

COGNITION

Domain: Mathematics Development

SUB-DOMAIN: COUNTING AND CARDINALITY

Goal P-MATH 1. Child knows number names and the count sequence.

DEVELOPMENTAL PROGRESSION	
36 to 48 Months	48 to 60 Months
Says or signs some number words in sequence (up to 10), starting with one. Understands that counting words are separate words, such as “one,” “two,” “three” versus “onetwothree”.	Says or signs more number words in sequence.

INDICATORS
By 60 Months
<ul style="list-style-type: none"> Counts verbally or signs to at least 20 by ones.

Goal P-MATH 2. Child recognizes the number of objects in a small set.

DEVELOPMENTAL PROGRESSION	
36 to 48 Months	48 to 60 Months
Develops an understanding of what whole numbers mean. Begins to recognize the number of small objects in groups without counting (referred to as “subitizing”).	Quickly recognizes the number of objects in a small set (referred to as “subitizing”).

INDICATORS
By 60 Months
<ul style="list-style-type: none"> Instantly recognizes, without counting, small quantities of up to 5 objects and says or signs the number.

Goal P-MATH 3. Child understands the relationship between numbers and quantities.

DEVELOPMENTAL PROGRESSION	
36 to 48 Months	48 to 60 Months
Begins to coordinate verbal counting with objects by pointing to or moving objects for small groups of objects laid in a line (referred to as one-to-one correspondence). Begins to understand that the last number represents how many objects are in a group (referred to as “cardinality”).	Understands that number words refer to quantity. May point to or move objects while counting objects to 10 and beyond (one-to-one correspondence). Understands that the last number represents how many objects are in a group (cardinality).

INDICATORS
By 60 Months
<ul style="list-style-type: none"> When counting objects, says or signs the number names in order, pairing one number word that corresponds with one object, up to at least 10. Counts and answers “How many?” questions for approximately 10 objects. Accurately counts as many as 5 objects in a scattered configuration. Understands that each successive number name refers to a quantity that is one larger. Understands that the last number said represents the number of objects in a set.

Goal P-MATH 4. Child compares numbers.

DEVELOPMENTAL PROGRESSION	
36 to 48 Months	48 to 60 Months
Begins to accurately count and compare objects that are about the same size and are in small groups with adult assistance, such as counts a pile of 2 blocks and a pile of 4, and determines whether the piles have the same or different numbers of blocks. Identifies the first and second objects in a sequence.	Counts to determine and compare number amounts even when the larger group’s objects are smaller in size, such as buttons, compared with the smaller group’s objects that are larger in size, such as markers. Uses numbers related to order or position.

INDICATORS
By 60 Months
<ul style="list-style-type: none"> Identifies whether the number of objects in one group is more than, less than, or the same as objects in another group for up to at least five objects. Identifies and uses numbers related to order or position from first to tenth.

Domain: Mathematics Development

Goal P-MATH 5. Child associates a quantity with written numerals up to 5 and begins to write numbers.

DEVELOPMENTAL PROGRESSION	
36 to 48 Months	48 to 60 Months
Begins to understand that a written numeral represents a quantity and may draw objects or use informal symbols to represent numbers.	Understands that written numbers represent quantities of objects, and uses information symbols, such as a tally, to represent numerals. With adult support, writes some numerals up to 10.

INDICATORS
By 60 Months
<ul style="list-style-type: none"> Associates a number of objects with a written numeral 0-5. Recognizes and, with support, writes some numerals up to 10.

SUB-DOMAIN: OPERATIONS AND ALGEBRAIC THINKING

Goal P-MATH 6. Child understands addition as adding to and understands subtraction as taking away from.

DEVELOPMENTAL PROGRESSION	
36 to 48 Months	48 to 60 Months
Begins to add and subtract very small collections of objects with adult support. For example, the teacher says, “You have 3 grapes and get 1 more. How many in all?” Child counts out 3, then counts out 1 more, then counts all: “1, 2, 3, 4. I have 4!”	Solves addition problems by joining objects together and subtraction problems by separating, using manipulatives and fingers to represent objects.

INDICATORS
By 60 Months
<ul style="list-style-type: none"> Represents addition and subtraction in different ways, such as with fingers, objects, and drawings. Solves addition and subtraction word problems. Adds and subtracts up to 5 to or from a given number. With adult assistance, begins to use counting on from the larger number for addition. For example, when adding a group of 3 and a group of 2, counts “One, two, three...” and then counts on “Four, five!” (keeping track with fingers). When counting back for subtraction such as taking away 3 from 5, counts, “Five, four, three... two!” (keeping track with fingers).

Goal P-MATH 7. Child understands simple patterns.

