete actions to make something happen
	2cI-4 Use an object, action, or adult to accomplish tasks, such as pulling a blanket to reach a toy or pushing a button to hear a sound.	**2cYT-4** Experiment to find a solution to a problem	**2cOT-4** Imitate others' actions to complete a task or activities
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Scoot across the room to reach a toy • Drop a block, then a rattle to watch the effect • Explore the characteristics of different objects	• Watch and imitate another child who is jumping up and down • Search for items that are missing • Press the knob on a pop-up toy to make it open • Bang on a drum over and over to make a loud noise	• Pour water from a cup to watch what happens • Ask, "why?" • Be observant about children's actions and extend their ideas through materials or interactions • Push a cart around an obstacle to move it to a particular place
SAMPLING OF PROFESSIONALS' PRACTICES	• Acknowledge and encourage new learning by each child • Stay near child to offer support as needed	• Wait for the child to seek help before offering it • Describe the child's actions to elicit a response such as "You made the toy pop. How did you do that?"	• Guide the learning process rather than providing solutions • Ask open-ended questions that prompt a child to think about cause and effect • Model different ways to use materials and encourage children to do the same

APL 2: CONSTRUCTING, ORGANIZING, AND APPLYING KNOWLEDGE

APL2c: Reasoning and Problem Solving: Children will identify and develop strategies for solving simple problems.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**2cYP-1** Experiment with similar actions on different objects	**2cOP-1** Apply prior knowledge and experiences to new ideas and activities
	2cYP-2 Experiment with a variety of strategies to solve a problem	**2cOP-2** Describe the steps they will use to solve a problem
	2cYP-3 Apply previously-successful strategies to complete a task	**2cOP-3** Evaluate different strategies for problem solving and select the strategy they feel will work without trying it
	2cYP-4 Seek and make use of ideas and help from adults and peers to solve problems	**2cOP-4** Ask specific questions of adult or peer to solve a problem
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Ask, "How can I get this paint off my pants?" • Try to pour sand into a small cup after pouring it into a bucket • Try to reach a toy by first stretching, then getting a stick to push it within reach • Tell an adult, "We tried to put all the pencils in this can, but they didn't fit. We are going to use this one."	• Tell an adult, "I think we can make that smaller by cutting off this end." • Respond to, "Should we use the large or small brush to paint this shape?" • Suggest more than one way to reach an object, First, "We could use this stick to get it or climb on the stool. I'll try the stick first."
SAMPLING OF PROFESSIONALS' PRACTICES	• Model curiosity, "I wonder what would happen if…" • Include materials that encourage children to explore and manipulate them • Add toys or materials that can be used in different ways • Respond positively when a child tries something new and makes a mistake, "That was a great try, how could you do that a little differently to make it work?"	• Provide opportunities for children to gather to discuss a problem and suggest ways to resolve • Help children consider different ways to solve a problem, "That's one way, is there another idea?" • Brainstorm ways to complete a task • Ask, "How can we find out about that idea?" • Make a book with children's drawings and a summary of a completed task or experience "First, we read the book about apples, then we went to the apple orchard to pick apples, then we made applesauce."

APL 3: WONDERMENT AND INVESTIGATION

APL3a: Curiosity, Invention, and Initiative: Children will show eagerness, imagination, and creativity as they try new tasks.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**3aI-1** Show interest and excitement while exploring new experiences in familiar settings	**3aYT-1** Delight in finding new properties and uses for familiar objects and experiences	**3aOT-1** Invent new uses for materials other than those originally intended
	3aI-1 Explore materials by using their senses	**3aYT-2** Gesture to adults to describe or name new objects or toys	**3aOT-2** Ask short questions to learn new information and show interest in routines and daily activities
	3aI-1 Reach for the same objects or toys repeatedly	**3aYT-3** Indicate preferences for objects or activities	**3aOT-3** Be insistent about preferences
	3aI-1 Try a new action with a familiar object	**3aYT-4** Delight in finding different and unique ways to use familiar objects	**3aOT-4** Express joy or satisfaction through simple, actions, gestures, and words
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Pick up objects and put them in mouth • Watch another performing an action • Show interest in fingers or toes • Touch and explore adults' characteristics to learn about them	• Demonstrate excitement about trying something new • Point to new objects for adults to name or describe • Choose the same book over and over • Show a preference for a particular doll-baby, carrying it around • Climb up and slide down the slide, clapping after slide down	• Show eagerness and curiosity as a learner • Tell an adult "no" • Demand the blue cup while refusing to drink from the red cup • Pick (or request) the same shirt to wear every day • Ask why and how questions • Clap and wiggle with joy while playing a simple game • Say, "I like doing this puzzle."
SAMPLING OF PROFESSIONALS' PRACTICES	• Place infants near each other to encourage interest in others • Include mirrors in areas where children can look at themselves • Make eye contact when completing routines • Take children outside for sensory play and exploration	• Offer toys and materials with different textures and sounds • Reinforce children's attempts to try new things by smiling and praising • Allow time for exploration throughout the day • Name toys and activities	• Provide different types of books for children to read • Make available creative materials such as play dough, paint or crayons • Rotate or add new materials to learning centers periodically • Create new scenarios in the dramatic play area with new props and equipment, such as a pet store, doctor's office or ice cream shop

APL 3: WONDERMENT AND INVESTIGATION

APL3a: Curiosity, Invention, and Initiative: Children will show eagerness, imagination, and creativity as they try new tasks.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**3aYP-1** Demonstrate willingness to participate in both familiar and new experiences	**3aOP-1** Show eagerness to learn about and discuss new topics, ideas and tasks
	3aYP-2 Ask questions to obtain clarification	**3aOP-2** Ask questions to understand a new concept
	3aYP-3 Make choices and complete some independent activities	**3aOP-3** Show independence and purpose when making choices.
	3aYP-4 Discover things that amaze them and seek to share them with others	**3aOP-4** Use complex and varied language to share ideas and influence others during play
		3aOP-5 Select and carry out activities without adult prompting
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Show interest in and express that interest to adults and peers, "Look at this bug I found on the ground." • Ask questions about the people and things around them • When a new student comes to class, ask why and where they came from	• Ask questions about future events • Choose different ways to explore things (such as using a magnifying glass or a bug jar to examine an insect) • Show interest in a growing range of topics, ideas, and tasks, and determine new and intriguing ways to explore them • Demonstrate interest in learning new skills; may indicate interest in using new materials (such as gel pens or glitter glue) to complete tasks
SAMPLING OF PROFESSIONALS' PRACTICES	• Allow children to move materials from one learning area to another • Provide a wide variety of objects, experiences, and exploration from different cultures and family types • Listen and respond to children as they share thoughts. • Provide props and pictures to assist children in expressing thoughts using unknown vocabulary	• Use "I wonder" statements to encourage children's creativity with use of objects • Provide materials that will assist a child's expression of a memory. • Encourage conversation about their memory to facilitate inquiry • Ask children to communicate what they like or dislike and encourage them to express why. • Use facial expressions to reflect interest in what the child is communicating

APL3b: Risk-Taking and Flexibility: Children will demonstrate a willingness to take risks and try new things.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**3bI-1** Look to adults for reassurance when trying new things	**3bYT-1** Move away from an adult to try new things but check in frequently	**3bOT-1** Explore environment freely with an adult nearby
	3bI-2 Notice changes in the environment	**3bYT-2** React to unexpected events with laughter or interest	**3bOT-2** Transition to new activities with adult encouragement
	3bI-3 Try to do things that are hard (such as crawl or walk) looking to adults for reassurance	**3bYT-3** Show interest in toys that offer a challenge and try to figure out how they work and how to use them	**3bOT-3** Demonstrate a willingness to participate in new experiences
	3bI-4 Seek to discover where something was and where it might be (object permanence)	**3bYT-4** Seek new experiences that create joy and excitement	**3bOT-4** Accept changes in plans and schedules with minimal opposition
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Explore new experiences both indoors and outdoors • Try to crawl, walk or climb, either with or without adult assistance • Try to climb out of crib or on top of chairs and furniture to experience new perspectives	• Use facial expressons to indicate willingness to transition from activity to activity • Say "NO" initially but shift to another activity with little duress • Indicate interest in new toys when presented, using senses to examine them • Look for resassurance from adults to proceed to unknown tasks	• Acknowledge a mistake and suggest a remedy • After gentle encouragement, move freely from one activity to another • Use a picture schedule to shift from activity to activity • Approach a challenge with confidence, "I can do it!"
SAMPLING OF PROFESSIONALS' PRACTICES	• Provide infants support and assurance that they are safe • Use positive facial expressions to support children in explorations • Be available to provide physical or emotional support to children as needed • Provide toys that make noise, pop, or change in some way to provoke thoughts about how something works	• Show interest in children's work and indicate joy or disappointment in successes and challenges • Model flexibility, trying other ways of completing something or needing to try again, "Uh-oh my block tower fell down, I need to try it again" • Encourage children to "get back up" after falling or failing on a task and reassure them that they are ok	• Consider different ways to introduce new experiences or ideas to accommodate children's different approaches to learning • Show or model flexibility, "You'd like 5 more minutes to play? Ok…" • Show pleasure in the ways children tackle tasks and encouraging them to keep working when unsuccessful • Establish a regular yet flexible routine

APL 3: WONDERMENT AND INVESTIGATION

APL3b: Risk-Taking and Flexibility: Children will demonstrate a willingness to take risks and try new things.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**3bYP-1** Choose to participate in an increasing variety of familiar and new experiences	**3bOP-1** Approach new experiences, topics, and ideas with interest
	3bYP-2 Ask to participate in new experiences they have observed or heard about	**3bOP-2** Express a belief that they can do things that are hard
	3bYP-3 With support and guidance, differentiate between appropriate and inappropriate risk taking	**3bOP-3** Try things they are not sure they can do while avoiding dangerous risks
	3bYP-4 Try different roles or play approaches with adult support	**3bOP-4** Take on new roles in a group setting
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Explore a new climbing structure on the playground • Follow simple commands to transition from one activity to another • Express a confidence in their ability to do something by themselves • Express verbally, step-by-step, how they did something • Express a desire to learn something increasingly complicated and complex believing they are able to do it	• Independently seek new challenges • Approach new experiences independently and offer explanation(s) of how they learned something new • Express desire to learn new, challenging tasks. They will offer suggestions on how to proceed • Explain how to accomplish new and challenging tasks to adults or peers
SAMPLING OF PROFESSIONALS' PRACTICES	• Help children think through alternative strategies, "Rosie is playing with that ball now, can you find another one?" • Support children's own ways to solve problems and let them know that there is more than one "right way" to do something • Try different ways to introduce change and variety (provide advance warning of changes in routine, using pictures where possible)	• Plan for and recognize different interest levels and abilities to tolerate materials, mistakes, and engagement with other children • Accommodate differences by being flexible and introducing more challenging experiences gradually • Ask probing questions when children appear to be confused to help them understand and build meaningful connections • Model constructive reactions to mistakes explaining that everyone makes them from time to time

Adaptations and Accommodations for Children with Unique Needs

Environment

- Use markers such as bookcases or other furniture, rugs, and colored tape on the floor to represent boundaries between spaces and learning areas.
- Arrange the classroom furnishings so all children can move and maneuver around the room and learning centers by themselves.
- Provide hands-on materials and experiences.
- Use visuals to designate when an area is full.
- Include authentic cultural artifacts.

Daily Schedule and Routines

- Vary the pace and duration of activities, alternating between active and calming activities to keep children engaged and to meet their need for movement.
- Use visual cues (hands-on demonstrations and modeling, objects, pictures) as needed to help the child to better grasp the directions.
- Create consistent, predictable, and structured classroom routines.
- Give warnings ahead of transitions.

Materials

- Provide open-ended materials, such as clay, blocks, and puzzles.
- Use lots of visuals such as picture schedules, choice boards and picture cards that designate activities.
- Include big books, board books, flannel board sets, books on CD, etc.
- Offer soft comfortable places such as pillows, bean bags, cushions, carpet, etc.
- Use materials with contrasting colors and/or textures.

Instruction and Activities

- Teach only a small number of 'key' skills at one time.
- Teach children how to take turns, how to play and how to use social routines such as saying hello or asking to play.
- Demonstrate chores or activities rather than relying on verbal explanations.
- Provide lots of repetition and practice.
- Accommodate the pace of learning to match all children's abilities.
- Monitor play behavior closely.

Executive function are those skills that help children control their thoughts and actions. They help children plan and prioritize tasks, pay attention and avoid distractions; remember information; and flexibly respond to different situations and rules. Executive function is often compared to air traffic control at a busy airport. Air traffic controllers coordinate planes' safe departures and landing from different runways by communicating with pilots, weather forecasters, navigators, etc. to guide their decisions. Early learning professionals guide children's navigation when, through relationships, they help them cope with stress; encourage creativity and active play; build on their skills to learn new information; and offer opportunities for repeated skill practice.

Center on the Developing Child at Harvard University (2011). *Building the Brain's "Air Traffic Control" System: How Early Experiences Shape the Development of Executive Function: Working Paper No. 11.*

A Sampling of Foundational Practices

Environment and Materials

- Set up learning areas that encourage children to use materials creatively, in varying ways, to achieve a task.
- Include areas for group and individual play.
- Use though-provoking materials that have are not limited to a single right answer.
- Arrange locations where children can set aside projects to continue their work from day to day.
- Add props or additional materials to extend children's thinking and exploration.
- Set up situations that require or encourage children to work together.
- Include materials that appeal to all of the children's senses.

