



PreKindergarten

Maryland College and Career Ready Standards for Mathematics

Companion Guide

Mathematics Branch

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Purpose

PURPOSE OF COMPANION GUIDE

This document is designed to support a shared understanding of what each mathematics standard means, how it connects to other content, and how it can be authentically enacted in classrooms. It does not replace your high-quality instructional materials (HQIM) but instead works alongside them so that educators have a common interpretation of the mathematical expectations we set for students. Regardless of the HQIM in use, these documents provide clarity about the essence and intentions of the standards and illustrate how those expectations can be realized through instruction.

DOCUMENT STRUCTURE

Each domain begins with a set of cluster connections to the Numeracy Development Framework (NDF). These connections identify the ways in which individual clusters either:

- **Contribute to milestones:** The cluster builds prerequisite knowledge, skills, or ways of reasoning that *support progress toward* a milestone in the NDF, even if the milestone itself is not fully realized at this stage.
- **Directly contribute to milestones:** The cluster includes content and practices that are *explicitly named within* an NDF milestone, meaning student proficiency with this cluster demonstrates attainment of that milestone.

For each standard, the companion document provides:

- **Content Progression:** A description of the content that comes before and after that standard to highlight how it fits within a coherent learning trajectory. Within the PreK document, the identified content that comes before the PreK standard is aligned to the [Maryland Early Learning Standards](#), when appropriate.
- **Examples and Clarifications:** Explanations and expansions of the standard language that provide additional detail about its intent. These may include illustrative examples, as well as common missteps to avoid that can narrow or distort the mathematical authenticity of the standard.
- **Student Opportunities for Mathematical Experience:** Statements describing the kinds of reasoning, modeling, problem solving, and sense-making students should have the chance to engage in as part of learning the content of the standard. Where relevant, these are connected to the Standards for Mathematical Practice (SMPs). Not every SMP is explicitly called out, but all can be present in any standard depending on how instruction is designed. What is included are non-exhaustive examples. Within this section, additional features include:
 - For standards that directly represent a key milestone in the NDF, a bolded statement reminds educators that students need multiple opportunities and varied ways to demonstrate proficiency with the concept(s).
 - Opportunities to connect with financial literacy are flagged with a **\$** symbol. These indicators point to natural entry points for integration, but they should not limit educators from making additional meaningful connections to financial literacy where appropriate.

Standards for Mathematical Practice

“The Standards for Mathematical Practice (SMPs) describe varieties of expertise that mathematics educators at all levels should seek to develop in their students” ([Common Core State Standards Initiative](#)). The SMPs develop along a continuum as students progress mathematically, with each grade’s content providing distinct opportunities for students to engage in and demonstrate the practices at an appropriate level of sophistication.

The SMPs should be integrated with content and not taught separately. As students participate in these practices on a regular basis, they become part of the mathematically productive habits of mind that support deep understanding. Intentionally incorporating opportunities to develop the SMPs enhances instruction and enriches students’ mathematical engagement. Students who learn to use these eight mathematical practices as they engage with mathematical concepts and skills have a greater chance of developing conceptual understanding (Van de Walle, et al, 2014).

The table below highlights opportunities to develop the SMPs in general across the given grade band, while the companion guides for individual standards provide more specific connections to the content of each grade. Educators should utilize this resource to assist in planning for opportunities when the SMPs can be emphasized in daily instructional practice. To facilitate the incorporation of SMPs within instruction, notations have been made in the Companion Guide to indicate when a specific SMP may be applicable for a particular standard. These examples should not limit educators from making additional meaningful connections to SMPs where appropriate.

Standard for Mathematical Practice	What does it look like for PreK – Grade 2 students?	How can PreK – Grade 2 teachers support this practice?
Make sense of problems and persevere in solving them (SMP 1)	Students make sense of familiar situations (e.g., sharing items, organizing objects, or comparing lengths or counts) and use physical objects, fingers, drawings, or movement to explore and respond to the situation. They try different approaches (e.g., recounting or re-building) and, when something doesn’t work or seems “off,” they adjust their thinking. They begin to articulate what the situation is calling for (“We need enough cookies for everyone”). Through this exploration, they develop early confidence, persistence, and curiosity as mathematical thinkers.	Teachers use classroom routines (e.g., lining up, snack distribution, comparing sizes) and play-based experiences to ground problem situations in students’ everyday activity. They encourage students to try different approaches rather than providing answers quickly. Through purposeful questioning (e.g., “What could you try next?” or “What happens if you try it a different way?”) and by valuing effort and persistence, teachers support students in using objects, drawings, or marks as tools to help them keep working when a situation is challenging.

Standard for Mathematical Practice	What does it look like for PreK – Grade 2 students?	How can PreK – Grade 2 teachers support this practice?
Reason abstractly and quantitatively (SMP 2)	Students connect numbers to meaningful situations (e.g., how many objects, how long something is) and talk about what those quantities represent (“5 means five blocks”). When amounts change, they express how the situation changes (“If I take one away, now there are 4”). They begin to recognize that numbers and representations can stand for real things and support understanding, not just counting or writing digits.	Teachers prompt students to explain what quantities represent (“5 what?”) and use activities that link actions (e.g., counting, grouping, comparing) with recorded representations such as drawings or numerals. They reinforce that representing quantities helps make sense of a situation, and encourage gradual movement from concrete experiences toward early mathematical notation.
Construct viable arguments and critique the reasoning of others (SMP 3)	Students explain their thinking using everyday language, objects, drawings, or gestures (e.g., “I used 4 blocks because 4 people need one each”). They listen to others’ ideas and notice similarities or differences in approaches (“I counted, but you matched them one by one”). Through these exchanges, students begin to realize that sharing and comparing ideas helps them make sense of situations, and that a problem can be approached in more than one way.	Teachers invite students to share how they approached a situation (“Show me how you figured it out”) and create opportunities for students to listen to and respond to peers’ ideas. They model curiosity about reasoning (“How did you think of that?”) and facilitate brief exchanges between students to emphasize that explaining and comparing ideas is part of learning mathematics, not just about determining who got the answer right.
Model with mathematics (SMP 4)	Students begin by noticing things they are curious about (“How many?”, “Which one is more?”, “How far?”) They use drawings, objects, gestures, or simple diagrams to show what is happening in the situation. They use their representations to think about the situation (combining, separating, comparing) and revise their representation when they see it no longer matches. Early modeling is an emergent cycle of show → think → adjust.	Teachers provide situations that invite representation and prompt students to connect their drawings or objects to the story or context. They encourage noticing questions that can be answered with mathematics and support small revisions (“Does your picture still show what’s happening?”). Modeling stays informal and helps students connect experiences to early mathematical ideas.