DEVELOPMENTAL PROGRESSION	
36 to 48 Months	48 to 60 Months
Recognizes a simple pattern, and with adult assistance, fills in the missing element of a pattern, such as boy, girl, boy, girl, _, girl. Duplicates and extends ABABAB patterns.	Creates, identifies, extends, and duplicates simple repeating patterns in different forms, such as with objects, numbers, sounds, and movements.

INDICATORS
By 60 Months
<ul style="list-style-type: none"> Fills in missing elements of simple patterns. Duplicates simple patterns in a different location than demonstrated, such as making the same alternating color pattern with blocks at a table that was demonstrated on the rug. Extends patterns, such as making an eight block tower of the same pattern that was demonstrated with four blocks. Identifies the core unit of sequentially repeating patterns, such as color in a sequence of alternating red and blue blocks.

COGNITION

Domain: Mathematics Development

SUB-DOMAIN: MEASUREMENT

Goal P-MATH 8. Child measures objects by their various attributes using standard and non-standard measurement. Uses differences in attributes to make comparisons.

DEVELOPMENTAL PROGRESSION		INDICATORS
36 to 48 Months	48 to 60 Months	By 60 Months
With adult support, begins to understand that attributes can be compared, such as one child can be taller than another child.	With some adult support, uses measurable attributes to make comparisons, such as identifies objects as the same/different and more/less.	<ul style="list-style-type: none"> Measures using the same unit, such as putting together snap cubes to see how tall a book is. Compares or orders up to 5 objects based on their measurable attributes, such as height or weight. Uses comparative language, such as shortest, heavier, or biggest.

SUB-DOMAIN: GEOMETRY AND SPATIAL SENSE

Goal P-MATH 9. Child identifies, describes, compares, and composes shapes.

DEVELOPMENTAL PROGRESSION		INDICATORS
36 to 48 Months	48 to 60 Months	By 60 Months
Recognizes and names typical circle, square, and sometimes a triangle. With adult support, matches some shapes that are different sizes and orientations.	Recognizes and compares a greater number of shapes of different sizes and orientations. Begins to identify sides and angles as distinct parts of shapes.	<ul style="list-style-type: none"> Names and describes shapes in terms of length of sides, number of sides, and number of angles. Correctly names basic shapes regardless of size and orientation. Analyzes, compares and sorts two- and three-dimensional shapes and objects in different sizes. Describes their similarities, differences, and other attributes, such as size and shape. Creates and builds shapes from components.

Goal P-MATH 10. Child explores the positions of objects in space.

DEVELOPMENTAL PROGRESSION		INDICATORS
36 to 48 Months	48 to 60 Months	By 60 Months
Begins to understand spatial vocabulary. With adult support, follows directions involving their own position in space, such as "Stand up and stretch your arms to the sky."	Increasingly understands spatial vocabulary. Follows directions involving their own position in space, such as "Move to the front of the line."	<ul style="list-style-type: none"> Understands and uses language related to directionality, order, and the position of objects, including up/down, and in front/behind. Correctly follows directions involving their own position in space, such as "Stand up" and "Move forward."

Domain: Scientific Reasoning

SUB-DOMAIN: SCIENTIFIC INQUIRY

Goal P-SCI1. Child observes and describes observable phenomena (objects, materials, organisms, and events).

DEVELOPMENTAL PROGRESSION		INDICATORS
36 to 48 Months	48 to 60 Months	By 60 Months
Uses the five senses to observe objects, materials, organisms, and events. Provides simple verbal or signed descriptions. With adult support, represents observable phenomena, such as draws a picture.	Makes increasingly complex observations of objects, materials, organisms, and events. Provides greater detail in descriptions. Represents observable phenomena in more complex ways, such as pictures that include more detail.	<ul style="list-style-type: none"> Identifies the five senses (smell, touch, sight, sound, taste) and uses them to make observations. Uses observational tools to extend the five senses, such as a magnifying glass, microscope, binoculars, or stethoscope. Describes observable phenomena using adjectives and labels, such as lemons taste sour and play dough feels sticky. Represents observable phenomena with pictures, diagrams, and 3-D models.

Goal P-SCI2. Child engages in scientific talk.

DEVELOPMENTAL PROGRESSION		INDICATORS
36 to 48 Months	48 to 60 Months	By 60 Months
Begins to use scientific vocabulary words with modeling and support from an adult. Sometimes repeats new words offered by adults.	Uses a greater number of scientific vocabulary words. Repeats new words offered by adults and may ask questions about unfamiliar words.	<ul style="list-style-type: none"> Uses scientific practice words or signs, such as observe, describe, compare, contrast, question, predict, experiment, reflect, cooperate, or measure. Uses scientific content words when investigating and describing observable phenomena, such as parts of a plant, animal, or object.

Goal P-SCI3. Child compares and categorizes observable phenomena.