Instruction

- Model interest and affection to children.
- Ask open-ended questions that stimulate children's problem solving and creativity.
- Encourage children to talk and share with each other about interests or findings.
- Ask children to make advance plans of their play strategy.
- Call group meetings to discuss a problem or situation that would benefit from a group decision.
- Plan experiences where children role play situations or act out stories.
- Ask children what they already know and what more they'd like to learn about specific topics.

Children's Books

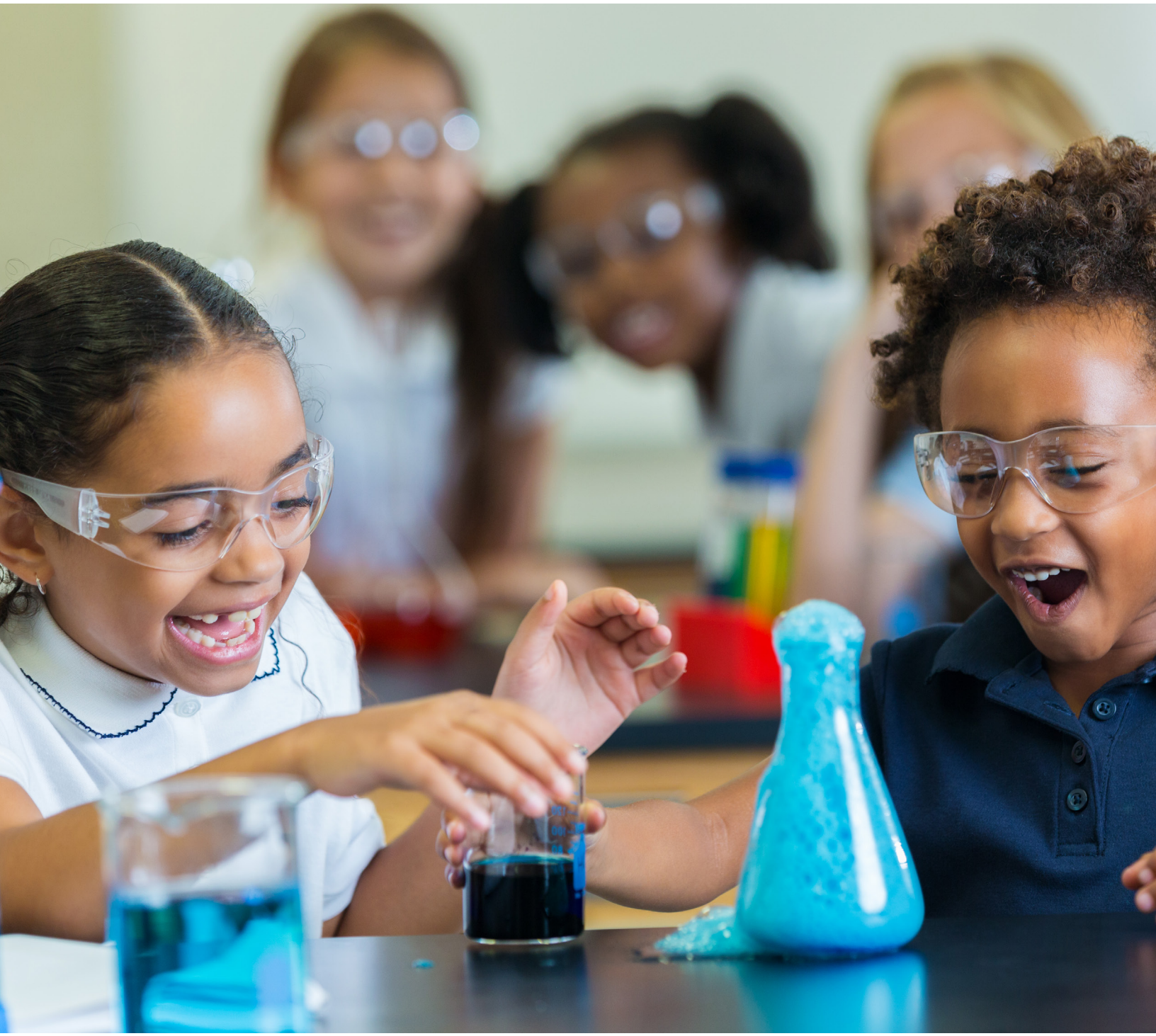
- Not a Box by Antoinette Portis
- The Wonder Bear by Tao Nyeu
- Mom, What's That? by Atlas Jordan
- If Chocolate Were Purple by Jen Barton
- Leaf by Stephen Michael King
- Big Words for Little People by Jamie Lee Curtis
- Toot and Puddle, You Are My Sunshine by Holly Hobbie
- The Jazz Fly series by Gollub
- Where the Wild Things Are by Maurice Sendak
- Pretend by Jennifer Placas
- I Won't Give Up by David Kenney
- I Will Surprise my Friend! By Mo Willems
- Press Here by Herve Tullet
- Whose Knees Are These? by Jabari Asim
- Giraffes Can't Dance by Giles Andreae
- Clive and his Babies by Jessica Spanyol
- Horrible Bear! by Ame Dyckman
- Stuck by Oliver Jeffers

Adult Resources

- The Role of Play in Promoting Children's Positive Approaches to Learning. Marilou Hyson, PhD.
  https://www.researchconnections.org/files/childcare/pdf/PlayandApproachestoLearning-MarilouHyson-1.pdf
- Head Start Effective Practice Guide: Approaches to Learning.
  https://eclkc.ohs.acf.hhs.gov/school-readiness/effective-practice-guides/approaches-learning

Family Engagement

- Display children's work in family-accessible areas.
- Send home information about the stages of play.
- Invite family members to help complete a longer-term or more complex project.
- Create a book or display about a special project or event.
- Post a "question of the day" for children and their family adults to ponder.



SCIENCE EXPLORATION AND KNOWLEDGE (SEK)

Exploring the World Around Me

Science is not just a set of facts for children to learn; it is a process or a way of thinking and understanding the world. This process begins with observations and moves through predictions, testing those predictions and then making sense of those observations. "Children acquire scientific knowledge by construction, not by instruction. (Kamii and Lee-Katz, 1983). When teachers encourage children's exploration and use of the scientific process, they promote the development of thinking and problem solving skills.

Rich science experiences also include mastery of science concepts in life science, physical thinking, earth and sky, engineering and technology. Investigation of these topics is best experienced through direct interaction with the environment in which children live and play. Professionals who pose open-ended questions or offer opportunities for children to explore their world spark new questions, new ideas, and new directions to explore. Both content and process are essential aspects of children's learning.

SEK 1 **Science Concepts**

SEK1a: Science
SEK1b: Biological Science
SEK1c: Physical Science
SEK1d: Earth and Space Science
SEK1e: Environment and Ecology

SEK 2 **Technology**

SEK2a: Use of Tools
SEK2b: Media Literacy
SEK2c: Digital Citizenship
SEK2d: Computational Thinking

SEK 3 **Engineering Processes**

Did you know?

Children are natural engineers.

They like to explore and figure out how things work. Infants and toddlers shake objects or move them around. They may make towers with large blocks. Older toddlers and preschoolers may take things apart and put them back together or send cars and trucks down ramps to watch them move. They may plan and then carry out the construction of buildings with different kinds of blocks, and they might put together different types of materials to make sculptures or unique creations.

The engineering process engages children in activities that ask them to 1) ask; 2) imagine; 3) plan; 4) create; 5) improve. Does your learning environment include materials that encourage children to plan and create designs or solutions to problems? What experiences can you create to help children become budding scientists and engineers?

SEK1a: Scientific Inquiry: Children will gain knowledge through exploration and discovery.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**1aI-1** Use senses to explore objects	**1aYT-1** Use the five senses to observe and explore objects in the environment	**1aOT-1** Use the senses to describe objects, people, or actions
	1aI-2 Show interest in a variety of objects, materials and activities	**1aYT-2** Notice that something happens as a result of an action	**1aOT-2** Use observation and experimentation to answer questions
	1aI-3 Handle and manipulate objects to learn about them	**1aYT-3** Interact with materials and the environment to learn new ideas	**1aOT-3** Ask questions to find out why
	1aI-4 Repeat action to learn about its impact	**1aYT-4** Repeat actions to achieve a desired effect	**1aOT-4** Show understanding of cause and effect
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Drop a spoon, wait for adult to give it back, and drop again • Explore toys and materials with mouth or hands • Gaze intently at objects • Move object from one hand to the other • Shake objects	• Touch, taste or smell a new object to learn about it • Drop objects from different heights to see what happens • Try different things with objects to see how they work • Notice things that are happening in the environment	• Use a specific toy or engage in an activity for an extended period of time. • Use the senses to describe objects or action, "I hear an airplane." or "That smells yucky." • Watch the way the rain falls on the window • Ask questions about objects or events • Use simple tools to explore objects • Tell a friend, "Watch what happens when I drop this."
SAMPLING OF PROFESSIONALS' PRACTICES	• Place objects at varying distances and positions within infants' reach • Rotate toys to encourage infants' exploration of new things • Provide toys and objects of different textures, colors and patterns	• Provide sensory table or area for children to pour or manipulate rice, soil, water • Tell children to "look out the window to watch the rain" and describe what you see • Talk about what's happening during a walk, "Look at that squirrel climbing up the tree."	• Provide a science or exploratory area with a variety of natural materials such as leaves, rocks or shells; rotate the materials • Ask open-ended questions to spark children's thinking, "What are those dark clouds telling us?" • After a walk where children noticed rain puddles and worms, invite them to draw or sculpt what they saw, add books about worms, ask what else they want to know and help them research information about worms on a laptop or computer • Include magnifying glasses, color paddles, collection jars

SEK 1: SCIENCE CONCEPTS

SEK1a: Scientific Inquiry: Children will gain knowledge through exploration and discovery.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**1aYP-1** Identify and differentiate the five senses	**1aOP-1** Use the five senses to collect information
	1aYP-2 Make predictions based on past experiences	**1aOP-2** Try new approaches when results differ from what is expected
	1aYP-3 Participate in experiments to learn new information	**1aOP-3** Form conclusions based on observable actions or results
	1aYP-4 Discuss potential cause and effect relationships	**1aOP-4** Predict outcomes based on cause and effect, "If I…., then I…."
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Take a toy apart to see how it works or what is inside • Tell a friend, "I think the tower might fall, it's really high." • Put different types of objects in the water to see if they will sink or float • Investigate and describe a toy using the senses. "I hear it rattling but it doesn't smell. It feels rough." • Ask an adult why the lid is warped and doesn't fit on the box	• Notice the puddles on the sidewalk and say, "It rained last night." • Explain that the block tower fell because it was too high • Turn the pieces of a puzzle around to fit • Notice and describe the results of a science experiment. "The celery turned blue after we added the food coloring." • Explain to an adult what might happen when ice is left out of the freezer • Predict what will happen to the paint colors when they are mixed
SAMPLING OF PROFESSIONALS' PRACTICES	• Model a sense of wonder and excitement about nature • Create project-based opportunities where children design tools or experiences over time • Encourage children to use their sense to discover information by asking, "What do you see or hear? How does that feel? Does it have a smell?" • Ask children to predict what might happen next • Conduct simple experiments and ask children to record their findings through a drawing or dictated story	• Rotate the items in the science area to encourage children's ongoing attention and exploration • Ask children to predict what might happen before conducting science experiments, "What do you think might happen if I drop this cotton into the water?" • Ask children to identify what they know about a topic and what they would like to learn. Provide the tools and materials for them to research or explore to find out more • Provide opportunities for children to design and create projects over time, leaving them available from day to day • Turn puzzle pieces around when they don't fit on the first try

SEK1b: Biological Science: Children will differentiate between living and non-living things and their characteristics.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**1bI-1** Show interest and curiosity in the world	**1bYT-1** Explore a variety of living and non-living things	**1bOT-1** Explore the characteristics of living and non-living things
	1bI-2 Indicate basic needs through crying	**1bYT-2** Verbalize needs through short phrases	**1bOT-2** Show understanding that plants and animals have basic needs
	1bI-3 Explore and discover different body parts	**1bYT-3** Show or use specific body parts when asked by adult	**1bOT-3** Name body parts
	1bI-4 Respond to characteristics of living things	**1bYT-4** Differentiate between adults and babies	**1bOT-4** Observe plants' and animals' growth and change over time
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Notice other children while on the playground or on a walk • Notice objects and events in the indoor and outdoor environments • Reach for people • Startle at loud or angry voices • Touch photos of animals and their babies in books • Touch toes while lying on back • Show interest in adults' games that identify body parts, like "This Little Piggy…"	• Watch fish swimming in a tank or birds at a bird feeder • Stoop down to look at a dandelion • Tell an adult, "More please." • Point to body parts when asked • Point to animal babies in a book	• Kneel on the ground to watch an earthworm move in soil • Plant a seed and watch its growth over time • Look at a leaf or flower with a magnifying glass • Go on a nature walk to collect a variety of leaves • Name basic body parts • Help to water flowers or feed fish • Tell an adult, "That's the puppy." while reading a book
SAMPLING OF PROFESSIONALS' PRACTICES	• Include non-toxic plants or small pets in your environment, considering allergies • Read books that show photos of living and non living things • Provide varied materials and objects for children to explore • Name body parts while changing diapers or clothing • Describe child's characteristics, "You've got such long fingers!"	• Describe the feeding and care routines of pets as you conduct them • Set up a birdfeeder outside near a window • Play finger plays and sing songs that include body parts • Name animals and their babies while reading or post photos of animals around the room • Make animal sounds as you name the animal, "The cow says, moo."	• Talk about what children are seeing during nature walks • Add binoculars and magnifying glasses to your outside play equipment • Plant seeds or a small garden and watch the plants grow and involve the children in watering and weeding • Play games or sing songs that name or move body parts • Include stuffed animals in the reading and dramatic play area • Read The Very Hungry Caterpillar by Eric Carle