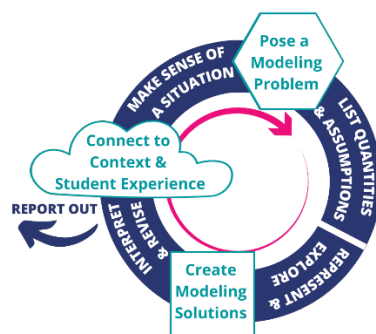
Standard for Mathematical Practice	What does it look like for PreK – Grade 2 students?	How can PreK – Grade 2 teachers support this practice?
Use appropriate tools strategically (SMP 5)	Students explore and use tools such as counters, cubes, drawings, number lines, or digital tools to help them solve problems and represent their thinking. They begin to notice which tools help them see or compare quantities (“I used counters to see which is more.”). Students might switch tools when another one better supports their understanding as they experiment with ways to show their ideas.	Teachers provide accessible tools and encourage students to choose what helps them make sense of a situation. They prompt reflection (“How did this help you show your idea?”), demonstrate flexible tool use, and gently guide students toward tools that clarify (not complicate) their reasoning. Tool use remains exploratory and grounded in sense-making.
Attend to precision (SMP 6)	Students begin to express their ideas clearly using everyday words, gestures, drawings, or informal mathematical language (“I have 5 because I counted 5”). When representing data (e.g., tallies or picture graphs), they aim to make their counts, marks, or drawings clear and accurate. They use tools or representations carefully so their ideas are shown clearly and revise their work when they notice it is unclear or incorrect.	Teachers model clear mathematical communication (“I counted 3 here and 2 here, so I have 5”) and help students use consistent and accurate language (e.g., “more,” “less,” “total”). They support students in checking their work, refining drawings or tallies, and using representations that can be interpreted consistently. Precision is nurtured through attention to clarity and accuracy, without overemphasis on formality.
Look for and make use of structure (SMP 7)	Students notice structures in numbers and operations, such as part-whole relationships, “making tens,” doubles, and combinations that show how numbers can be decomposed and recomposed (e.g., seeing 8 as “5 and 3” or “4 and 4”). They begin to recognize structure in join and separate situations (“I had 4 and got 3 more”) and use this understanding to reason about addition and subtraction. Students also see structure in shapes and spatial arrangements and use these observations to make sense of mathematical ideas.	Teachers highlight part-whole relationships, combinations of numbers, and visual structures (ten frames, dot patterns, connecting cubes) that reveal how operations work conceptually. They prompt students to explore how numbers are composed and decomposed (“How could you make this number in different ways?”), and they design experiences where noticing numerical or spatial structure supports reasoning. Teachers emphasize seeing structure over memorizing procedures.

Standard for Mathematical Practice	What does it look like for PreK – Grade 2 students?	How can PreK – Grade 2 teachers support this practice?
Look for and express regularity in repeated reasoning (SMP 8)	Students notice when the same mathematical action leads to a predictable result. For example, they recognize that adding 1 moves them to the next number in the count sequence and that taking away 1 moves them back one step. They notice repeating outcomes when they build equal groups or measure using the same-size objects ("Each block I add makes it taller by the same amount, so I know what the next height will be"). Students begin using these regularities to predict what comes next, check their thinking, or choose an efficient approach.	Teachers draw attention to predictable changes that occur during counting, adding on, taking away, skip-counting, and measuring using same-size objects. They ask questions such as, " <i>What happens to the number each time we add five?</i> " and encourage students to use these predictable changes to anticipate results, select a strategy, or verify whether their answer makes sense. This supports students in noticing regularity across repeated actions.

Modeling

Mathematical modeling is a process for using mathematics to make sense of situations drawn from the real world, other disciplines, or meaningful classroom contexts. Through modeling, students pose questions, identify relevant information and assumptions, represent relationships mathematically, and analyze and interpret results in relation to the original situation. Modeling supports deep understanding of mathematical concepts while strengthening reasoning, problem-solving, and communication skills.

In the classroom, modeling helps students see mathematics as useful, connected, and purposeful. It encourages students to make decisions about tools and representations, explain and justify their thinking, and evaluate whether results make sense in context. As such, modeling is a core component of a comprehensive mathematics education and supports students' ability to use mathematics thoughtfully in academic, civic, and everyday settings.



Although the modeling evidence statements (M.1–M.6) are not formally assessed in PreK–Grade 2, early mathematics instruction should intentionally include experiences that build modeling-related skills and lay the foundation for more formal modeling in later grades.

Within this Companion Guide, connections between modeling and specific content standards are highlighted as entry points for integration. These examples are not exhaustive, and educators are encouraged to identify additional opportunities for modeling whenever meaningful contexts or rich mathematical situations arise.

Modeling Evidence Statements	What does this look like for students in PreK-Grade 2?
M.1 Formulate a question about a particular context that can be answered using mathematics.	Students begin modeling by noticing situations and wondering about questions that can be answered using mathematics. Questions focus on quantities in familiar or imaginable contexts and often involve how many, how much, how long, or which has more or less. For example, “There are some cookies on a plate and some were eaten” allows students to ask questions such as, “How many cookies were eaten?”, “How many are left?”, or “How many were on the plate at the beginning?”
M.2 Determine the information needed and what assumptions must be made to answer a mathematical question about a context.	Given a mathematical question about a familiar context, students identify the information needed to answer the question. This includes deciding which quantities matter in the situation and what is already known or needs to be found. Students also make assumptions based on the context. For example, if the context is “There are some cookies on a plate and someone ate some,” and the question is “How many cookies are left?”, students must determine that they need to know how many cookies were on the plate at the start and how many were eaten, and assume no other cookies were added or removed.
M.3 Represent a context mathematically by selecting and applying appropriate concepts, tools, and representations to define variables, model relationships, and/or identify constraints.	Given a familiar context, students represent quantities and relationships by acting it out or using objects, drawings, tallies, number paths, or simple diagrams. For example, to represent the context “There are some cookies on a plate and someone ate some,” students might draw the cookies and cross out how many were eaten, use counters to act out the situation, or show the change on a number path to represent how the quantities are related.
M.4 Use a mathematical model to perform computations, make predictions, or answer the question posed about a context.	Given a mathematical model of a familiar context, students use the model to find an answer to the question posed. Students may count, combine, separate, or compare quantities using their representation to determine an outcome connected to the situation. For example, after drawing or modeling the cookies in the situation “There are some cookies on a plate and someone ate some,” students can use their representation to count how many cookies remain on the plate.

Modeling Evidence Statements	What does this look like for students in PreK-Grade 2?
M.5 Interpret the results or conclusions of a mathematical model in terms of the original context.	Given a conclusion from a mathematical model, students interpret what the result means for the original situation. This involves connecting the numerical result back to the context and explaining it using everyday language. For example, after determining that 5 cookies remain, students explain that “There are 5 cookies left on the plate,” connecting the number to what is happening in the situation.
M.6 Critique the validity of a mathematical model and its conclusions. Revise assumptions, representations, or mathematical approaches based on the context, new understanding, or additional information.	Given a mathematical model and its conclusion, students consider whether the model and answer make sense for the situation. This may involve noticing mismatches between the model and the context or recognizing when information is missing or misunderstood. For example, if a student shows that all the cookies were eaten but the story says some cookies remain, the student can revise the drawing or model so it better matches what happened in the situation.