DEVELOPMENTAL PROGRESSION		INDICATORS
36 to 48 Months	48 to 60 Months	By 60 Months
Sorts objects into groups based on simple attributes, such as color. With support, uses measurement tools to quantify similarities and differences of observable phenomena, such as when a child scoops sand into two containers and with adult assistance, determines which container holds more scoops.	With increasing independence, sorts objects into groups based on more complex attributes, such as weight, sound, or texture. Uses measurement tools to assess the properties of and compare observable phenomena.	<ul style="list-style-type: none"> Categorizes by sorting observable phenomena into groups based on attributes such as appearance, weight, function, ability, texture, odor, and sound. Uses measurement tools, such as a ruler, balance scale, eye dropper, unit blocks, thermometer, or measuring cup, to quantify similarities and differences of observable phenomena.

COGNITION

Domain: Scientific Reasoning

SUB-DOMAIN: REASONING AND PROBLEM-SOLVING

Goal P-SCI 4. Child asks a question, gathers information, and makes predictions.

DEVELOPMENTAL PROGRESSION		INDICATORS
36 to 48 Months	48 to 60 Months	By 60 Months
Asks simple questions. Uses adults as primary resources to gather information about questions. With adult support and modeling, makes simple predictions, such as "I think that the golf ball will be heavier than the ping pong ball."	Asks more complex questions. Uses other sources besides adults to gather information, such as books, or other experts. Uses background knowledge and experiences to make predictions.	<ul style="list-style-type: none"> Asks questions that can be answered through an investigation, such as "What do plants need to grow?" or "What countries do the children in our class come from?" Gathers information about a question by looking at books or discussing prior knowledge and observations. Makes predictions and brainstorms solutions based on background knowledge and experiences, such as "I think that plants need water to grow." or "I think adding yellow paint to purple will make brown."

Goal P-SCI 5. Child plans and conducts investigations and experiments.

DEVELOPMENTAL PROGRESSION		INDICATORS
36 to 48 Months	48 to 60 Months	By 60 Months
With adult support, engages in simple investigations and experiments, such as building a "bridge" out of classroom materials and seeing how many dolls it will hold before it collapses. Records data with teacher assistance, mostly using pictures and marks on a page.	With increasing independence, engages in some parts of conducting complex investigations or experiments. Increasingly able to articulate the steps that need to be taken to conduct an investigation. Uses more complex ways to gather and record data, such as with adult support, makes a graph that shows children's favorite snacks.	<ul style="list-style-type: none"> Articulates steps to be taken and lists materials needed for an investigation or experiment. Implements steps and uses materials to explore testable questions, such as "Do plants need water to grow?" by planting seeds and giving water to some but not to others. Uses senses and simple tools to observe, gather, and record data, such as gathering data on where children's families are from and creating a graph that shows the number of children from different countries.

Domain: Literacy

Goal P-SCI 6. Child analyzes results, draws conclusions, and communicates results.

DEVELOPMENTAL PROGRESSION		INDICATORS
36 to 48 Months	48 to 60 Months	By 60 Months
With adult assistance, analyzes and interprets data. Draws conclusions and provides simple descriptions of results. For example, an adult suggests counting how many dolls can be supported by a bridge before it breaks and along with the children counts, "One, two, three dolls. What happened when we put on the next doll?" A child says, "The bridge broke!"	With increasing independence, analyzes and interprets data and draws conclusions. With adult support, compares results to initial prediction and generates new questions or designs. For example, after putting multiple magnets together to create one magnet that is not strong enough to lift 10 paperclips, builds another and tries again. Communicates results, solutions, and conclusions in increasingly complex ways through multiple methods.	<ul style="list-style-type: none"> Analyzes and interprets data and summarizes results of investigation. Draws conclusions, constructs explanations, and verbalizes cause and effect relationships. With adult support, compares results to initial prediction and offers evidence as to why they do or do not work. Generates new testable questions based on results. Communicates results, solutions, and conclusions through a variety of methods, such as telling an adult that plants need water to grow or putting dots on a map that show the number of children from each country.

SUB-DOMAIN: WRITING

Goal P-LIT 6. Child writes for a variety of purposes using increasingly sophisticated marks.

DEVELOPMENTAL PROGRESSION		INDICATORS
36 to 48 Months	48 to 60 Months	By 60 Months
Engages in writing activities that consist largely of drawing and scribbling. Begins to convey meaning. With modeling and support, writes some letter-like forms and letters.	Progressively uses drawing, scribbling, letter-like forms, and letters to intentionally convey meaning. With support, may use invented spelling consisting of salient or beginning sounds, such as L for elevator or B for bug.	<ul style="list-style-type: none"> Creates a variety of written products that may or may not phonetically relate to intended messages. Shows an interest in copying simple words posted in the classroom. Attempts to independently write some words using invented spelling, such as K for kite. Writes first name correctly or close to correctly. Writes (draws, illustrates) for a variety of purposes and demonstrates evidence of many aspects of print conventions, such as creating a book that moves left to right.