SEK 1: SCIENCE CONCEPTS

SEK1b: Biological Science: Children will differentiate between living and non-living things and their characteristics.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**1bYP-1** Sort living and non-living things by one or more basic characteristics	**1bOP-1** Describe differences between living and non-living things
	1bYP-2 With adult support, describe how living things depend on other non-living and living things to survive	**1bOP-2** Describe how living things interact with the environment and its conditions to survive
	1bYP-3 Explore the function of body parts	**1bOP-3** Describe the functions of body parts
	1bYP-4 Explain how plants and animals change over time	**1bOP-4** Describe the predictable patterns for life cycles of plants and animals
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Notice that the food and water for a pet needs to be replenished • Tell a friend that plants need water to grow • Notice a caterpillar eating and leaf and say, "Look, he's hungry." • Play body movement games such as Hokey Pokey or relay races • Tell an adult, "My legs are strong so I can run fast." • Chart or make an observational drawing about the growth of a plant	• Sort cards in a lotto or folder game by living and non-living • Sort photos or pictures into animals that move in the sky, on land, or in the water • Tell another child, "I have a bracelet on my wrist." or "I scraped my elbow." • Pat head or rub tummy during a simplified Simon Says game • Tell an adult, "We need to sleep so we get energy to play." • Tell an adult, "Seeds grow into plants." or "Birds' eggs hatch into babies."
SAMPLING OF PROFESSIONALS' PRACTICES	• Talk about the different characteristics of birds, mammals, reptiles, "Reptiles have scales to help them live in dry places, fish use gills to breathe, birds fly with wings." • Show children's baby pictures and current pictures and talk about the growth changes • Provide games where children match different kinds of animal and their babies or the animal to their habitats • Investigate the characteristics of rocks and shells on the internet	• Describe the different habitats and habits of animals, "Bears hibernate, bats fly at night, frogs live on both land and water." • Take a trip to a local zoo or farm • Use sequence cards to demonstrate the stages of plant growth or eggs hatching • Use books or the internet to talk about the way humans breathe; practice taking deep breaths and blowing out • Display pictures or cards that children can sort into living or non-living

SEK1c: Physical Science: Children will demonstrate emerging understanding of matter and energy.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**1cI-1** Explore and discover the motion of objects	**1cYT-1** Explore the ways in which objects move	**1cOT-1** Explore different ways that familiar objects can move or be moved
	1cI-2 Handle objects to learn about their characteristics or properties	**1cYT-2** Begin to categorize objects according to their attributes	**1cOT-2** Describe the physical attributes of objects
		1cYT-3 Explore the properties of liquids and solids	**1cOT-3** Categorize objects as liquid or solid
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Push the knob on a pop-up toy to make it open • Press the button on a doll or stuffed animal to hear its sound • Rock on a rocking horse or push a push toy to make it move • Shake toys to watch what happens	• Experiment with riding toys, making them go fast or slow • Add objects to a wagon and try to pull it • Make cars move around a track • Notice differences in fabrics or materials, such as cotton balls are soft or ice feels cold • Play with water, sand or soil	• Notice that water flows through a sieve faster than sand • Move a car along the floor or on a track or race it in the air • Pick up a beach ball and say, "This is so big." • Try to lift a box and say, "Too heavy." • Make mud pies
SAMPLING OF PROFESSIONALS' PRACTICES	• Read books that have texture inserts and encourage children to feel • Roll a ball to infant • Provide toys that require infants to push buttons or press to make them open or make noise • Include rattles and small toys that move or shake or make noise	• Include a sensory table with pouring, sifting and filling containers • Offer toys and objects that move at different speeds and in different ways • Ask children to lift different sized objects and talk about which one is heavier or bigger • Describe children's actions, "You are pushing that truck across the room." • Provide materials with different textures	• Construct musical instruments with rubber bands or paper rolls and rice or beans • Include sensory boxes that have objects with different textures in the science area • Add a scale and objects of different weights to the science area • Include cars and trucks of different sizes in the block area and outside • Talk about the different attributes of milk or water and blocks or solids

SEK 1: SCIENCE CONCEPTS

SEK1c: Physical Science: Children will demonstrate emerging understanding of matter and energy.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**1cYP-1** Notice strategies that impact how balls, cars, and other objects can change speed	**1cOP-1** Experiment with cars, balls, and other objects to determine which is faster
	1cYP-2 Sort and describe objects according to their physical properties, including size, shape, texture, and color	**1cOP-2** Notice and explain changes in physical properties of objects as a result of outside influences
	1cYP-3 Investigate and identify the differences between liquids and solids	**1cOP-3** Describe characteristics of solids and liquids
	1cYP-4 Explore the properties of light and sound, with adult guidance	**1cOP-4** Investigate the properties of light and sound
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Try to hit a ball with a stick or a bat • Push cars or trucks down a ramp • Touch an object inside a sensory bag and identify it as cotton or a pine cone • Sort different nuts or leaves at the science table according to type or color • Watch, over time, an ice cube melt and notice when it turns to water • Bang on drums of different sizes and types to notice the differences in sound	• Race cars down different sized ramps with a friend to see whose is fastest • Use loose parts to put together objects • Ask if the sliding board is too hot to slide down • Use a stick like a lever to move things • Predict which objects might float during an experiment • Stir water into sand and talk about it will form a sand castle • Watch what happens with magnets • Create shadows with flashlights
SAMPLING OF PROFESSIONALS' PRACTICES	• Provide ramps and inclines in the block area • Conduct experiments with different size cars and ramps to see which comes first • Put water, soil, ice, or sand in the sensory table, along with cups and funnels and shovels • Add water and sand tables for outside play • Ask children to reach into a bag with objects of different textures and sizes and guess what they are • Ask children to identify different sounds	• Conduct science experiments with light and sound, and sink and float • Graph results of experiments • Conduct cooking experiences that show what happens when water is heated or when ingredients are combined • Add prisms, color paddles, and crystals to the science area

SEK1d: Earth and Space Science: Children will demonstrate emerging understanding of the earth and atmosphere.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**1dI-1** Explore textures and sounds found in nature	**1dYT-1** Use basic tools to explore soil and sand	**1dOT-1** Explore the properties of soil and sand
	1dI-2 Enjoy water play	**1dYT-2** Engage in water play with tools such as cups and sieves	**1dOT-2** Begin to explore the properties of water through play
	1dI-3 Show interest in the earth and sky	**1dYT-3** Show interest or recognize objects that are in the sky	**1dOT-3** Name objects in the sky: stars, sun, moon, clouds
	1dI-4 Respond to changes in the temperature (weather)	**1dYT-4** Recognize different weather types	**1dOT-4** Match clothing needs to appropriate season or weather with adult assistance
		1dYT-5 Begin to differentiate day from night	**1dOT-5** Draw pictures that represent day or night
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Touch grass or sand • Attend to birds singing • Respond to light and darkness and anticipate routines with both (for example, dark = nap)	• Pack sand into a pail using hands or tools • Point to a bird as it lands on a tree • Look up at the sun and say, "sun-hot" • Talk about the changes in weather using simple vocabulary such as hot or cold • Splash in the bathtub or pour water from bottles in the water table	• Observe and discuss changes in day to day weather, "It's cold outside today." or "It's really cloudy, no sun today!" • Play with soil and water, combining to make mud pies • Point to a lake or pond, "I see water." • Ask an adult, "Do I need to wear pants today or can I wear shorts?" • Use dark paper and light crayons to draw a night picture or paint with soap flakes to make snow or clouds
SAMPLING OF PROFESSIONALS' PRACTICES	• Provide opportunities for children to grasp and move objects • Introduce children to water play using small tubs and a few basic toys • Point to and describe the sun or flowers growing during a walk • Tell a baby, "It's getting cold outside, we need to wear coats today." • Explain, as you prepare baby for nap, "I'm going to close the curtains so the dark room will help you sleep."	• Conduct a very simple sink-float experiment, using 1 or 2 objects, and talk about the outcome • Provide materials that children can mix and combine • Conduct very simple cooking experiences, explaining, "I am mixing water with flour to make dough." allowing children to try to stir • Describe the weather as children are getting dressed, "It's raining today. We will need our raincoats and umbrellas." or "It's raining today; we can't play outside." • Read books about day and night activities and characteristics, such as Good Night Moon by Margaret Wise Brown	• Create opportunities for children to investigate natural changes in the environment, snow melting, water evaporating, or water and soil combining • Sing "the Bear Went Over the Mountain" or "Jack and Jill" • Encourage creative use of materials, "What else can we do with that block?" • Dress a flannel board character for the weather during circle time • Introduce children to science vocabulary, solid, liquid, mixture, reaction • Talk about the things you do during the day and the things you do at night

SEK 1: SCIENCE CONCEPTS

SEK1d: Earth and Space Science: Children will demonstrate emerging understanding of the earth and atmosphere.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**1dYP-1** Describe the properties of earth materials, soil and sand	**1dOP-1** Compare and contrast the properties of natural materials, soil and sand
	1dYP-2 Investigate the properties of water through experimentation	**1dOP-2** Describe the properties and changes of water
	1dYP-3 Differentiate day and nighttime objects in the sky	**1dOP-3** Explore the characteristics of the sun and shadows, moon, clouds and stars
	1dYP-4 Describe changes in weather or seasons over time	**1dOP-4** Explain how weather and its changes impact daily life
	1dYP-5 Describe daytime and nighttime activities	**1dOP-5** Describe the day and night cycle
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Identify the different types of weather • Notice that the leaves on the trees are turning colors • Notice that the slide is hot on a warm and sunny day • Describe how the features of the sky change from day to night, "Look, it's getting dark outside, I see the moon." • Talk about the hill to climb during a walk or how high the mountain is in a picture • Describe properties of rocks, soil and mud, "This feels hard; this feels gooey." • Talk about the way snow melts when it's brought inside to warmth	• Tell an adult, "It's getting cold outside. I need to wear my hat and mittens." or "I need my sunscreen when it's so hot and sunny." • Tell another, "We can't go out to play today because it's raining." • Compare the colors and textures of sand and soil • Talk about the wind blowing the leaves off the trees • Explain that we pick up litter to keep our neighborhood clean • Notice the different sizes of shadows between adult and self during a walk
SAMPLING OF PROFESSIONALS' PRACTICES	• Include different types of natural materials for children to explore; water, sand or soil in the sensory table and shells, sticks, pinecones or acorns in a science area • Ask children to predict what might happen when water is added to sand or when an ice cube is left out on the table • Provide flashlights, color paddles and prisms for children to explore • Investigate the way flower petals change color when their stems are put into water with food coloring • Read books about the moon and space; add space travel to the dramatic play area	• Chart the phases of the moon • Conduct a time study with an ice cube, measuring the amount of melting every few minutes • Investigate what happens when water is dropped onto waxed paper • Provide play dough, toothpicks and other materials for children to create stars, sun, moon or planets • Make shaker bottles with water, oil and glitter or objects • Take children outside to dig for different types of dirt or soil, compare and graph or chart the differences

SEK1e: Environment and Ecology: Children will demonstrate emerging understanding of their impact on taking care of the world.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**1eI-1** Demonstrate joy in being outside	**1eYT-1** Show interest in nature	**1eOT-1** Respond to changes in the natural environment
		1eYT-2 Show an understanding of trash or things that need to be discarded	**1eOT-2** Participate in daily clean-up activities with adult direction
			1eOT-3 Participate in simple activities to protect the environment
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Crawl or move around in the grass • Look at birds, sky, flowers, animals during walks	• Bend down to look at or pick a flower • Look up to see or listen to birds • Put familiar items in their proper place • Take an item from an adult and put it into the trash	• Put away bikes, helmets and other outside toys • Sort trash and objects for recycling with adult help • Participate in garden planting or care • Re-use an object for another purpose • Make simple sun catchers with waxed paper and tissue paper
SAMPLING OF PROFESSIONALS' PRACTICES	• Take children for walks, describing what they hear and see • Give and describe objects with different textures for babies to feel, such as flowers, rocks (watch carefully to make sure they don't put them in their mouths)	• Model environmentally-responsive behavior such as no litter, recycling • Take children on a listening walk to look for or observe birds, flowers, squirrels • Talk about what you're doing when you recycle; "I'm going to put this in the recycling bin so it can be repurposed." • Use recycled materials for learning toys such as egg cartons for sorting or paper towel rolls for musical instruments	• Create a wildlife or garden area with plants that attract bees or birds • Model and explain how putting away outside toys protects them from the weather elements • Provide separate recycling and trash cans that help children separate trash • Make homemade play dough, paint or bubble soap, explaining how things can be made from home materials and don't need to be purchased • Go for a walk to pick up litter • Bring inside natural materials for children to explore

