**Math Concepts for 2-Year-Olds**

Two-year-olds learn important math skills from their play and routines. They show symbolic thinking with pretend play, and recognize patterns with daily activities. They also understand what "tomorrow" and "yesterday" mean. Two-year-olds are just beginning to use logical reasoning to solve everyday problems. They can sort shapes, complete puzzles with eight pieces or less, and stack a set of rings on a peg by size. They also understand addition and subtraction with the numbers "one" and "two."

Numbers

* Around 24 months, the average child uses a few number words without understanding quantity (e.g., imitates a simple counting rhyme). Some may not do so until later this year.
* On average, an older two-year-old understands the words "one" and "two.” A few two-year-olds may also begin to understand the word "three," and a very few may grasp the concept of "four."
* At the beginning of this year, some children will be able to verbally count by ones up to "three," and sometimes beyond, but not necessarily in the correct order. The average child will be able to do this later this year. A few two-year-olds may even be able to count in the correct order up to "five."
* In the second half of this year, a very few children will be able to determine the number of items in a collection of up to five items by using one-to-one counting, or "enumeration.”
* At 24 months, some children can correctly use the size terms "many" and "same" when making comparisons. Some children will also begin to appropriately use the size word, "more," to identify the larger of two obviously different-sized collections.

Geometry and Spatial Sense

* Throughout this year, some two-year-olds will be able to match shapes, first with same size and orientation, then with different sizes and orientation .
* During the first half of this year, some two-year-olds will be able to sort, order and build with solids (e.g., when playing with a ring-stacking toy, ignores any forms that have no hole and stacks only rings or other objects with holes; can stack rings on a peg in order of size). The average child can do this during the second half of this year.
* Between 24-36 months, children are typically able to work simple puzzles (e.g., completes a three-piece simple puzzle where pieces are whole objects). Throughout the year, children can complete increasingly complex puzzles (e.g., four-piece interlocking to eight- or ten-piece puzzles).
* Throughout this year, a very small number of two-year-olds will understand and use words representing physical relations or positions (e.g., "over," "under," "above," "on," "beside," "next to," "in front," "behind," "in," "inside," "outside," "between," "up," "down," top," "bottom," "front," "back," "near," "far," "left," "right").

Measurement

* Between 24-30 months, some children still believe that a cracker broken into many pieces is more food
* During the first half of this year, the average two-year-old explores objects by filling and emptying containers. Some children will also fill a shape with solids or liquids (e.g., ice cubes or water), and know that different sized containers will hold more or less.
* Throughout this year, a few two-year-olds will recognize, informally discuss, and develop language to describe attributes such as "big" or "small" (height/area/volume), "long" and "tall" or "short" (length/height), "heavy" or "light" (weight), and "fast" or "slow" (speed).
* In the second half of this year, some children understand the concepts of "same" and "different," and describe how items are the same or different.

Patterns and Reasoning

* Between 24-30 months, some children will still be learning that there is an order to the day (e.g., Mommy comes to get me after storytime). In the first half of the year, some children show a greater understanding of daily time sequence (e.g., time to eat, nap time, etc.). The average child develops this understanding during the second half of this year.
* During the first half of the year, some children notice patterns in the environment (e.g., day follows night, patterns in carpeting or clothing, etc.). They also use the terms, "tomorrow," and "yesterday." The average child understands these patterns and terms during the second half of this year.
* In the first half of this year, some children show interest in patterns or sequence (e.g., attempts to follow patterns with stringing beads, magnetic shapes, peg boards). The average child develops this interest during the second half of the year.
* Between 30-36 months, some children can classify, label and sort familiar objects by a known group (e.g., hard v. soft, large v. small, heavy v. light). The average child logically sorts and classifies during the second half of this year.

**Literacy Concepts for 2-year-olds (Writing, Letters, and Books)**

Two-year-olds are laying the groundwork for reading and writing. They enjoy reading books with adults, and may independently look through familiar books and pretend to read. Two-year-olds can sing the A-B-C song, but they don't yet understand that the letter names correspond to specific graphic designs. They also make a variety of scribble marks anywhere and everywhere, and may even attempt to write the first letter of their name.

Phonological Awareness (Awareness of Sounds)

Delights in hearing nursery rhymes, and begins to recite familiar phrases of songs, books and rhymes. May chime in on rhyming words when adult reads aloud a familiar, predictable text book. Acquiring an awareness of sounds can be nurtured by frequent exposure to nursery rhymes and songs, in both infancy and toddlerhood. Other stimulation can come from adult interaction and frequent exposure to simple predictable text books.

Book knowledge and appreciation

* Looks at books and inspects pictures. Holds a book right side up based on knowledge of the proper positions for objects pictured. By the end of this year, goes from front to the back of familiar books, and page by page.
* During the first half of this year, most children have short attention spans for stories and are easily distracted. Simple event "stories," such as The Snowy Day and Goodnight Moon, as well as predictable text books, such as Brown Bear, Brown Bear and I Went Walking, are of interest to many children.
* By late in this year, many children retell simple, predictable text books, while turning the pages and using the pictures to prompt recall. Also, many children look through picture books, magazines, catalogs, etc. as if reading.
* May turn pages to find a favorite picture in a familiar book. May name items pictured in books and repeat comments about events and actions depicted.
* Children ask "What's that?" and "What's he/she doing?" Children answer some "what" and "who" questions posed by adults.
* Interest and enjoyment of books is highly variable, depending on availability of books and whether adults spend time sharing these with children in positive ways. May choose books from among toys to entertain self.

Print Awareness

* Begins to recognize some frequently-seen signs and symbols in the environment that contain print (e.g., stop signs, logos, product packaging, fast food signs), but does not pay attention to the actual print in these displays.

Writing

* Continues to make scribble marks, but a larger variety of marks is used. Zig-zag scribbles may appear by the end of this year, and might be labeled by the child as "a letter" (not an alphabet letter, but a type of written document). Separated, tight scribble marks might be created on paper, along with continuous looped scribbles or zig-zag scribbles.
* By the end of this year, some children may try to write the first letter of their name. The mark for this letter may resemble the actual letter with respect to a basic feature (e.g., closed, such as when "O" is made for "D"), but rarely is completely conventional in form.
* Attempts at writing letters are typically large for most children and fill most of a piece of paper.
* A child's immature grasp (rigid hand grasp) of a marking tool requires that its movement be made by moving the muscle of the upper arm. This type of movement causes writing to be quite large.
* Makes marks anywhere and everywhere. For most of this year, has no awareness of the organization of writing vs. drawing. By the end of this period, a few children have begun to place their scribble writing linearly, often in rows, which captures an essential general feature of writing vs. drawing.
* Has an emerging understanding of the uses and formats of writing. By the end of this year, some children make marks, present these to an adult, and say, "A letter for you," or "My name."
* Has no written word creation strategies.

Alphabet Knowledge

* May become familiar with the A-B-C song and sing it, but without knowing that the letter names recited label individual graphic designs. By the end of this year, some children (20%) recognize and label a few letters, especially the first letter in their own name, and perhaps other letters in their name. By the end of this year, many children (70%) do not know the names of any letters. Also by the end of this year, a few children (10%) know most uppercase letters.
* Acquisition can be stimulated by repeated exposure to the alphabet song and alphabet letters in books and play materials (e.g., magnetic letters), interactions with adults who name the letters, exposure to one's name, and having an adult name the letters in one's name.

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