Reasoning

Reasoning is the process of manipulating and analyzing objects, representations, diagrams, symbols, or statements to draw conclusions based on evidence or assumptions. Developing students’ capabilities with reasoning and sense making should be the primary goal of mathematics instruction (Battista, et al, 2016). Students who can make sense of mathematical ideas and truly understand them can make use of reasoning skills in new and unfamiliar problem-solving situations. Reasoning and sense-making are inherently satisfying experiences, meaning students who can make sense of the mathematics they are learning are more likely to stay engaged and feel successful.

Although the reasoning evidence statements (R.1–R.4) are not formally assessed in PreK–Grade 2, it is important for students in these early years to engage in classroom experiences that nurture mathematical reasoning. Young learners benefit from opportunities to use visual and symbolic representations, explore patterns and relationships in meaningful contexts, and explain or communicate their thinking. Formulating explanations and communicating reasoning helps children begin to justify their ideas, recognize errors in their own and others’ reasoning, and develop logical thinking. By embedding reasoning into early math instruction, educators lay a strong foundation for future success in problem solving and mathematical communication.

Opportunities to connect reasoning with content standards are identified within the Companion Guide. These opportunities are entry points for integration, but they should not limit educators from making additional meaningful connections to reasoning where appropriate.

Reasoning Evidence Statements	What does this look like for students in PreK-Grade 2?
R.1 Use visual, symbolic, or contextual representations to explain mathematical ideas.	Students explain mathematical ideas by showing and talking through their thinking using concrete or familiar representations. Their reasoning is often communicated by pointing, grouping, labeling, or using simple words to explain how quantities or relationships are related. For example, when explaining how they know there are 10 dots, a student circles groups of 5 in a dot picture and explains that “5 and 5 make 10,” or uses a number path to show how counting by fives lands on 10.

Reasoning Evidence Statements	What does this look like for students in PreK-Grade 2?
R.2 Identify and critique errors in reasoning, misapplied procedures, or invalid assumptions, and provide a mathematically valid alternative.	Students critique reasoning by noticing when an explanation does not match what they see, count, or know and explaining the mismatch using concrete evidence. Reasoning at this level often involves recounting, comparing quantities, or pointing to specific features of a representation to explain what needs to be corrected. For example, if a student explains that two groups have the same number because they “look the same,” another student may count the objects in each group and explain that one group has more and revise the conclusion based on that reasoning.
R.3 Construct coherent chains of reasoning that connect mathematical properties, ideas, and evidence, such as examples or counterexamples, to support or refute mathematical statements or claims.	Students support a mathematical idea by connecting pieces of thinking in a clear order, such as counting, comparing, and explaining how one idea leads to another. Their reasoning links evidence to a claim so that others can follow how the student knows the idea is true. For example, to explain why a group has more than 6 cubes, a student says, “I counted 7 cubes. When counting, 7 comes after 6, so there are more than 6 cubes.”
R.4 Identify and extend patterns or regularities to form general rules and justify their validity using mathematical reasoning.	Students notice patterns or repeated changes and use those observations to explain what will happen next or how something works. Their reasoning focuses on identifying what stays the same and using repeated examples to justify why the pattern continues. For example, when skip counting by 2s, a student explains, “It goes 2, 4, 6. Each number is 2 more than the last one, so the next number will be 8.”

Numeracy Development Framework

PreKindergarten marks the beginning of students' formal mathematical development, with an emphasis on building foundational understandings of quantity, comparison, and structure through concrete, play-based experiences. Within **Number & Operation Sense**, students develop early number awareness by recognizing small quantities in familiar arrangements without counting, often described as perceptual subitizing (Clements, 1999) and by counting and comparing collections of up to 10 objects. They reason about quantities by identifying when groups are the same or different in size and by exploring ideas of more and fewer.

Students also reason about change in quantity by adding to and removing from small sets and by identifying what is “one more” or “one less” than a given collection. Through repeated work with small quantities, students form early part-whole understandings that prepare them for the composing and decomposing of numbers and the transition to conceptual subitizing in Kindergarten.

Early **Algebraic Thinking** emerges as students use objects, drawings, and informal language to determine how many more items are needed to make a given amount. These experiences help students view quantities as flexible in concrete ways and introduce foundational ideas about relationships that support later reasoning about unknowns and operations.

In **Geometric Reasoning and Measurement**, students sort two-dimensional shapes based on observable attributes, such as the number of sides or corners, and compare physical objects by size. Closely connected to this work, early **Reasoning with Data, Statistics, and Probability** develops as students sort up to 10 objects into categories using physical materials or pictures and compare the quantities in each group. Together, these experiences cultivate habits of noticing attributes, organizing objects, and making sense of similarities and differences. These are foundational forms of spatial and quantitative reasoning that will extend to more formal geometric and data representations in later grades.

The developmental milestones identified in the Numeracy Development Framework for PreKindergarten establish early quantitative awareness, comparison, and part-whole reasoning that directly support the learning students encounter in Kindergarten. This companion document highlights where these milestones align with PreKindergarten standards and points to the ideas most critical to monitor as students prepare for continued mathematical growth.

Reference

Clements, D. H. (1999). *Subitizing: What is it? Why teach it?* *Teaching Children Mathematics*, 5(7), 400–405. National Council of Teachers of Mathematics.

Number and Operation Sense (NOS)

Number and Operation Sense (NOS) Clusters	Connections to the Numeracy Development Framework
PK.NOS.A Know number names and the count sequence.	Standards within this cluster directly contribute* to the PreK Number and Operation Sense milestones within the Numbers & Number Sets and Operation strands of the Numeracy Development Framework.
PK.NOS.B Count to tell the number of objects.	Standards within this cluster directly contribute* to the PreK Number and Operation Sense milestones within the Numbers & Number Sets strand of the Numeracy Development Framework.
PK.NOS.C Compare quantities.	Standards within this cluster directly contribute* to the PreK Number and Operation Sense milestones within the Numbers & Number Sets strand of the Numeracy Development Framework.
PK.NOS.D Decompose numbers.	Standards within this cluster contribute** to the PreK Number and Operation Sense milestones within the Operations strand of the Numeracy Development Framework.

***Directly contribute to milestones:** The cluster includes content and practices that are *explicitly named within* an NDF milestone, meaning student proficiency with this cluster demonstrates attainment of that milestone.

****Contribute to milestones:** The cluster builds prerequisite knowledge, skills, or ways of reasoning that *support progress toward* a milestone in the NDF, even if the milestone itself is not fully realized at this stage.