SEK 1: SCIENCE CONCEPTS

SEK1e: Environment and Ecology: Children will demonstrate emerging understanding of their impact on taking care of the world.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**1eYP-1** Recognize unique features in the environment	**1eOP-1** Describe how changes to the environment occur
	1eYP-2 Participate in activities that keep the environment clean	**1eOP-2** Discuss how actions positively and negatively impact the environment
	1eYP-3 Describe ways to protect the environment	**1eOP-3** Demonstrate conservation as part of daily routines
	1eYP-4 Differentiate the habitats where species live	**1eOP-4** Describe the features of habitats that species need for life
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Notice limbs that have blown down from a wind storm • Talk about the way an adult mowed the lawn or planted flowers • Sweep the sidewalk or rake leaves as part of environment clean-up • Help put the trash out • Explain that fish need to live in water; ants crawl on the ground • Participate in activities that demonstrate care for the environment • Explain that fish live in water and birds like to fly in the sky	• Notice a rainbow and research how it happens on the internet • Talk about what happens to fish if there is too much trash in the water • Help with sorting recycling into different categories • Turn over a piece of paper to color on both sides • Remind another child to turn off the water after they wash hands, saying "We have to be careful not to waste water." • Tell an adult that "Fish will die if they jump out of the water." or "Bats fly at night because that's when they can see best." • Tell how at least one plant or animal is important to the environment • Sort animal cards by their habitat
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Read books about Earth Day • Remind children to turn off lights or equipment when not in use • Check toys to make sure they are in good repair • Put out bins to sort recycling into paper, foil, plastic • Include natural materials for use during art • Collect rainwater and use to water plans	• Make a worm farm and record observations • Put a plastic cover or bag over a plant to make a mini green house • Take recycled cans or bottles to a recycling plant and use the money for a child-determined purchase • Save paper scraps for use in a collage or other art project • Make drums or other instruments from recycled materials • Read books about litter's impact on animals or the importance of taking care of the earth

SEK2a: Use of Tools: Children will use simple and more complex tools to accomplish a task.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**2aI-1** Manipulate toys, often with a purpose	**2aYT-1** Explore the use of simple tools to get results	**2aOT-1** Use simple tools to build knowledge and obtain a result
		2aYT-2 Explore simple technology tools	**2aOT-2** Include technology tools or toys during play
		2aYT-3 Observe the function of technology tools in the environment	**2aOT-3** Identify different types of technology
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Crawl or climb on furniture to reach a desired toy or object • Bang toys together or shake them to make noise • Use spoon or cup	• Hold a toy phone to ear • Push a button a toy to hear the sound • Hit the different buttons on a busy box to see what happens • Pull a string to bring a toy closer • Bang on tray with spoon to hear the sound it makes	• Manipulate simple tools like crayon, fork and spoon, with purpose • Use a toy phone to call someone • Play the notes on a toy piano to make a song • Choose the button on the busy box to watch a specific character appear • Pretend to take pictures with a play camera
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Include toys that require action like pushing buttons, shaking to make noise • Describe the reason you are performing a task, "I'm using this comb to smooth out your hair." • Offer spoons or cups to hold or use during feeding	• Describe what is happening when the child is performing an action, "You are making music when you tap that drum." • Offer non-toxic and washable crayons and paper for children to practice drawing • Provide toys that mimic technology such as pretend cell phones or tablets	• Include a variety of basic tools for children's use • Introduce play phones, microwaves, coffee makers, etc. in the dramatic play area • Model the use of a camera and add toy cameras for play • Ask children to push the button to find the hidden character • Talk about and model the uses of specific tools

SEK 2: TECHNOLOGY

SEK2a: Use of Tools: Children will use simple and more complex tools to accomplish a task.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**2aYP-1** Use tools to solve problems	**2aOP-1** Use or adapt appropriate tools and materials to create or solve problems
	2aYP-2 Use a variety of simple technology tools with purpose	**2aOP-2** Use technology tools to seek out information or an answer to a problem
	2aYP-3 Talk about the ways in which specific technology tools are used	**2aOP-3** Explain the purposes of specific technology tools
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Use a shovel to dig a hole • Use markers or pencil to write a story • Play a matching game on a tablet • Call the doctor on a pretend cell phone • Take pictures of a group of children with a camera • Explain that a firefighter uses a hose to put out a fire • Use the mouse of a computer	• Use a stick to move a bug so it can be inspected • Measure different sizes of cups to find out which one will fit in the small box • Use a laptop or table to gain information about bears and hibernation or how to make muffins • Ask Alexa, "What is the weather going to be today?" • Move the cursor on a computer screen
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Ask questions about how specific tasks might be accomplished, "What tool do you think would help us reach that toy?" or "Which kind of art tools do you want to use to draw a picture?" • Model the use of smart phone cameras and ask, "Can I take a picture of that building and send it to your family?" • Provide opportunities, with adult guidance, for children to use laptops or tablets to acquire information • Talk about the tools needed for specific professions, "Doctors use stethoscopes to hear your heart." or "Carpenters use hammers and nails to build."	• Provide varied types of tools in different learning areas: crayons, markers, pencils, stamps in the art area or pegs, laces, magnets in manipulatives • Use non-traditional tools like string to measure a table or blocks to determine height • Include time for children to use laptops or tablets to find out more about a specific topic • Post photos that show different types of technology and people using technological tools • Use musical instruments and music for children to express feelings

SEK2b: Media Literacy: Children will demonstrate an understanding of the types of information they are receiving through media.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	*Not yet an expectation. Children learn best through hands-on exploration and interaction with their world. The use of technology under two is discouraged. View Appendix Six for additional guidance on technology in early learning. *****		**2bOT-1** Begin to differentiate real and pretend **2bOT-2** Answer questions about whether events or ideas would really happen
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS			• Tell another while playing in the dramatic play area, "We can't really drink this juice." • Wear a doctor's coat and stethoscope, "I am going to be the doctor." • Ask an adult reader, "Can monkeys really jump like that?"
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS			• Preview books, songs and photos before they are shared with children to be prepared to ask and answer questions • Ask questions about real and pretend, "Do you think there are really monsters that live under your bed?" • Ask questions about realistic expectations, "Can you really jump all the way up to the sky?" or "Do you think cows can really jump over the moon?"

**Assistive technology equipment may benefit children with disabilities who are approximately 18 months and older.*

SEK 2: TECHNOLOGY

SEK2b: Media Literacy: Children will demonstrate an understanding of the types of information they are receiving through media.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**2bYP-1** Identify real and pretend in stories or movies	**2bOP-1** Differentiate between real or pretend objects or situations
	2bYP-2 Relate events or characters in a story to ones in real life	**2bOP-2** Discuss if information is realistic or could actually happen
	2bYP-3 Identify the way technology tools can be used for both entertainment and to acquire information	**2bOP-3** Describe the specific uses for technology tools
	2bYP-4 Predict what might be inside a package or a story based on pictures or appearance	**2bOP-4** Identify differences between packaging and what's inside
	2bYP-5 Ask questions about a story to gain more information or clarity	**2bOP-5** Discuss the ways one can find out more information
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Tell an adult after reading a story, "That happened to me." or "I can swim like that person." • Use a laptop to play a game • Draw a picture about a recent event or experience • Use words like laptop, internet, log on, ipad, printer • Look at a package and guess what type of toy is inside • Feel the shape of a package to identify the type of object within • Ask questions about why a character performed specific actions or what the photos in a book represent, "Why did that boy in the story laugh after he heard that song?"	• Tell a friend, "We can use the laptop to learn about worms." • Ask an adult, "Can I use the phone to take a picture?" • Talk about whether the packaging accurately indicates what is inside • Notice that the packaging represents a character differently than the actual character • Explain to an adult, "I drew it with big eyes because he has super powers." • Tell an adult, " I think I saw a picture about birds in the book we read last week." • Ask, "Why did that story talk about that child being afraid?" or "Why did that man on TV say, stay tuned?"
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Ask probing questions during a book reading, "Do you think that could really happen?" • Talk about the packaging, the pictures and wording on cereal or game boxes, "Do you think rabbits are really different colors?" • Ask children why or how they represented a character or event in a drawing • Ask what happened whey they clicked on a tab or icon on the laptop • Pause a story reading and ask children to guess or predict what might happen next	• Ask children, "Where or how can we find out more information about that?" • Ask children to predict what might be inside a box by looking at the packaging • Encourage children to draw their own packaging design, "What would you draw on an ice cream box to show that it's both vanilla and chocolate?" • Talk about the differences between reality and make-believe that children see on media • Ask questions about information that was shared on a video, "Do you think that dogs really bark when they see cars go down the road?"

SEK2c: Digital Citizenship: Children will demonstrate safe use of technology.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	*Not yet an expectation. Children learn best through hands-on exploration and interaction with their world. The use of technology under two is discouraged. View Appendix Six for additional guidance on technology in early learning. **		**2cOT-1** Use the computer or other digital media with adults' permission and guidance
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS			• Tap and swipe screens to get to next one • Complete simple computer games with shapes or counting
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS			• Use digital terminology • Model and remind children of the safe and appropriate ways to use equipment • Partner children to find the answer to a question • Ask children for permission before posting one of their products • Be critical about choosing apps and talk about your reasons • When children are using digital equipment, talk about what they are doing or seeing; ask questions, while giving time for them to figure things out • Create e-books about children's characteristics • Create a media plan and involve children in its development • Think out loud about the decisions you are making for posting, choosing apps, etc.

**Assistive technology equipment may benefit children with disabilities who are approximately 18 months and older.*

SEK 2: TECHNOLOGY

SEK2c: Digital Citizenship: Children will demonstrate safe use of technology.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**2cYP-1** Follow rules for safe use of digital media	**2cOP-1** Identify appropriate and inappropriate use of digital media
	2cYP-2 Share use of technology to play a game or find out information	**2cOP-2** Collaborate with others to create a product or investigate information
	2cYP-3 Demonstrate familiarity and understanding of the meaning of technology terms	**2cOP-3** Use technology terms such as mouse, keyboard, printer as part of daily conversation
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Show awareness of specific keys on a keyboard such as the tab bar or enter • Use basic digital terminology, "mouse, swipe, log-on, cursor" • Partner with another child to play a computer game • Look at and comment on photos that have been posted on social media • With adult guidance, use an app to talk with another adult who is long distance	• Ask to log onto the computer to find out information about a topic • Work with a partner to find hidden pictures on a computer or ipad • Ask a teacher, "Can Jamie and I look at those pictures of trains again?" • Tell a friend, "You need to click the mouse to move the cursor." • Tell an adult, "Keisha forgot to turn off the TV." or "I need to charge this phone."
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Use digital terminology • Model and remind children of the safe and appropriate ways to use equipment • Partner children to find the answer to a question • Ask children for permission before posting one of their products • Be critical about choosing apps and talk about your reasons • When children are using digital equipment, talk about what they are doing or seeing; ask questions, while giving time for them to figure things out • Create e-books about children's characteristics • Create a media plan and involve children in its development • Think out loud about the decisions you are making for posting, choosing apps, etc.	• Use digital terminology • Model and remind children of the safe and appropriate ways to use equipment • Partner children to find the answer to a question • Ask children for permission before posting one of their products • Be critical about choosing apps and talk about your reasons • When children are using digital equipment, talk about what they are doing or seeing; ask questions, while giving time for them to figure things out • Create e-books about children's characteristics • Create a media plan and involve children in its development • Think out loud about the decisions you are making for posting, choosing apps, etc.

SEK2d: Computational Thinking: The child will use emerging technological skills, concepts, and behaviors to solve problems or complete projects.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	*Not yet an expectation. Children learn best through hands-on exploration and interaction with their world. The use of technology under two is discouraged. View Appendix Six for additional guidance on technology in early learning. *****		**2dOT-1** Follow adult-directed steps to solve a simple problem **2dOT-2** Identify similarities patterns in the way things are designed, how they look or what they represent, with adult guidance
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS			• Turn the puzzle piece around to fit after an adult says, "Try it a different way." • Respond to, "What can we use to clean up this mess?" • Follow an adult's guidance to, "First, lift up this tab, then push here." • Ask an adult to help transform a robot • Respond to an adult's question, "How do I make this go?"
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS			• Give simple 1 or 2 step directions, "Walk to the table and sit down." or "Get your mat from the shelf." • Hide a toy and give clues to find it, "It's near the chair." or "Look up high." • Talk about the similarities in two transformers, "They both change from cars to robots." • Remind the children, "This truck works the same way as the red one. First you rev up the wheels, then you let it go."

**Assistive technology equipment may benefit children with disabilities who are approximately 18 months and older.*

SEK 2: TECHNOLOGY

SEK2d: Computational Thinking: The child will use emerging technological skills, concepts, and behaviors to solve problems or complete projects.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**2dYP-1** Accept adult support to identify the steps of a problem solution	**2dOP-1** Break down the steps of a problem or activity (Decomposition)
	2dYP-2 Find patterns or similarities in the environment or in objects	**2dOP-2** Extend and create design patterns (Pattern Recognition)
	2dYP-3 Predict what comes next in a problem-solving situation (or the sequence of a problem)	**2dOP-3** Attempt to solve a problem by working through the sequence of steps (Algorithms)
		2dOP-4 Assist teacher in sorting needed and unneeded information
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Tell another child, "We need to put on the big blocks first so the tower doesn't tip over." • Tell the others at the play dough table, "We each need to give Gail a little so she can play." • Notice, "All of the houses on this side of the street have red doors." • Sort trucks by type, "These trucks carry things; these trucks go fast." • With an adult at circle time, determine the steps to making applesauce or how they might keep the rabbit from getting out of its cage	• Discuss the ways they might strengthen a box so it doesn't keep breaking • Repeat the clapping pattern, 1 clap, 2 claps, 1 clap • Create a fence of blocks around a building so that the trucks other children are using don't knock down the building • Help an adult determine the information they need to take to complete a task, "Help me figure out which things we need to put together this bike." • Follow the sequence of steps to log-in and open a document on a laptop
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Allow enough time for children to determine their own steps to completing a task • Provide toys or activities that have more than one use or way to complete • Encourage children to try again after a mistake, "What do you think happened? How could you do it differently?" • Follow a simple map, "We are here. It is showing us to go this way." • Lay out a collection of objects and ask children to sort by similarities, "Can you find all the ones that are the same shape?" or "Which ones can be used for drawing?" • Ask children how they might solve a problem, "What can we do to make sure we don't over-feed the fish?" or "We have already closed the door and windows. What else can we do to warm up the room?"	• Ask children to think of a solution for how they might move a large, heavy object from one place to another • Pose challenging questions or ideas, "What would you do if…" or "How can we…." • Ask children to find the similarities or differences in objects or pictures • Ask for help in identifying the things that are needed to prepare for a picnic • Draw visual representations of the steps needed to accomplish a task • Talk about the ways in which children's drawings may differ even though they represent the same thing

SEK3: Engineering Processes: Children will use emerging understanding of design processes for problem solving.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**3I-1** Explore toys that move **3I-1** Stack objects	**3YT-1** Use simple machines in play **3YT-2** Notice characteristics of structures	**3OT-1** Explore the way simple machines operate during play **3OT-2** Build structures that involve stability and motion **3OT-3** Create representations of structures
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Play with different toys that move or make noise • Manipulate objects to make things happen • Stack rings on a stacking tower • Stack 1-2 blocks	• Push a play shopping cart or lawn mower • Ride on simple riding toys • Use the string to pull a toy across the room • Make simple towers or buildings with blocks • Say, "uh-oh" if the block creation falls	• Watch cars or trucks go down a ramp • Put gears together to see how they connect, with adult assistance • Use blocks as a train track and move trains along the "track" • Combine wood blocks and legos to make a house • Draw a picture of children on the playground climbing apparatus
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Make available a variety of different toys that infants can hold and manipulate • Demonstrate how to stack or put rings onto a stacking tower	• Provide toys that need to be pushed or pull and sufficient space for children to move them • Provide toys that can be ridden and moved • Offer soft blocks or nesting cubes and boxes that can be stacked and re-stacked • Describe what happens, "It looks like your tower was very tall; I wonder if that's why the blocks fell."	• Provide boards or tracks from which children can make ramps or inclines • Offer toys that go together or intertwine to move • Encourage children to use unique or non-traditional materials to make or add to a creation • Provide different types of the same toy for children to combine, such as wood, foam and lego blocks • Encourage children to draw and describe representations of things happening in their environment, then write captions of their descriptions

SEK 3: ENGINEERING PROCESSES

SEK3: Engineering Processes: Children will use emerging understanding of design processes for problem solving.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**3YP-1** Explain how a machine operates to complete a task	**3OP-1** Use unique materials to create a simple machine
	3YP-2 Build structures that deliberately experiment with stability and motion	**3OP-2** Follow a visual plan to create a structure
	3YP-3 Draw or illustrate objects or experiences based on observations or interactions	**3OP-3** Create detailed observational drawings that represent objects
	3YP-4 Follow a set of sequential instructions to arrive at an answer (coding)	**3OP-4** Follow directional cues to accomplish a task
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Use ramps to race cars • Tell an adult that a bucket is needed to move water from one container to another • Use blocks to make a bridge between two buildings or add people to the top of a high structure and make them jump off into a pile of soft blocks • Watch an ant carry a leaf and draw a picture to show what happened • Draw a picture of self playing ball • Use a set of clues to find hidden toys, "Look near the chair, now under the table, pull off the blanket."	• Create a telescope from a paper towel holder • Use a stick as a lever to lift a worm onto a leaf • Look at a simple illustration of a lego building and try to replicate it • Draw detailed pictures of a toy or object that considers the color, size and small parts • Carry a clipboard and pencil or crayon and draw an observation during a walk • Use an adult's instruction to put the wheel back on a truck, "Turn it upside down, put the white side down, then push on the axle."
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Provide marble chasers or toys with ramps and inclines • Pose questions about how things work or how things can be modified, "How can we make this bigger?" or "How can we move this heavy box?" • Encourage children to try out their ideas and to modify them as needed • Provide opportunities for children to record their observations of new things or to draw representations of specific events • Conduct simple scavenger hunts, giving step by step clues for children to find something • Provide simple maps to guide children's search for an object	• Give step by step directions that result in a completed task • Enlist children into helping to design maps or sets of directions for locating an object or participating in an event • Provide loose parts or different materials that can be used in unique ways • Take children on observation walks, where they record, through drawing, something they've observed or experienced • Provide toys or objects that can be taken apart and put back together

Adaptations and Accommodations for Children with Unique Needs

Environment

- Have a sensory and/or light table in your room.
- Display real pictures of living and non-living things around your classroom or in your science center.
- Include a recycling center with pictures showing how to sort objects.
- Have items labeled with words/pictures, and include labels from children's native languages.

Daily Schedule and Routines

- During small group allow your students to explore various types of materials to engage their five senses.
- Simplify a complicated task by breaking it into smaller parts or reducing the number of steps.
- Allow for many opportunities for repetition and practice.
- Adjust the length of an activity to accommodate children's needs.
- Introduce new concepts early in the day when children are most alert.

Materials

- Use a variety of textures in the table such as dried beans, rice, shaving cream, gelatin, or mud.
- Have actual living and non-living objects for children to explore.
- Have visuals listed of rules on how to handle technology.
- Use pictures and stories to illustrate the life cycle of animals and plants.
- Use touch screen devices or switches.
- Provide pictures of steps of the solution to a problem.

Instruction and Activities

- Make learning as hands on as possible.
- Have visuals that correlate with your lessons.
- Use various ways to present lessons (i.e one on one, small group, with media, manipulatives, large group).
- Have visual supports and various ways students can answer during activities.
- Use short and concise language.
- Use higher level questions, content, and opportunities to ask questions for advanced learners.
- Learn and use a few key terms from children's native languages.

Children use scientific thinking to discover and problem solve the ways in which materials can be used in different ways to create different things. Early learning programs support children's creativity when they have a good supply of loose parts on hand. Loose parts are materials that can be combined, moved, carried, or taken apart and put back together. They can be natural items like pinecones, leaves or pebbles or recycled objects like paper towel tubes, cardboard or wrapping paper. Loose parts may be toys that can be used on combined in different and unique ways. For example, blocks, paper and pencils, and pots and pans may be combined to create a restaurant.

A Sampling of Foundational Practices

Environment and Materials

- Rotate materials in the science area or sensory table.
- Use real materials for exploration and learning.
- Include a pet or fish for children to care for, being mindful of allergies or sensitivities.
- Bring in plants for children to care for.
- Use materials to stimulate children's senses.
- Plant a garden.
- Bring natural materials indoors for learning.
- Add technology tools, ipads and tablets or cameras, to be used with adult support.

Instruction

- Use cooking experiences to convey scientific concepts.
- Use real materials or photos of real objects or activities to explain concepts.
- Encourage children's observation and recording of objects and activities through graphs and charts or drawings.
- Ask probing questions that stimulate children's thinking.
- Create children's projects that extend over days to encourage their in-depth exploration and problem solving.

Children's Books

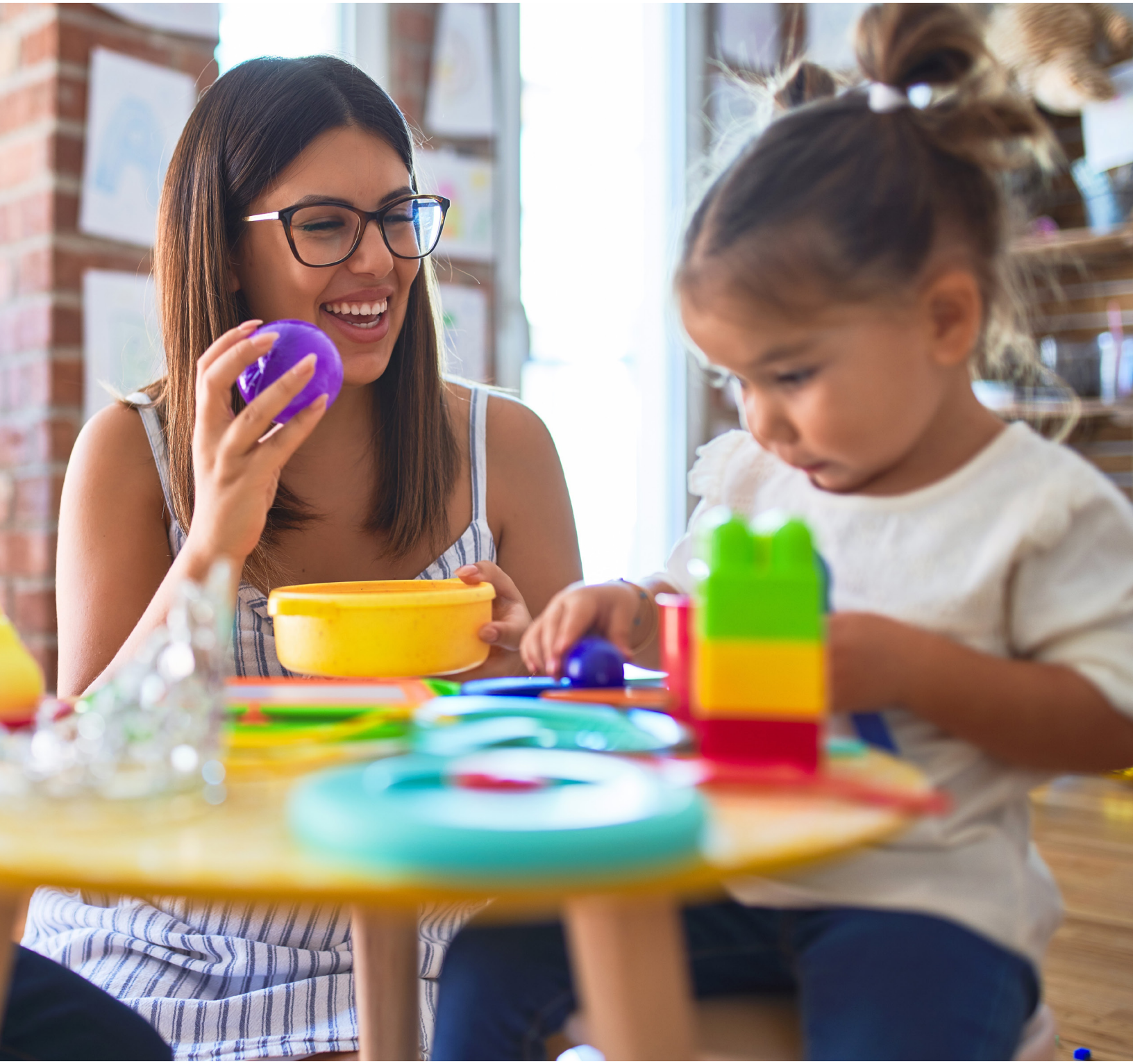
- In a Small, Small Pond by Denise Fleming
- The Listening Walk by Paul Showers
- I Spy in the Sky by Edward Gibbs
- Inch by Inch by Leo Lionni
- Mama Zooms by Jane Cowen-Fletcher
- What is A Scientist? by Barbara Lehn
- The Moon Book by Gail Gibbons
- Are you an Ant? by Judy Allen and Tudor Humphries
- Roll, Slope, and Slide by Michael Dahl
- Snail Trail by Ruth Brown
- My Five Senses by Aliki
- Pete the Cat, Out of This World by James Dean
- Matter: Physical Science for Kids by Andi Diehn
- Baby Code by Sandra Horning
- Baby Loves Gravity by Ruth Spiro
- Black Bird, Yellow Sun by Steve Light
- I Fall Down by Vicki Cobb
- Oscar and the Snail: A Book About Things That We Use by Geoff Waring
- Pop! A Book About Bubbles by Kimberly Brubaker Bradley
- All Around the Seasons by Barney Saltzberg

Adult Resources

- Worms, Shadows and Whirlpools: Science in the Early Childhood Classroom by Karen Worth and Susan Grollman
- Mudpies To Magnets by Williams, R.A., Rockwell, R.E., and Sherwood, E.
- Science is Simple: Over 250 Activities for Preschoolers by Peggy Ashbrook
- STEM in Early Learning Series by PDG TA. https://pdg.grads360.org/#program/stem-in-early-childhood
- Making and Tinkering With STEM: Solving Design Challenges With Young Children by Cate Heroman

Family Engagement

- Provide information for families about screen time and the use of technology with young children.
- Invite families to help tend a garden and create a vegetable stand for families to use the produce.
- Schedule a family night event to look at the stars.
- Create "take home" kits with magnets and related books or water play activities. Invite families to record their experiences and share when they return the kit.