PK.NOS.A KNOW NUMBER NAMES AND THE COUNT SEQUENCE.**PK.NOS.A.1: Count to 20 by ones.**

Content Progression	Examples and Clarifications	Students should have the opportunity to...																				
Where are students coming from? - Recite number sequence in order to 10 with increasing accuracy (C.MT.1). Where are students going? - Count to 100 by ones and tens (K.NOS.A.1).	- Students are expected to orally count, demonstrating accuracy and consistency in number sequence. - Counting should be connected to objects or visuals, so students understand the purpose and meaning of numbers within the count sequence. Avoid focusing solely on rote recitation of number sequences. Number paths (shown below) and manipulatives support students in visualizing the count sequence and making connections to the meaning of and relationship between numbers. <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr></table>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	- Count regularly as part of daily routines, speaking aloud and/or pointing to each number. - Use physical objects or manipulatives when counting to reinforce one-to-one correspondence. - Begin with smaller ranges (e.g., 10) and gradually increase the range to 20 as they become more proficient. - Incorporate movement (e.g., clap, stomp, jump) when counting. - Read books and play games that provide practice with counting. - Recognize and explain the patterns within the count sequence (SMP 7).
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			

Previously PK.CC.A.1

PK.NOS.A.2: Count backwards from 10 by ones.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Recite number sequence in order to 10 with increasing accuracy (C.MT.1). Where are students going? - Count backwards from any given number within 20. (K.NOS.A.3).	- Students are expected to orally count, demonstrating accuracy and consistency in number sequence. - To count backwards is to count in reverse order from a given number. A student begins at 10 and counts back 9, 8, 7, 6, 5, 4, 3, 2, 1. - Counting backward supports students understanding of the concept “one less” which is foundational to number sense and subtraction. - When counting backward, connect the count to objects, visuals (e.g., hundreds chart, number path), or within a context. Avoid focusing solely on rote recitation of the number sequence in reverse order.	- Count backward as part of daily routines. - Count from 1 to 10 and then count back from 10 to 1 while pointing at each number. - Incorporate movement (e.g., clap, stomp, jump) when counting. - Practice counting backward through card and dice games. - Read books that feature counting backward. - Apply patterns within the count sequence to count backwards (SMP 7).

Adopted 2025

PK.NOS.A.3: Identify which number comes just after or just before a given number in the counting sequence to 10.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Recognize that numbers represent “how many?” (C.MT.1). Where are students going? - Count forward from any given number within 100 (K.NOS.A.2). - Count backward from any given number within 20 (K.NOS.A.3),	- Students are expected to identify the previous number in a sequence or the next number in a sequence while counting a set of objects, images, movements, or sounds. - Counting should be connected to objects or visuals, so students understand the purpose and meaning of numbers within the count sequence. Avoid focusing solely on rote recitation of number sequences.	- Identify the previous or next number in sequence when counting as part of daily routines. For example, when counting the number of students in the class, students may count 1, 2, 3,... to count each student and stop to engage in discussion of “What number will the next student be? What comes right before 3?” - Practice through number path (1-10), card, and dice games. Hopscotch and other outdoor number paths games can also be used to provide additional practice. Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key PreK Number and Operation Sense milestones in the Operations strand of the Numeracy Development Framework.

Previously PK.CC.A.2

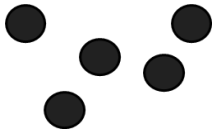
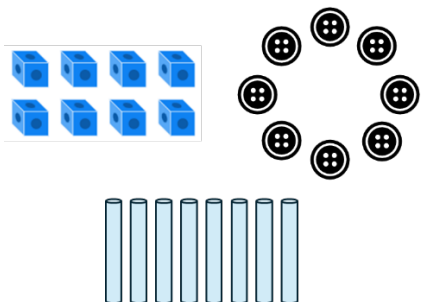
PK.NOS.A.4: Identify written numerals 0-10.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Points out numerals in the environment (C.MT.1). Where are students going? - Write numerals 0-20 (K.NOS.A.4). - Represent a number of objects with a written numeral within 20 (K.NOS.A.5).	- Use printed numeral cards, numerals in the environment, teacher-written numerals with manipulatives, found objects, movements, and fingers/body parts to teach number recognition. - Present numerals in meaningful contexts (e.g., calendars, clocks, labels). - Numeral recognition should be connected to objects or visuals, so students understand the purpose and meaning of numerals. Avoid focusing solely on rote memorization of numerals.	- Identify written numerals connected to manipulatives, found objects, movements, etc. as part of daily routines (e.g., attendance, counting the days of school). - Engage in numeral hunts where students look for examples of numerals in the classroom. - Play games that involve the use of numerals (e.g., bingo, memory, board games). - Explore environmental print (e.g., grocery store circulars, menus) with examples of numerals.

Previously PK.CC.A.3

PK.NOS.B COUNT TO TELL THE NUMBER OF OBJECTS.

PK.NOS.B.5: Use the relationship between numbers and quantities within 10 to count objects with one-to-one correspondence and verbalizing the last number stated is the total when asked "How many...?" (cardinality).

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Uses one-to-one correspondence to count small sets (C.MT.1). Where are students going? - Count objects with one-to-one correspondence, including up to 20 items in familiar configuration and up to 10 in a scatter configuration (K.NOS.B.6).	- One-to-one correspondence refers to the ability to match a unique number to each object in a set. - Cardinality refers to the size of a set. A student demonstrates cardinality if after counting a set, they are able to answer the question, "how many?" without recounting. For example, you give a student 8 blocks in a line. The student points to each block individually while counting, "one, two, three, four, five, six, seven, eight." When asked, "How many blocks?" the student answers, "Eight." This shows one-to-one correspondence and understanding of cardinality. - Present up to 10 objects in familiar configurations (e.g., line, rectangular array, a circle) or up to 5 objects in a scattered configuration. Familiar Configuration  Scatter Configuration  - Present empty sets (a set with 0 objects) to support students in recognizing the quantity zero and being able to verbalize there are 0 objects when asked "How many...?"	- Engage in purposeful counting. Students may count the number of children on the carpet, the number of pencils on the desk, etc. - See appropriate counting strategies modeled, including organizing objects in a row, counting objects from left to right, touching or moving one object at a time as counting. - Use manipulatives and visual models (e.g., five frames, ten frames, number paths) as they develop proficiency. Physically moving objects while counting and using visual models helps to ensure objects are counted once and only once. - Count objects in a variety of configurations.  - Make sense of quantities, recognizing that the total number counted represents the quantity of objects (SMP 2). Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key PreK Number and Operation Sense milestones in the Numbers & Number Sets strand of the Numeracy Development Framework.

Previously PK.CC.B.4

PK.NOS.B.6: When counting objects within 10, recognize that each successive number name refers to a quantity that is one larger.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Recognize that numbers represent “how many?” (C.MT.1). Where are students going? - When counting objects within 20, recognize that each successive number name refers to a quantity that is one larger (K.NOS.B.7).	- As students develop their understanding of counting, students recognize that each counting number in the sequence represents a quantity that is one more than the previous number. This graphic can support educators in visualizing the relationship between numbers. - When counting, provide tasks that help students to see and experience that the next number said will represent a quantity that is one more than the previous number. Avoid emphasizing the rote memorization of the count sequence without connection to quantities.	- Use manipulatives and physical or visual models (e.g., egg cartons, ten frames) to reinforce the concept that when counting, one object is being added each time the next number is counted. - Connect counting to addition. For example, if a student has a cup with 4 counters and one more counted is added to the cup, the student can identify that there are now 5 counters in the cup without counting, because 5 is the next number in the counting sequence (SMP 7). Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key PreK Number and Operation Sense milestones in the Operations strand of the Numeracy Development Framework.

Previously PK.CC.B.4

PK.NOS.B.7: Represent a number within 10 by producing a set of objects with concrete materials, drawing pictures, and/or writing numerals. Correctly respond when asked "How many" after counting concrete objects.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Recognize that numbers represent "how many?" (C.MT.1). Where are students going? - Represent a number of objects with a written numeral (K.NOS.A.5).	- When given a number, for example 9, a student is expected to represent that number with objects, pictures, and/or writing the numeral.    - Cardinality refers to the size of a set. A student demonstrates cardinality if after counting a set, they are able to answer the question, "how many?" without recounting. For example, a student points to each block individually as counting, "one, two, three, four, five, six, seven, eight, nine." When asked, "How many blocks?" the student answers, "nine." This shows one-to-one correspondence and understanding of cardinality. - Present situations that include 0 to support students in recognizing and representing the quantity zero, as a set with no objects, drawing an empty set, or writing the numeral, 0.	- Explore and use a variety of concrete materials (e.g., counters, cubes, buttons, or natural objects) to create sets that represent numbers up to 10. - Participate in guided play scenarios (e.g., setting a table for a certain number of friends) that require them to count and match quantities with real-world objects. - Use visual models (e.g., ten frames, number paths) or organizers as they develop proficiency. Physically moving objects while counting and using visual models helps to ensure objects are counted once and only once (SMP 6). Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key PreK Number and Operation Sense milestones in the Numbers & Number Sets strand of the Numeracy Development Framework.

Previously PK.CC.B.5

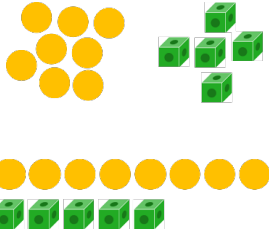
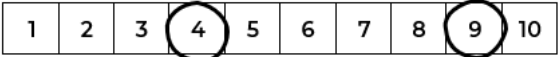
PK.NOS.B.8: Recognize the number of objects in a set without counting (subitizing) with both unfamiliar patterns within 3 and familiar patterns within 5.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Develops a sense of numbers and demonstrates some basic knowledge of counting (CMT.1). Where are students going? - Recognize the number of objects in a set without counting within 6 (K.NOS.B.8).	- Subitizing is the ability to instantly “see” how many objects are in a set without counting one by one. <u>Perceptual subitizing</u> is recognizing a quantity without having to count or use other mathematical processes.  - Familiar patterns are arrangements students often see, such as the dots on dice, dominoes, or five frames. - Unfamiliar patterns are random or irregular arrangements that students may not have seen before, such as a group of scattered dots.	- Identify and extend dot patterns on dice, dominoes, and five frames. The use of familiar patterns supports students in recognizing quantities quickly. - Engage in <u>Quick Image</u> tasks using dot cards as well as grouping and configurations of familiar objects or fingers, as a way to practice subitizing and to develop a sense of number and quantity (SMP 2). Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key PreK Number and Operation Sense milestones in the Numbers & Number Sets strand of the Numeracy Development Framework.

Adopted 2025

PK.NOS.C COMPARE QUANTITIES.

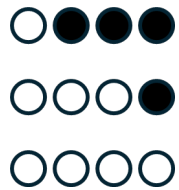
PK.NOS.C.9: Compare two groups of objects within 10. Identify whether the number of objects in one group is more than, equal to, or less than the number of objects in another group by using one-to-one correspondence, matching, and counting.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Compare equivalent and different quantities of objects (C.MT.1). Where are students going? - Compare two numbers within 20 (K.NOS.C.10).	- When using objects, students may use matching as a strategy to solve the problem: Compare the number of counters and number of cubes. Students apply one-to-one correspondence to match objects from each set to make pairs, determining that there are extra cubes that don't have a match, so there is a greater number of cubes. Students may also count each set and explain that "there are 8 yellow counters and 5 green cubes so there are more yellow counters than green cubes."  - Use number paths to compare. For example, if Student A lands on space 4 and Student B lands on space 9 on a game board, a number path can help to determine who has traveled further. A student may recognize that 4 is said before 9 when counting, so 4 is less than 9. Students may also recognize that 9 is further along the number path so it is the greater number.  - Ask a variety of questions when asking students to compare. Avoid only asking "Which is more?" questions. Students are often less familiar with the concept of "less", so they need experience with these types of questions. - Students are not expected to use comparison symbols ($>$, $=$, and $<$).	- Use a variety of representations and strategies to compare numbers. - Connect comparisons on a number path to their understanding of each number in the count sequence representing a quantity that is one more than the previous (PK.NOS.B.6). - Explore sets with equal quantities. Students may identify that one set has the "same as" another set and should be encouraged to use "equal" when describing sets with equal quantities. - Explain their thinking and prove why their comparisons are accurate using mathematical language (SMP 3). Students should be encouraged to use a visual representation to explain their comparison. - Identify and critique errors in reasoning. For example, if student A says that 8 blocks is greater than 10 blocks, student B recognizes the error and can explain why that is incorrect. Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key PreK Number and Operation Sense milestones in the Numbers & Number Sets strand of the Numeracy Development Framework.

Previously PK.CC.C.6

PK.NOS.D DECOMPOSE NUMBERS.