MATHEMATICAL THINKING (MAT)

Exploring, Processing, and Logical Reasoning

Math is everywhere! Children are learning math as they experience their world. They compare quantities, find patterns, navigate in space, and grapple with real problems during their daily routines and activities. They find the pattern of stripes on their shirt, count the steps as they climb or curl up to fit through a tunnel on the playground. They notice that a friend has more blocks and ask for more or they open boxes to find out what's inside.

Adults build children's mathematical thinking when they use everyday experiences for learning, pose questions to spark children's curiosity and interest, and offer opportunities for children to repeat and practice skills. Professionals who offer both informal and formal ways for children to learn math support skill mastery. They should intentionally include materials that encourage counting, sorting and matching, help children recognize and find the solutions to simple problems during play, but also build specific activities that introduce math concepts and vocabulary.

Did you know?

Your attitude about math makes a big difference in the way young children experience mathematical concepts and skills.

Do you make math fun? Do you incorporate math learning into everyday experiences? If you had trouble with math or disliked it when you were in school, try to leave those negative feelings at the door and help children get excited about numbers, shapes and patterns. Build on their curiosity and energy to help them develop the attitudes, knowledge and skills about math that will impact their learning for life.

MAT 1 **Numbers and Quantity**
- MAT1a: Number Relationships
- MAT1b: Counting and Number Sense

MAT 2 **Algebraic Thinking**
- MAT2a: Operations
- MAT2b: Classification
- MAT2c: Patterns

MAT 3 **Spatial Reasoning and Geometry**
- MAT3a: Spatial Reasoning
- MAT3b: Geometry

MAT 4 **Measurement and Data Analysis**
- MAT4a: Measurement
- MAT4b: Logical Reasoning

MAT1a: Number Relationships: Children will understand the concept of numbers, and the relationships between numbers and quantities.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**1aI-1** Ask for "more" through gestures or respond to adults' questions about wanting more	**1aYT-1** Use words that indicate understanding of quantity – more or all	**1aOT-1** Use language to refer to amount and quantity, such as some, more, another, nothing (zero)
	1aI-2 Give an adult two or more objects when asked for them by name	**1aYT-2** Explore quantity through dumping and filling	**1aOT-2** Compare 2 groups of objects and tell which has more
	1aI-3 Line up objects in one hand with another object in another hand	**1aYT-3** Identify more or less with a small number of items without counting	**1aOT-3** Subitize (immediately recognize without counting) up to two objects
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Reach for a second cracker so both hands are holding one • Point to, reach for, or wiggle arms and legs in excitement to show interest in more • Observe number in songs and finger play	• Ask "More milk" • Say, "all gone" after finishing a snack • Fill a bucket with sand and dump over and over • Repeat the identified number after hearing adult say it • Dump a box of blocks, put them back in and dump again	• Ask for "another" cookie • Add counting bears to a group and say, "I added some more." • Look at a set of two objects and identify it as 2 without counting • Point to a written numeral and ask, "What number is this?" • Use simple markings or symbols to represent numbers • Try to hold up three fingers to represent age while saying, "I'm three years old."
SAMPLING OF PROFESSIONALS' PRACTICES	• Describe an infant's actions, "You want another cracker." or "I see you're excited to get more milk." • Sing songs and finger plays with numbers	• Point to the numerals on the page as you read counting books • Sing songs and finger plays that include numbers • Post signs with numerals in visible places • Provide groups of materials with varying amounts of objects • Use comparison words, "Jonah has more blocks."	• Talk while doing math operations, "I need 3 pencils but I only have 1, I'll need to find 2 more." • Play, "which is more" games where children need to guess which cup or container has more objects • Write the number of children who can play in a learning area on signs

MAT 1: NUMBERS AND QUANTITY

MAT1a: Number Relationships: Children will understand the concept of numbers, and the relationships between numbers and quantities.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**1aYP-1** Understand that written numerals represent quantity, including zero (up to 5)	**1aOP-1** Understand that written numerals represent quantities of objects (up to 10)
	1aYP-2 Compare groups of objects and determine which has more or less when asked	**1aOP-2** Compare groups of objects and tell which is same or different, more, less or fewer
	1aYP-3 Subitize (immediately recognize without counting) the number of objects in a set of four objects	**1aOP-3** Subitize (immediately recognize without counting) five or more objects
	1aYP-4 Identify some written numerals in the environment	**1aOP-4** Identify written numerals from zero (0) up to 10
		1aOP-5 Match numerals with the correct number of objects, with assistance
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Match numeral puzzles that have a written numeral and the corresponding number of objects • Sort objects into groups of 5 • Look at a group of 4 objects and identify it as 4 without counting • Hold up four fingers and say, "I'm four." • Begin to differentiate written numerals from letters` • Note the number of children who can play in a learning area by the posted sign	• Put together a puzzle that uses the written numeral and corresponding number of objects up to 10 • Look at a group of 5 objects and identify it as 5 without counting • Read the numerals 1-10 • Attempt to write numerals • Count two different sets and tell which is more
SAMPLING OF PROFESSIONALS' PRACTICES	• Talk about the room arrangement, "I need more chairs at this table." • Provide groups of similar objects that can be compared • Hold up fingers and ask, "How many?" • Poll children about a question, then make a graph that depicts the findings; "More children want to play in the block area than the art area." • Use math puzzles and lotto games to match numerals and numbers of objects • Arrange different groupings of numbers and ask children to identify the one with "3" or the one with "5"	• Include objects with numerals, such as clocks, timers or calculators or thermometers in learning centers • Play a game where children are asked to guess, "How many?" • Play a simple game like Bingo, where children need to recognize numerals • Provide puzzles and matching games that require children to sort and compare numbers of objects • Introduce cooperative math games on the laptop or tablet

MAT1b: Counting and Number Sense: Children will connect number names to quantities.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**1bI-1** Show interest in adult's counting movements and songs	**1bYT-1** Rote count, not always in sequence (1, 3, 2)	**1bOT-1** Rote count up to 5 in sequence **1bOT-2** Count backwards from 3 with assistance **1bOT-3** Place objects in one-to-one correspondence relationships during play **1bOT-4** Count out 1 or 2 objects when asked
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Engage with adult who is singing or doing finger plays that include numbers	• Mimic child who is counting while dressing, "One sock, two socks" • Count objects with adult, repeating the number • Participate in finger plays and songs that include counting	• Count out 3 crackers • Rote count in correct sequence to 5 • Hold up fingers while counting in a finger play • Point to objects while counting objects up to 5 • Starting at 3, count backwards to 1
SAMPLING OF PROFESSIONALS' PRACTICES	• Sing songs or act out finger plays that involve numbers, "1-2-3-4-5, once I caught a fish alive…" • Count children's body parts, "You've got two legs, 1-2."	• Count with children as they get dressed, "one button, two buttons, three buttons!" • Count steps • Count the number of crackers as you lay them on a napkin • Sing counting songs and rhymes	• Include toys and objects in different learning centers that encourage counting • Use songs and finger plays that include counting • Count in different languages • Count children out loud during transitions • Ask children to help set the table, asking them to put a spoon next to each plate • Play "how many" by holding your hand behind your back and bringing it out with a few fingers raised

MAT 1: NUMBERS AND QUANTITY

MAT1b: Counting and Number Sense: Children will connect number names to quantities.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**1bYP-1** Rote count up to 10 in sequence	**1bOP-1** Rote count up to 20 in sequence
	1bYP-2 Count backwards from 5	**1bOP-2** Count backwards from 10 to 0
	1bYP-3 Begin to demonstrate one-to-one correspondence up to 10 during daily routines	**1bOP-3** Demonstrate one-to one correspondence when counting objects placed in a row (one to 15 and beyond)
	1bYP-4 Count out a specified number of objects up to 5	**1bOP-4** Count out a specified number of objects up to 10
		1bOP-5 Understand that the last number represents how many objects are in a group
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Lay out small crackers on each corner of the napkin and one in the middle • Rote count with accuracy up to 10 • Count down a rocket ship takeoff, starting at 5 • Count on a calendar how many days until a special event, with adult support • Accurately count 10 blocks while pointing to each	• Count the number of children who are present • Match a cup to a napkin while setting the table • Rote count with accuracy to 20 • Count down until it's time to go outside, starting at 10 and ending with 0 (zero) • Count out 10 counting cubes when asked • Count 10 bears and then tell you, "There are 10 bears." • Identify what's missing after adult removes an object from a collection
SAMPLING OF PROFESSIONALS' PRACTICES	• Display counting books and objects • Ask children how many as part of their play, "How many blocks do you have?" • Count the steps it takes to walk to the bathroom from the table • Ask children to count out 5 crackers for their snack • Count and verbalize the last number to show quantity, "1-2-3-4-5; I have 5 crayons." • Lay out sets of 1-2-3-4-5 objects and count with child, "Let count these bears together to see how many we have." • Count backwards with children before you start to read a story	• Provide many opportunities to count for authentic reasons • Count the number of children who are present • Invite children to help you count heads while lining up to go outside • Number the bottom of empty egg carton cups and ask children to put the correct number of chips in each egg cup • Invite children to count steps with you as you move from one location to another • Provide natural objects like rocks or acorns to count • Ask children to count backwards as they await a task • Ask children to count out 10 blocks

MAT2a: Operations: Children will develop an understanding of putting together, adding to, taking apart, and taking from.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**2aI-1** Hold one object and reach for another at the same time	**2aYT-1** Notice changes in quantity of objects or look for a missing object	**2aOT-1** Demonstrate an understanding that "adding to" increases quantity **2aOT-2** With adult guidance, change the size of a set of objects by "adding to" or "subtracting from" during child-led play
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Hold a cracker and reach for another • Try to pick up a block while already holding another	• Notice that a block dropped and look for it • Add one more to a group of objects when asked	• Remove or add objects when asked • State, "I ate one apple slice, now I have one left." • Tell an adult, "I need one more block to make this tower taller."
SAMPLING OF PROFESSIONALS' PRACTICES	• Describe the action, "You would like another cracker? You already have one and now you want another."	• Ask children to help you count out objects • Describe your actions or needs, "I have 3 apples, but there are 5 children, I need to get 2 more apples."	• Call attention to changes in quantity, "You had 3 crackers, you ate one, now you have 2." • Describe children's actions when they are adding, "You just added one more block to the tower." • Tell a child, "This tower is too high, let's take away two blocks so it won't tip."

MAT 2: ALGEBRAIC THINKING

MAT2a: Operations: Children will develop an understanding of putting together, adding to, taking apart, and taking from.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**2aYP-1** Demonstrate an understanding of addition or subtraction concepts during play or daily life	**2aOP-1** Use addition and subtraction concepts while playing with sets of objects (0-10).
	2aYP-2 Notice the size of a set by combining or taking awaywith adult support	**2aOP-2** Independently change size of sets by combining or taking away
	2aYP-3 Understand that each successive number is one more	**2aOP-3** Understand that each successive number name refers to a quantity that is one larger
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Identify that DeShawn has 2 and that one more is needed to make 3 • Respond to an adult's request, "There are 5 cups there. Let's take one away to make 4." • Use fingers to count and show age • Share play dough with another, "I have a lot, you can have some." • Follow teacher direction to hop 2 spaces, then hop 3 more	• Demonstrate sharing objects with another, "I have a lot, you can have one." • Jump to the next numeral or space on a number line • Look at 3 blocks and put in 2 more to make five • Add blocks to a group, announcing the new number with each addition, "Here's one, now I'm adding one more to make two..." • Build a set of 5 objects, then divide it into 2 smaller sets
SAMPLING OF PROFESSIONALS' PRACTICES	• Use your fingers to show how addition or subtraction works • Tell a child during dramatic play, "You paid me 2 dollars, but it costs 3 dollars. I need one more." • Describe, "There are 10 children at this table and I have 7 cups, I will need to add 3 more cups so everyone has one." • Talk out loud as you add more objects to a pile, "I had 3 blocks, I'm going to add another. Now I have 4."	• Model word problems such as "We have 1 ball and 2 people. What can we do?" • Play simple board games like Candy Land or Go Fish • Use pattern cards or boards that depict addition: 4 green blocks in a row, then 2 yellow blocks to add • Read books about adding or subtracting to teach the concepts • Use and define math vocabulary "Addition is adding something to a group."