PK.NOS.D.10: Decompose numbers less than or equal to 5 in more than one way by using objects, fingers, drawings and/or verbal explanations.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Recognize that numbers represent “how many?” (C.MT.1). - Uses one-to-one correspondence to count small sets (C.MT.1). Where are students going? - Decompose numbers within 10 more than one way (K.NOS.D.11).	- To decompose a number is to break apart the number into parts. Decomposing numbers in multiple ways supports students in developing an understanding of the part-part-whole relationship. - Use objects, fingers, or drawings to represent or show how the whole (e.g., 4) is decomposed into parts (e.g., 1 counter and 3 counters, 2 counters and 2 counters, or 4 counters and 0 counters). Use drawings to record.  - When exploring decomposition, include zero as part of number decompositions. Students should recognize that a number can be broken into parts that include zero, reinforcing the concept of zero.	- Use objects and organizers or containers to physically decompose the number into two parts. For example, a student may place 1 counter on one plate and 3 counters on another plate to show that 4 can be decomposed into 1 and 3. - Engage in games that allow students to explore and identify a variety of ways to decompose numbers. For example, a student may shake and then spill two-sided counters, count the number of counters of one color and then the other color and record the combination with a drawing. - Explore number combinations and begin to develop strategies for identifying and organizing their decompositions in a systematic way (SMP 8). - Connect concrete objects and drawings. The use of mathematical symbols should be consistently modeled for students. As students become more proficient, students may use mathematical symbols to represent their decompositions.

Previously PK.OA.A.2

Algebraic Thinking (AT)

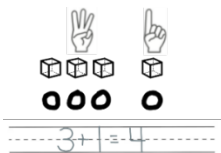
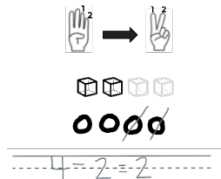
Algebraic Thinking (AT) Clusters	Connections to the Numeracy Development Framework
PK.AT.A Understand addition as putting together and adding to and understand subtraction as taking apart and taking from.	Standards within this cluster directly contribute* to the PreK Algebraic Thinking milestones within the Solving Equations & Inequalities strand of the Numeracy Development Framework.
PK.AT.B Understand repeating patterns.	Standards within this cluster reinforce important mathematical concepts and provide opportunities for meaningful practice and application of skills. While they do not directly contribute to PreK milestones within the Numeracy Development Framework, they support students' overall readiness for future learning.

***Directly contribute to milestones:** The cluster includes content and practices that are *explicitly named within* an NDF milestone, meaning student proficiency with this cluster demonstrates attainment of that milestone.

****Contribute to milestones:** The cluster builds prerequisite knowledge, skills, or ways of reasoning that *support progress toward* a milestone in the NDF, even if the milestone itself is not fully realized at this stage.

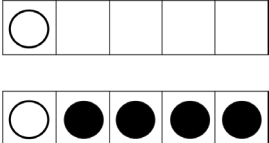
PK.AT UNDERSTAND ADDITION AS PUTTING TOGETHER AND ADDING TO AND UNDERSTAND SUBTRACTION AS TAKING APART AND TAKING FROM.

PK.AT.A.1: Represent addition and subtraction situations (presented verbally, without the use of numerals or mathematical symbols) within quantities of 5 with objects, fingers, drawings, sounds (e.g., claps), acting out situations, and/or verbal explanations.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Develops a sense of numbers and demonstrates some basic knowledge of counting (CMT.1). Where are students going? - Represent addition and subtraction situations within 10 (K.A.T.A.1).	- Numerals or mathematical symbols refer to written numbers (e.g., 3, 7, 10) and operation signs (+, −, =) in expressions or equations. - When presenting addition and subtraction situations, include situations that involve result unknown, total unknown, and both addends unknown in alignment with Addition and Subtraction Situations by Grade. - Present situations that include 0 to support students in recognizing and representing the quantity zero. - Given an addition situation, represent the sum of $3 + 1$ using a variety of representations.  - Given a subtraction situation, represent the difference of $4 - 2$ using a variety of representations.  - Model and encourage the use of multiple representations. Avoid using only one representation. - Model the use of numerals and mathematical symbols to begin laying the foundation for work in Kindergarten. Students may begin using the symbols, but it is not required.	- Physically manipulate objects to represent joining and taking apart or separating. Students may also act out situations, e.g., two students join a group to demonstrate addition, or three students leave a group to demonstrate subtraction. - Engage in stories or action songs (e.g. Five Little Monkeys Jumping on the Bed, Five Little Ducks, Five Little Speckled Frogs). - Describe what is happening in an addition or subtraction situation in their own words (SMP 1). - Connect authentic contexts to concrete objects and visual models (SMP 4). The use of mathematical symbols should be consistently modeled for students. As students become more proficient, students may use mathematical symbols to represent these situations, however it is not required for students. - Make connections between addition and subtraction situations and part-part-whole relationships. For example, a student may explain that if one plate has 3 donuts and another plate has 1 donut then the total number of donuts on both plates is 4 donuts.

Previously PK.OA.A.1

PK.AT.A.2: Given a quantity within 5, identify the quantity that must be added to equal 5 using objects, fingers, drawings and/or verbal explanations.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Recognize that numbers represent “how many?” (C.MT.1). - Uses one-to-one correspondence to count small sets (C.MT.1). Where are students going? - Decompose numbers within 10 more than one way (K.NOS.D.11). - Represent and solve addition and subtraction problems (K.AT.A.1; K.AT.A.2).	- To decompose a number is to break apart the number into parts. Decomposing numbers in multiple ways supports students in developing an understanding of the part-part-whole relationship. - Use objects, fingers, or drawings to represent or show the quantity that must be added to a given quantity to equal 5. For example, if a student has 3 counters, they will identify that 2 counters would need to be added to have 5 counters. Use drawings to record.  - Include zero as part of number decompositions. Students should recognize that a number can be broken into parts that include zero (e.g., 3 and 0 or 0 and 3), reinforcing the concept of zero.	- Use objects and organizers or containers (e.g., five frames, plates, bowls, egg carton, etc.) to physically decompose the number into two parts. For example, a student may use a five frame to determine the number of counters that must be added to one to equal five.  - Engage in games that allow students to explore and identify a variety of ways to decompose numbers. For example, a student may shake and then spill 5 two-sided counters, count the number of counters of one color and then the other color and record the combination with a drawing. - Explore number combinations and begin to recognize patterns helping them to develop strategies for identifying and organizing their decompositions in a systematic way (SMP 8). - Connect concrete objects and drawings. The use of mathematical symbols should be consistently modeled for students. As students become more proficient, students may use mathematical symbols to represent their decompositions. - Use visual models to explain the missing addend needed to make 5. Students are not expected to use the term, addend. Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key PreK Algebraic Thinking milestones in the Solving Equations & Inequalities strand of the Numeracy Development Framework.

Previously PK.OA.A.3

PK.AT.B UNDERSTAND REPEATING PATTERNS.**PK.AT.B.3: Identify and extend a repeating pattern (ABAB, AABB, or ABCABC) using concrete objects, shapes, sounds, or movements.**

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Notices and creates simple patterns (C.MT.4). Where are students going? - Identify, extend, and create repeating patterns (K.AT.B.3).	- ABAB, AABB, and ABCABC are examples of repeating patterns where a specific sequence of elements is repeated. Each letter represents a distinct item, action, or sound, and the pattern continues by repeating the same sequence (e.g., AABB means the sequence “AABB” is repeated).  - Students are not expected to use letters to label patterns, however, students should be able to describe the core, or the unit being repeated, to identify and extend. In the example above, students would be expected to identify the core (or unit being repeated) as square, square, triangle, triangle.	- Work with varying types of patterns, including visual patterns (e.g., connecting cubes, pattern blocks, stickers, drawings), auditory patterns (e.g., clapping, using instruments), and kinesthetic patterns (e.g., stomp, jump, spin). - Listen to stories that feature patterns. - Explore, predict, and verify ways to extend repeating patterns. - Identify patterns that exist in real world contexts (e.g., days of the week, months in a year, tile design on a floor or wall, beads on a bracelet) (SMP 4).

Adopted 2025

Geometric Reasoning (GR)

Geometric Reasoning Clusters	Connections to the Numeracy Development Framework
PK.GR.A Describe and compare measurable attributes.	Standards within this cluster directly contribute* to the PreK Geometric Reasoning milestones within the Measurement strand of the Numeracy Development Framework.
PK.GR.B Work with two-dimensional and three-dimensional shapes.	Standards within this cluster directly contribute* to the PreK Geometric Reasoning milestones within the Classifying Figures strand of the Numeracy Development Framework.

***Directly contribute to milestones:** The cluster includes content and practices that are *explicitly named within* an NDF milestone, meaning student proficiency with this cluster demonstrates attainment of that milestone.

****Contribute to milestones:** The cluster builds prerequisite knowledge, skills, or ways of reasoning that *support progress toward* a milestone in the NDF, even if the milestone itself is not fully realized at this stage.

PK.GR.A DESCRIBE AND COMPARE MEASURABLE ATTRIBUTES.

PK.GR.A.1: Describe a measurable attribute of an object, such as length, height, weight, and capacity using appropriate vocabulary (e.g., long, short, tall, heavy, light, wide, narrow).

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Understand and use words to describe differences in size, length, or weight of objects (C.MT.5). Where are students going? - Describe a measurable attribute of an object (K.GR.A.1).	- Students describe objects by talking about one or more of their attributes (length, height, weight, and capacity). For example, a student may describe a feather as long and light. - Length: the distance between the endpoints of an object - Height: the vertical distance between the endpoints of an object - Weight: how heavy an object is - Capacity: how much something can hold - Students are not expected to use measurement tools or units to physically measure objects.	- Explore measurement comparisons through hands-on experiences with everyday objects. - Draw or use pictures that represent opposite measurement attributes and describe their image using appropriate vocabulary. For example, a student may draw a short plant next to a tall plant and explain their drawing to others. - Practice using appropriate vocabulary to describe objects. PreK students may begin using words such as “small” or “big” to describe an object. Students should be encouraged to use more precise mathematical language such as short, narrow, long, tall, etc. (SMP 6). - Apply their understanding of measurable attributes to sort objects into categories (PK.DS.A.1). - Ask questions in measurement contexts that can be answered by identifying measurable attributes of objects. For example, a student may ask which of the books is heavy.

Previously PK.MD.A.1

PK.GR.A.2: Directly compare two objects with a measurable attribute in common, using words such as “more/less,” “longer/shorter,” “lighter/heavier,” or “taller/shorter.”

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Understand and use words to describe differences in size, length, or weight of objects (C.MT.5). Where are students going? - Directly compare two objects with a measurable attribute in common (K.GR.A.2).	- To directly compare two objects, students will place the objects side by side to observe similarities or differences of a measurable attribute (length, height, weight, and capacity). Students are not expected to use measurement tools or units to physically measure objects. - When comparing length and/or height, it is important that the objects are appropriately aligned to ensure accurate comparison. - Students should also recognize when an object appears to have similar length/height/weight/capacity to another object. Avoid only providing objects of differing length/height/weight/capacity.	- Explore measurement comparisons through hands-on experiences with everyday objects. For example, comparing backpacks by saying “My backpack is heavier than your backpack” helps students connect mathematical language to everyday contexts and develop a deeper understanding of measurable attributes. - Fill containers to compare their capacities using appropriate vocabulary (e.g., full, empty, holds more, holds less). - Practice using appropriate vocabulary to describe objects. PreK students may begin using words such as “smaller” or “bigger” to compare objects. Model and encourage the use of more precise mathematical language (e.g., “The rock is heavier than the feather.”) (SMP 6). - Begin exploring the use of objects of roughly the same size to measure objects. For example, a student may use connecting cubes to measure and compare the length of two objects. Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key PreK Geometric Reasoning milestones in the Measurement strand of the Numeracy Development Framework.

Previously PK.MD.A.2

PK.GR.B WORK WITH TWO-DIMENSIONAL AND THREE-DIMENSIONAL SHAPES.

PK.GR.B.3: Sort two-dimensional shapes (circles, triangles, and rectangles-including a square which is a special rectangle) by like attributes and distinguish between examples and non-examples.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Identify and recognize basic shapes. (C.MT.3). Where are students going? - Identify and describe two- and three-dimensional shapes (K.GR.B.5). - Identify shapes as two- or three-dimensional (K.GR.B.6). - Analyze and compare two- and three-dimensional shapes (K.GR.B.7).	- Students are expected to sort two-dimensional shapes (circle, triangle, rectangle, square) by like attributes (e.g., number of sides, number of corners, sides with equal length). - Shapes should be shown in various sizes and orientations. This helps students to recognize that the orientation or size does not impact its identification. For example, A student should recognize each of the shapes below as a triangle. Avoid providing examples that use the same orientation and size every time.  - Carefully select examples to minimize confusion between two- and three-dimensional shapes. For instance, a clock face is a circle (two-dimensional), while the entire clock is a cylinder (three-dimensional). Avoid using examples that may be misleading.	- Sort two-dimensional shapes in a variety of ways. - Practice using appropriate mathematical language. PreK students may begin describing shapes as “pointy” or “curvy.” Model and encourage the use of more precise mathematical language (e.g., “I grouped these shapes together because they have 3 sides and 3 corners.”) (SMP 6). - Explain how they sorted the shape, referring to attributes, such as number of sides or corners (SMP 3). Students should be encouraged to use a visual representation to explain. - Examine examples and counterexamples of given shapes. Students should be prompted to explain their thinking. Teachers may ask questions like “How do you know that this shape belongs with this group?” or “Why does this shape not belong in this group?” Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key PreK Geometric Reasoning milestones in the Classifying Figures strand of the Numeracy Development Framework.