MAT2b: Sets: Children will classify and organize objects according to properties and attributes.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**2bI-1** Explore the characteristics of objects	**2bYT-1** Match two identical objects	**2bOT-1** Match two similar objects with one attribute
	2bI-2 Identify likes and dislikes in foods, sounds, and toys	**2bYT-2** Sort objects by one attribute with adult assistance	**2bOT-2** Sort objects by one characteristic during child-led play
	2bI-3 Touch and explore objects of different sizes and textures	**2bYT-3** Compare simple objects	**2bOT-3** Order objects according to size or shape
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Transfer objects from one hand to the other, looking at their attributes • Show preference for specific toys • Touch objects with different textures and feels • Reach for a familiar toy	• Gather the cubes from a basket of toys • Put shapes into the appropriate opening on a shape sorter • Match different size containers with their lids • Bring the other sock to an adult when requested • Notice the similarities and differences in counting bears	• Match socks of the same color • Separate all the red cubes from a collection of multi-colored cubes • Notice that two objects are the same, "This car looks just like this one!" • Select an object after hearing its attribute, "Can you find the red car?" • Sort simple puzzle pieces • Line up 3 bears according to size
SAMPLING OF PROFESSIONALS' PRACTICES	• Encourage children to seek out or try new toys • Introduce children to new adults in the company of familiar adults • Include objects of different sizes, shapes and textures for children to manipulate • Talk about the way objects look and feel, "This blanket is very soft; this block is hard."	• Talk as you clean up, "I'm going to put away all of the dolls." • Provide pairs of objects and multiples of materials for matching • Prompt children to look for similarities in objects, "Can you find the cup that looks like this one?" • Provide shape sorters and other materials designed to promote matching	• Encourage children to separate similar objects from a collection, "Let's find all the round ones." • Ask children to sort objects according to one attribute, "Put all of the red ones here and all of the blue ones over here." • Provide pairs of different objects for children to sort sorting and classifying • Model and describe sorting, "This one is a circle. I'll put it in this pile. This one is a square; it's different from a circle. I'll put it here."

MAT 2: ALGEBRAIC THINKING

MAT2b: Sets: Children will classify and organize objects according to properties and attributes.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**2bYP-1** Match many objects according to one attribute	**2bOP-1** Match objects according to two or more attributes
	2bYP-2 Sort and place a group of objects with one attribute	**2bOP-2** Sort and place in a series objects according to more than attribute
	2bYP-3 Order up to 5 objects according to an attribute	**2bOP-3** Put up to 10 objects in order according to an attribute
		2bOP-4 Demonstrate knowledge that the same set can be sorted in different ways
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Separate and line up all the red cubes • Select a toy or object when adult describes the attributes, "Can you find the car with the red and black wheels?" • Sort the edge and inside pieces of a puzzle • Arrange a group of crayons by color • Independently sort blocks by shape while playing in the block area	• Separate the large red cubes and put them in a group • Line up a group of counting cubes by color and shape • Describe more than one attribute of an object, "This car has a red stripe and black wheels." • Match forks and spoons from a collection of silverware • Sort the same collection in different ways, such as by color, then by use, then by size • Clean-up and return blocks and other materials to the correct container or shelf • Sort buttons by shape, then regroup them and sort by another attribute such as color or size
SAMPLING OF PROFESSIONALS' PRACTICES	• Provide a variety of manipulatives, objects and other materials for sorting and classifying • Ask children to sort objects by function, such as those for eating, those for writing • Use routines for children to put objects into groups, "How many boys are here today and how many girls?" • Play sorting games during transitions, "All those who are wearing shoes, line up. Now, all those who are wearing sneakers line up."	• Ask children to sort objects, then tell you which has most • Use "not" language to help children sort by one attribute, "This group of bears is red; this group is NOT red." • Expand one-word answers by modeling complete sentences, "Yes, there are 5 girls here." • Use clean up as an the for sorting: "Put all the square blocks on this shelf and all the long ones on this shelf." "Put the play dishers on the this shelf and the play pots and pans in the stove."

MAT2c: Patterns: Children will recognize simple patterns in daily life and play experiences.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**2cI-1** Respond with regularity to a daily routine **2cI-2** Explore objects with different characteristics	**2cYT-1** Begin to predict events in the daily schedule **2cYT-2** Notice the same characteristics in different objects	**2cOT-1** Identify what comes next in the daily schedule or steps within a daily routine **2cOT-2** Recognize a simple pattern in the environment **2cOT-3** Repeat a simple 2-part pattern, clap-clap or clap-snap **2cOT-4** Understand the concept of "first"
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Put head down on an adult's shoulder after being fed a bottle • Lift legs to help adult change a diaper • Kick legs in anticipation of eating when put in the high chair	• Sit down on the rug for circle when the music starts • Show interest in the pattern or shape of objects when adult shows and talks about them, "See how this is round; it looks like a circle." • Point to nose when adult says, "Here's my nose, where's your nose?" • Repeat the word "blue" when adult names 2 objects of the same color • Tell a child, "You have a dog and I have a dog."	• Tell an adult, "I just washed my hands and now I need a towel to dry them." • Ask, "We just washed our hands, is it time for snack now?" • Notice that all the coats are hung up on hooks • Tell an adult, "The garden has a row of red flowers, then a row of yellow ones." • Follow the adult's movement pattern, Clap-stamp, clap-stamp • Say, "I'm first in line" or "I'm going to eat my carrots first."
SAMPLING OF PROFESSIONALS' PRACTICES	• Keep regular routines and try to avoid sudden changes • Describe the steps of a routine, "First we talk off your wet diaper, then we wash your bottom, then we put on a fresh, new diaper." • Describe the differences in objects, "Here are your pink socks and these are your blue ones."	• Describe the sequence of routines as you perform them with children, "First we put on socks, then your shoes!" • Ask child, "What happens next? We've washed hands, now what do we do?" • Read stories that have patterns of words or phrases • Describe characteristics of objects, "Feel this soft, white sock." • Call attention to similarities in objects, "This block is blue and so is this one."	• Remind children of the sequence of events or routine • Read books with patterns • Provide beads, buttons or counting bears that are 2 colors or 2 sizes and ask children to sort • String beads on a necklace, naming them circle, square, circle, square…Help child find the next bead in the sequence • Call attention to patterns in clothing; "You both have stripes on your shirts!" • Describe a sequence of events using ordinals like, first, second and last

MAT 2: ALGEBRAIC THINKING

MAT2c: Patterns: Children will recognize simple patterns in daily life and play experiences.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**2cYP-1** Recognize that the daily schedule repeats and is the same each day	**2cOP-1** Identify differences in the daily schedule or routine
	2cYP-2 Notice a missing or different element in a pattern	**2cOP-2** Identify a pattern, and duplicate or extend
	2cYP-3 Create with adult support a simple A-B pattern (blue car, red car, blue car)	**2cOP-3** Create a more complex pattern that includes different attributes
	2cYP-4 Identify first and last	**2cOP-4** Identify more complex ordinals, such as second, third, or next,
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Tell a new friend, "We always wash our hands before snack and then we sit down on the carpet." • Draw the same object in different colors or different sizes • Notice that the stripes on one person's shirt are different than the stripes on someone else's shirt • Duplicate a pattern of red bear, blue bear, red bear, blue bear • Talk about who's first, second, etc. when children line up • Point out the patterns of houses on the block	• Ask about a change in the daily routine, "Why aren't we going outside now?" • Clap out a pattern of fast, fast, slow, slow • Look at a pattern of different colored and shapes blocks and duplicate • Create a pattern from a collection of objects • Notice that towers of blocks being built get taller – the first one has 2 blocks, the next one has 3 blocks, etc.
SAMPLING OF PROFESSIONALS' PRACTICES	• Use a picture schedule to remind children of the daily schedule • Identify names or words that start with the same letter • Call attention to the patterns that are within books • Ask children to help you remember the steps of an activity • Clap a sequence with more than 2 parts: clap fast, clap fast, clap slow • Duplicate a pattern with one different part; ask children, "What's different about this pattern?" • Call attention to the children who are first and last in line, "Luis is the engine and Maya is the caboose."	• Remind children about a change in the daily schedule; "Tomorrow we have a visitor coming so we won't go outside in the morning." • Ask what comes next in a pattern, "Here is blue, red, blue, red…what comes next?" • Invite children to re-create the patterns they've identified in books • Provide groups of objects that are organized in different ways • Call attention to patterns in the environment, "Look how each of these doors has square windows!" • Line up a group of stuffed animals and ask, "Which one is first?"

MAT3a: Spatial Reasoning: Children will explore and describe the spatial relationships between objects, their environment, and themselves.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**3aI-1** Watch how objects move	**3aYT-1** Move objects in different ways to understand how they work	**3aOT-1** Manipulate objects by moving them in different ways and directions
	3aI-2 Explore how to make objects move or fit together	**3aYT-2** Deliberately move objects to make them fit in spaces	**3aOT-2** Stack and build with objects intentionally to create something new
	3aI-3 Explore space with body by rolling, crawling or climbing	**3aYT-3** Move body in different ways	**3aOT-3** Move body to show understanding of basic directionality
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Pull off a blanket to play peekaboo • Put a block inside a bucket • Try to put the lid on a container • Look for an object that has fallen • Crawl over pillows and try to climb onto chairs or stools	• Shake or tap objects to see if they move • Manipulate nesting boxes or cups • Climb into a large cardboard box • Stack blocks to make a small tower • Move or dance to different types of music • Roll a ball and watch it go	• Move a car along a track or move it through the air • Roll or throw a ball • Put together simple puzzles • Stack blocks to make a house • Jump 3 times or clap 2 times according to an adults' instruction
SAMPLING OF PROFESSIONALS' PRACTICES	• Offer objects that nest inside one another or stack according to size • Show how a small box fits into a larger one • Arrange the space to encourage children to safely climb or crawl • Include cars or trucks or objects that move	• Put out different sized boxes for children to climb in and out of • Include trucks and cars of different types and sizes that move in different ways • Play simple movement games and songs • Add different types of stacking toys • Include different types of balls for rolling and gentle throwing	• Use prepositions that describe position, "Cameron, pick up the cup that fell under the table." or Jared, you are sitting next to Sarah." • Sing Head, Shoulders, Knees and Toes • Play simple relay races that ask children to move in different ways, "Hop like a bunny, fly like a bird." • Include materials that fit together like puzzles or blocks

MAT 3: SPATIAL REASONING AND GEOMETRY

MAT3a: Spatial Reasoning: Children will explore and describe the spatial relationships between objects, their environment, and themselves.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**3aYP-1** Manipulate objects by moving them to solve problems	**3aOP-1** Visualize a spatial transformation
	3aYP-2 Manipulate objects to make them fit together, or inside another, or to create something new	**3aOP-2** Describe the way in which objects fit together or verbally share plans with how to fit objects together
	3aYP-3 Follow basic directions about directionality and positioning self in relation to objects	**3aOP-3** Move body in different ways independently or following directions in response to music or song
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Play a modified version of Simon Says, "Touch your head, now touch your arms…" • Tell an adult, "I am putting bear next to the dog." • Sit next to another child, stating, "I'm sitting next to Elijah" • Answer the question, "Where do we hang our coats?" • Find the hidden object from a description, "It's under the table." • Participate in an obstacle course	• Cut paper in half or flip it upside down and notice the change • Follow or give simple directions, "Can you pick up the pencil that fell?" • Tell an adult, "I'm going to put my picture on the window sill to dry." • Attempt to identify which way to turn, left or right • Clean up toys by putting them back in the original container • Play "Going on a Bear Hunt" • Play "Freeze", stopping movement whenever the music stops
SAMPLING OF PROFESSIONALS' PRACTICES	• Make obstacle courses for children that ask them to go in, around, over and through • Provide toys that need to be put together • Extend spatial understanding by adding on descriptive phrases, "We keep our coats on the hooks inside our cubbies that are near the front door." • Play movement games that ask children to stand up, sit down, put hands on head, feet, etc. • Create scavenger hunts or play hide-and-seek types of games	• Map out the obstacle course as children go through • Use direction words to tell a story • Use left and right to describe position • Ask children to crawl to a location • Note, "Our tower needs a block here, can you think of one that would fit best?" • Play songs or movement games that ask children to move their bodies in different ways • Include puzzles or manipulative toys that require children to move them around to fit

MAT3b: Shapes: Children will explore, visualize, and analyze shapes and shape attributes.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**3bI-1** Explore objects of different 2 dimensional (2D) and 3 dimensional (3D)shapes	**3bYT-1** Match 2D and 3D shapes	**3bOT-1** Recognize and name shapes: circle, triangle square, cone, sphere **3bOT-2** Notice basic shapes in the environment
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Touch and look at different shaped blocks or objects	• Find another circle when asked by adult • Manipulate or touch objects of different shapes • Match shapes in a shape sorter	• Name the shapes on a shape puzzle while putting it together • Find a circle-shaped or square object when asked • Acknowledge that a ball is round • Point to a triangle-shaped roof after reading about triangles in a book
SAMPLING OF PROFESSIONALS' PRACTICES	• Provide different types of shaped objects and describe them as children play	• Identify the shapes of blocks, toys or foods, "I'm going to eat this square cracker." • Show children basic shapes and help them to find another that looks the same, "Let's find another circle." • Provide different types of toys and objects that are shape-based, like wood blocks, puzzles, shape sorters	• Describe the shapes of food or objects in the environment, "We are eating circle crackers." "The paper towels are shaped like squares." • Take shape walks to look for shapes in the neighborhood. "Look at that house; it's a square." "The sun is round like a circle." • Either individually or in pairs, hand children a shape and ask them to find something like it in the room