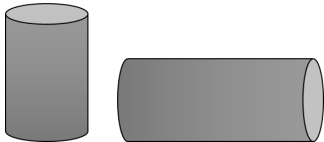
Previously PK.G.A.2

PK.GR.B.4: Match and name two-dimensional shapes (circles, triangles, and rectangles- including a square which is a special rectangle) regardless of their orientations or overall size.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Identify and recognize basic shapes. (C.MT.3). Where are students going? - Identify and describe two- and three-dimensional shapes (K.GR.B.5). - Identify shapes as two- or three-dimensional (K.GR.B.6). - Analyze and compare two- and three-dimensional shapes (K.GR.B.7).	- Students are expected to match and name two-dimensional shapes (circle, triangle, rectangle, square) by like attributes (e.g., number of sides, number of corners, sides with equal length). - Shapes should be shown in various sizes and orientations. This helps students to recognize that the orientation or size does not impact its identification. For example, A student should recognize each of the shapes below as a triangle. Avoid providing examples that use the same orientation and size every time.  - Carefully select examples to distinguish between two- and three-dimensional shapes. For instance, a clock face is a circle (two-dimensional), while the entire clock is a cylinder (three-dimensional). Avoid using examples that may be misleading.	- Practice using appropriate mathematical language. PreK students may begin describing shapes as “pointy” or “curvy.” Model and encourage the use of more precise mathematical language (e.g., “The triangle as 3 sides and 3 corners.”) (SMP 6). - Explain how they identified a particular shape, referring to its attributes, such as number of sides or corners (SMP 3). Students should be encouraged to use a visual representation to explain. - Examine examples and counterexamples of given shapes. Students should be prompted to explain their thinking. Teachers may ask questions like “How do you know a square is a square?” or “How do you know that is not a rectangle?” - Engage in games that involve shape identification or matching (e.g., shape relay races, hopscotch with shapes, memory).

Previously PK.G.A.1

PK.GR.B.5: Match and sort three-dimensional shapes (cubes, spheres, and cylinders) by like attributes and distinguish between examples and non-examples.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Identify and recognize basic shapes. (C.MT.3). Where are students going? - Identify and describe two- and three-dimensional shapes (K.GR.B.5). - Identify shapes as two- or three-dimensional (K.GR.B.6). - Analyze and compare two- and three-dimensional shapes (K.GR.B.7).	- Students are expected to match and sort three-dimensional shapes (cubes, spheres, and cylinders) by like attributes (e.g., number of faces, shape of faces). - Shapes should be shown in various sizes and orientations. This helps students recognize that the orientation or size does not impact its identification. For example, A student should recognize each of the shapes below as a cylinder, which is three-dimensional. Avoid providing examples that use the same orientation and size every time.  - Carefully select examples to distinguish between two- and three-dimensional shapes. For instance, a clock face is a circle (two-dimensional), while the entire clock is a cylinder (three-dimensional). Avoid using examples that may be misleading.	- Practice using appropriate mathematical language. Model and encourage the use of more precise mathematical language (e.g., “The cube has square faces.”) (SMP 6). - Explain how they identified a particular shape, referring to its attributes(e.g., “I know this is a sphere because it has no corners and it rolls. It looks like a ball.”) (SMP 3). Students may use a visual representation to explain. - Examine examples and counterexamples of given shapes. Students should be prompted to explain their thinking. Teachers may ask questions like “How do you know a sphere is a sphere?” or “How do you know that is not a cylinder?” - Engage in games that involve shape identification or matching (e.g., shape relay races, hopscotch with shapes, memory).

Previously PK.G.B.3

Reasoning with Data and Statistics (DS)

Reasoning with Data and Statistics Clusters	Connections to the Numeracy Development Framework
PK.DS.A Sort objects into categories to represent data.	Standards within this cluster directly contribute** to the Kindergarten Reasoning with Data, Statistics, and Probability milestones within the Collecting & Representing Data strands of the Numeracy Development Framework.

***Directly contribute to milestones:** The cluster includes content and practices that are *explicitly named within* an NDF milestone, meaning student proficiency with this cluster demonstrates attainment of that milestone.

****Contribute to milestones:** The cluster builds prerequisite knowledge, skills, or ways of reasoning that *support progress toward* a milestone in the NDF, even if the milestone itself is not fully realized at this stage.

PK.DS.A SORT OBJECTS INTO CATEGORIES TO REPRESENT DATA.**PK.DS.A.1: Organize data sets by sorting objects into categories.**

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Sorts objects into two or more groups based on one property (C.MT.4). Where are students going? - Organize data by classifying objectives into given categories (K.DS.A.1).	- Students recognize similarities and differences among objects (e.g., color, shape, size) in order to sort objects into given categories (e.g., red objects and blue objects, or shapes with 3 sides). - Limit sets of objects to a maximum of 20 objects (in alignment with PK.NOS.A.1).	- Sort objects through hands-on experiences with everyday objects and using visual aids to support organization (e.g., plates, cups, muffin tins, graphic organizers, or work mats). - Sort objects in a variety of ways. Students should be encouraged to sort the same group of objects in different ways. Teachers may ask, "Is there another way we can sort these?" - Use drawings to represent or model their sorting (SMP 4). - Describe the process for sorting and explain why objects belong in a particular category (SMP 3). - Apply understanding of shapes and their attributes to sort shapes (PK.GR.B.3, PK.GR.B.4, PK.GR.B.5). Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key PreK Reasoning with Data, Statistics, and Probability milestones in the Collecting & Representing Data strand of the Numeracy Development Framework.

Previously PK.MD.A.3

PK.DS.A.2: Analyze data sets by comparing the categories using words such as more than, less than, and equal to/same (Limit the total in any one category to maximum of 10).

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Sorts objects into two or more groups based on one property (C.MT.4). Where are students going? - Analyze data sets by ordering the categories by count (K.DS.A.2).	- Students count objects or items within each category to compare the categories by count (e.g., there are more triangles than squares). - Limit the total in any one category to maximum of 10 (in alignment with PK.NOS.C.9). - Provide examples with equal quantities. Students may identify that one category has the “same as” another set and should be encouraged to use “equal” when describing categories or groups with equal quantities.	- Participate in surveys relevant to their experiences to collect class data that can be analyzed and discussed. For example, students may respond to the question “How did you get to school today?” Students may formulate their own questions that could be answered by collecting data. - Use the data to answer questions about the categories or groups, such as “Which group has more? Which category has less?” (SMP4 4). - Use comparison language and numbers to describe and compare the categories or group (e.g., “There are more students who ride the bus to school than students who walk to school.”).

Previously PK.MD.A.4

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Provide Feedback

Your feedback is essential in helping us understand how these resources are being used, their effectiveness in supporting instruction, and how they can be improved to better serve educators, students, and stakeholders across the state. If you are interested in providing feedback, please completed the [Feedback: PreK-8 Mathematics Standards Companion Guide survey](#).

The survey includes general questions about your overall impressions of the companion guides, as well as opportunities to provide grade-level specific feedback. Your responses will inform future revisions and professional learning efforts to ensure the guides are clear, useful, and aligned with the needs of Maryland's diverse learning communities.