MAT 3: SPATIAL REASONING AND GEOMETRY

MAT3b: Shapes: Children will explore, visualize, and analyze shapes and shape attributes.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**3bYP-1** Recognize and name more complex 2-D and 3-D shapes: oval, rectangle, sphere, cone	**3bOP-1** Identify and classify 2-D and 3-D shapes by their attributes
	3bYP-2 Identify and name shapes in play	**3bOP-2** Visualize shapes by description and find them in the environment
	3bYP-3 Combine shapes to make new shapes	**3bOP-3** Complete complex shape puzzles
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Notice that 2 squares put together, make a rectangle • Tell an adult, "That cloud looks just like an oval." • Negotiate shape stickers with a friend, "I'm going to take the star sticker; you take the moon." • Use different sizes of block to build a house or barn • Go on a shape hunt during a walk to find triangles, circles or square • Put together tangrams or geo-boards	• Describe the number of sides in a triangle or square. • Identify that circles are round, they have no sides • Notice the different shapes of road signs; stop sign is octagonal, yield sign is a triangle • Use blocks to build a pyramid or solid square • Put shapes together to make a design
SAMPLING OF PROFESSIONALS' PRACTICES	• Demonstrate how 2 squares put together make a rectangle • Describe the attributes of shapes, "The rectangle has 4 sides: 2 long and 2 short." • Provide different types of blocks or building toys • Name and describe more complex shapes, "The moon is a crescent; a rectangle is longer than a square."	• Talk about the characteristics of shapes • Encourage children to use unit blocks to build creations and call attention to the shape(s) • Provide shape blocks that can be sorted by the number of sides • Graph the number of blocks that are circle, square, triangle, • Create a class shape book by taking photos of shapes within the environment

MAT4a: Measurement and Time: Children will explore and communicate about distance, weight, length, height, and time.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**4aI-1** Engage with adult in measurement games **4aI-2** Play with toys of various shapes and sizes	**4aYT-1** Use basic size words such as big, little **4aYT-2** Explore measuring tools **4aYT-3** Explore and identify, with adult support, the characteristics of objects	**4aOT-1** Describe the length, weight, and height of objects **4aOT-2** Pretend to use measurement tools in play **4aOT-3** Make simple comparisons about two objects' size
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Lift arms to play "so big" • Play with blocks of different sizes and types	• State, "big dog" • Use a measuring tape in play, not necessarily for the correct purpose • Attempt to lift a big or heavy box	• Tell a friend, I'm taller than you." • Look at a chair and say, "That is really big." • Describe, "The bathtub has a lot of water in it." • Use the measuring tape in the block area to measure the length of the blocks • Hold two crackers and identify which is biggest
SAMPLING OF PROFESSIONALS' PRACTICES	• Play games that use size, "So Big" or "This Little Piggy" • Provide toys of different sizes and weights for infants to explore	• Describe the attributes of objects, "That box looks really heavy." • Provide different types of measuring tools in the block or dramatic play area • Model the use of a measurement tool • Talk about time, "It took us so long to get there."	• Compare objects by an attribute, "That leaf is bigger than this leaf." • Provide objects that can be sorted into different attributes for comparison, such as blocks or counting cubes • Include different measuring tools in different learning areas • Use a timer to indicate the beginning or end of an activity

MAT 4: MEASUREMENT AND DATA ANALYSIS

MAT4a: Measurement and Time: Children will explore and communicate about distance, weight, length, height, and time.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**4aYP-1** Order objects by an attribute	**4aOP-1** Order objects in a series according to size
	4aYP-2 Use a variety of standard and non-standard tools to measure, with assistance	**4aOP-2** Use a variety of techniques with standard and non-standard tools to measure and compare objects
	4aYP-3 Compare objects based on more than one attribute	**4aOP-3** Compare objects by two or more attributes
	4aYP-4 Demonstrate an awareness of simple concepts of time that occur within daily life and routines	**4aOP-4** Show a beginning awareness of the concept of time as a sequence of events
		4aOP-5 Use beginning skills of estimation in solving everyday measurement problems
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Separate in a group all of the blue bears and all of the yellow bears • Use small blocks to measure the length of a string • Look at two cups and predict which holds more • Compare several pretzel sticks to find the one that is longest and shortest • Independently pick out a book to read after lunch (before nap)	• Line up different sized blocks according to size • Measure a table with string, a ruler or hands • First, measure a box's length, then it's depth • Look at a jar of crayons and guess "how many" • Think about how much string is needed to go around a pumpkin • Describe how many cubes would be needed to measure a child's foot • Explain the order of a daily routine, "First we eat breakfast, then we play in learning centers, then we go outside."
SAMPLING OF PROFESSIONALS' PRACTICES	• Ask children to line up objects according to attribute, "Can you put all of the red dinosaurs in a row?" • Help children think of different ways to measure an object, "How can we figure out how long this is?" • Read The Three Little Pigs, then ask children to act it out. • Ask children to predict which holds more and then find out • Use vocabulary that indicates time: "We will do that in 15 minutes."	• Provide different sizes of the same object and ask children to put them in order • Ask children to fill different sized boxes with bead or small blocks to find out which holds more • Read "Inch by Inch" by Leo Lionni and then measure objects to determine how many inches • Ask children, "When do you think you'll be ready to share that toy? How many minutes?" • Ask questions that require children to consider or predict how many

MAT4b: Logical Thinking, Reasoning, and Data Analysis: Child uses logical thinking and reasoning to solve meaningful problems and inform decisions.

	By 9-12 months, most INFANTS will	By 18-24 months, most YOUNG TODDLERS will	By 36 months (3 years), most OLDER TODDLERS will
DEVELOPMENTAL INDICATORS	**4bI-1** Explore objects in the natural world to observe reaction	**4bYT-1** Observe and imitate others to solve a problem	**4bOT-1** Try multiple approaches to solve a problem
	4bI-2 Seek objects that have disappeared or are out of reach	**4bYT-2** Act on objects to gather information	**4bOT-2** Take things apart and put back together
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Move objects from one hand to the other or shake them to see what happens • Crawl towards a ball that rolled out of reach or pull a toy's string to bring it closer • Pull off a blanket while playing peekaboo	• Watch another child dump toys, then imitate the action • Throw a ball to watch it bounce • Stack blocks, then knock them down • Open a box to remove an object hidden within	• Build simple block buildings, knock them down and rebuild • Put the bolts and screws onto a take apart car • Focus intently on stringing beads or putting pegs into a board • Try different ways to reach an object that is too high
SAMPLING OF PROFESSIONALS' PRACTICES	• Offer toys that produce a response to action • Place interesting toys just out of reach • Provide nesting toys	• Put items in small containers for children to open and remove • Hide objects that children search for and find • Talk about what others are doing, "Look at Miss Jen. She's putting that lid on top of the box." • Provide toys that can be sorted in different ways	• Ask, "How do you think we might reach that toy?" • Remind children of the solution that worked previously, "Remember how we turned it upside down to get the ball out?" • Provide legos or other blocks that can be put together and taken apart

MAT 4: MEASUREMENT AND DATA ANALYSIS

MAT4b: Logical Thinking, Reasoning, and Data Analysis: Child uses logical thinking and reasoning to solve meaningful problems and inform decisions.

	By 48 months (4 years), most YOUNG PRESCHOOLERS will	By 60 months (5 years), most OLDER PRESCHOOLERS will
DEVELOPMENTAL INDICATORS	**4bYP-1** Plan ways to solve problems with adult support	**4bOP-1** Use trial and error to reach a solution to a problem
	4bYP-2 Ask or why, who, what, where questions	**4bOP-2** Gather data to answer questions to problems
	4bYP-3 With adult help, draw a conclusion based on data	**4bOP-3** Make a prediction based on data
	4bYP-4 Participate in creating charts or graphs to represent data collection	**4bOP-4** Interpret a chart or graph to explain data findings
SAMPLING OF CHILDREN'S OBSERVABLE ACTIONS	• Ask why the blue car goes faster than the red one • Ask a friend, "What's going to happen when we mix blue and red?" • Compare two ramp heights and determine which one will make a car go faster • Count a group of children to determine whether there are more boys or girls • Help an adult create a graph about how many children like apples better than oranges by making marks beside orange/apple as children announce their preference	• Observe children racing cars down different-sized ramps and note with hash marks which cars or ramps are faster • Look at different-colored paintings to determine how many preferred red or blue • Read a graph to discover how many children like peanut butter sandwiches plain or with jelly • Develop a question for data collection, such as "What color are everyone's eyes?" and then determine a way to find the answer • Predict whether more children are wearing sneakers or shoes
SAMPLING OF PROFESSIONALS' PRACTICES	• Help children explore graphing by arranging objects on the floor for them to sort and arrange • Provide interesting materials that children can sort and classify to discover an answer • Ask children who has more or the least of a certain attribute or characteristic	• Ask children to look at two jars of buttons and predict which as more, then count to determine if they were correct • Invite children to conduct surveys to find out an answer to a question • Help the children use the survey responses to create a representation of the answer • Model analysis of a graph

Adaptations and Accommodations for Children with Unique Needs

Environment

- Use real items to help children understand mathematical concepts.
- Include classroom-made books with photos of children performing mathematical functions such as going in and out, counting, building with blocks, etc.
- Limit the number of children who may play in specific learning areas, posting the number.
- Adapt the length of activities based on the needs of the child.
- Present activities at varying levels so all children can reach and access them.

Daily Schedule and Routines

- Simplify a complicated task by breaking it into smaller parts or reducing the number of steps.
- Address difficult concepts early in the day while children are fresh.
- Keep activities with a lot of cognitive demands short.
- Use pictures/visual aids throughout daily activities.
- Model and demonstrate math skills during routine activities, counting stairs, talking about the colors of clothing, pairing socks.
- Role play the way to solve math problems.

Materials

- Use real objects to count (i.e. money, buttons, Legos, balls).
- Ask daily questions that engage children's problem solving.
- Provide raised/textured objects and larger-sized manipulatives.
- Provide multiple types of sorting materials such as counting bears, shapes, blocks, counters and egg cartons, muffin tins, etc.
- Use "finished baskets" to let children know when their task is completed.

Instruction and Activities

- Teach basic concepts like more/less, big/small, shapes, etc.
- Relate abstract concepts to things the child already knows.
- Use quick and short language.
- Use a multi-sensory approach that involves listening and hearing, seeing, touching and moving.
- Vary types of questions to accommodate children's differing abilities.
- Use math vocabulary/terms in your everyday language.

Young children who do well in math do well in school. And, those early foundational skills make a difference! When early childhood professionals support children's learning of counting, patterns, and measurement skills, they are laying the foundation for later mastery of more challenging, mathematical skills all the way through high school. In fact, research tells us that children's early math achievement is a bigger predictor of school success than reading! Add math into daily routines and play experiences to help them succeed in school!

A Sampling of Foundational Practices

Environment and Materials

- Include materials that involve math concepts in all activity areas.
- Include finger plays and counting in circle time.
- Make available games such as Candy Land, Guess Who or dice games.
- Limit the number of children who may play in specific learning areas, posting the number.
- Display the number name, symbol and number of dots to indicate numbers.
- Provide multiple types of sorting materials such as counting bears, shapes, blocks, counters and egg cartons, muffin tins, etc.

Instruction

- Incorporate mathematical questions during during routines or activities. "I wonder how many steps it will take to get to the snack table."
- Extend children's thinking about math problems while participating in their children's block or dramatic play.
- Use mathematical vocabulary with children.
- Develop scavenger hunts or active play strategies for children to find or use shapes or numbers in the environment.
- Talk about the patterns that occur in routines, materials or events.

Children's Books

- Ten Minutes Till Bedtime by Peggy Rathmann
- Albert Adds Up by Eleanor May and Deborah Melmon
- Anno's Counting Book by Mitsumasa Anno
- Color Zoo by Lois Ehlert
- Fish Eyes by Lois Ehlert
- Changes, Changes by Pat Hutchins
- Chicka Chicka 1,2,3 Bill Martin, Jr.
- Push, Pull, Empty, Full Tana Hoben
- Ten Apples on Top Dr. Seuss
- Miss Spider's Tea Party and Counting Book
- By Pamela Duncan Edwards
- Ten Little Ladybugs by Melanie Earth
- First the Egg by Laura Seeger
- Math Fabels by Greg Tang
- Crash! Boom! A Math Tale by Robin Harris
- The Doorbell Rang, by Pat Hutchins
- Inch by Inch by Leo Lionni
- The Napping House by Don and Audrey Wood
- I Went Walking by Sue Williams
- Shapes, Shapes, Shapes by Tana Hoban
- Tangled: A Story about Shapes by Anne Miranda and Eric Comstock
- Inside Outside Upside Down by Stan and Jan Berenstain

Adult Resources

- Erikson Institute Early Math Collaborative: https://earlymath.erikson.edu
- Making Math Meaningful (NAEYC) https://www.naeyc.org/resources/topics/math
- Early Math: Zero to Three https://www.zerotothree.org/resources/299-help-your-child-develop-early-math-skills
- Big Questions for Young Minds https://www.naeyc.org/resources/pubs/books/big-questions-young-minds
- Where's the Math? Books, Games, and Routines to Spark Children's Thinking https://www.naeyc.org/resources/pubs/books/wheres-the-math

Family Engagement

- Create a family space that offers resources on helping children build math skills.
- Send home the words to finger plays and songs that support math learning.
- Post a mathematical question of the week on a family bulletin board that encourages family members to work together to solve.