



Grade 2

Maryland College and Career Ready Standards for Mathematics

Companion Guide

Mathematics Branch

Version 2, May 2026

Table of Contents

Purpose.....	2
Standards for Mathematical Practice.....	3
Modeling	7
Reasoning.....	10
Numeracy Development Framework.....	12
Number and Operation Sense (NOS).....	13
2.NOS.A Understand place value and representations of numbers.	14
2.NOS.B Add and subtract within 20.	19
2.NOS.C Use representations, place value understanding, and properties of operations to add and subtract.	20
2.NOS.D Understand equal parts of a whole.....	24
Algebraic Thinking (AT)	25
2.AT.A Solve problems involving addition and subtraction.	26
2.AT.B Recognize patterns in numbers.	28
Geometric Reasoning (GR).....	29
2.GR.A Measure and estimate lengths in standard units.	30
2.GR.B Reason with shapes and their attributes.	33
2.GR.C Work with time and money.	35
Reasoning with Data and Statistics (DS)	38
2.DS.A Represent and interpret data.....	39
References	41
Provide Feedback.....	42

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.
- **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 students in PreK – Grade 2?	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 students in PreK – Grade 2?	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.

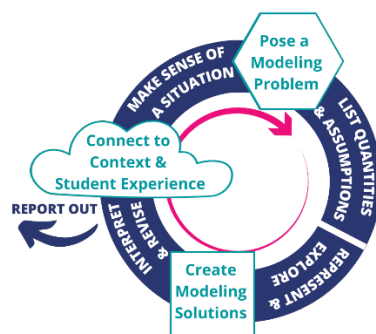
Standard for Mathematical Practice	What does it look like for students in PreK – Grade 2?	How can PreK – Grade 2 teachers support this practice?
Use appropriate tools strategically (SMP 5)	Students explore and use tools such as counters, cubes, drawings, number lines, or digital tools to help them solve 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 students in PreK – Grade 2?	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 PreK-Grade 2 students?
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 PreK-Grade 2 students?
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 PreK-Grade 2 students?
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 PreK-Grade 2 students?
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

Grade 2 deepens students' **understanding of numerical structure and operations** as they build confidence working with larger quantities and begin to generalize mathematical ideas. Students extend their understanding of place value to 1,000 and reason about numbers using representations, patterns in the base-ten system, and benchmark numbers such as 100 or 500 to make sense of magnitude. Fluency of addition and subtraction within 100 is a major focus this year; students choose strategies purposefully and begin to judge when an exact answer is needed versus when estimation is sufficient based on the context of a problem. This fluency is reinforced through practical applications such as counting money and telling time, both of which provide meaningful opportunities to reason with units, compose and decompose quantities, and apply addition and subtraction to familiar situations. Partitioning circles and rectangles into halves, fourths, and thirds formally introduces fractional thinking, reinforcing equal shares and establishing the foundation for understanding fractions as numbers in later grades.

Algebraic thinking advances as students use equations with a symbol to represent an unknown quantity and interpret that unknown in terms of the situation. Building on Grade 1 foundations, students further develop their understanding of the equal sign as a relational symbol that represents a balance between two quantities. Rather than viewing equations as steps in computation, students begin to see them as tools for representing relationships and reasoning about structure.

In **geometric reasoning and measurement**, students use standard units such as inches and centimeters to measure and compare the length of objects and apply estimation strategies to make predictions and check the reasonableness of results. Measurement tasks provide meaningful contexts for applying number sense and reasoning with operations. Students also explore symmetry by identifying and drawing lines that divide shapes into matching parts, which strengthens their understanding of structure, balance, and spatial reasoning.

Grade 2 expands students' work with **data** from categorical to numerical contexts. Students generate questions, collect data, and represent it on bar graphs and line plots, using these displays to compare quantities, describe patterns, and draw conclusions. These experiences support early statistical reasoning and help students make sense of numerical information in applied contexts.

Grade 2 serves as a key bridge between foundational number understanding and the emerging multiplicative and fractional reasoning that begins in Grade 3. This companion document illustrates how the Numeracy Development Framework connects to Grade 2 standards and highlights the ideas most critical for students' continued growth.

Number and Operation Sense (NOS)

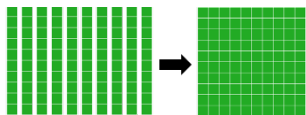
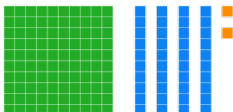
Number and Operation Sense (NOS) Clusters	Connections to the Numeracy Development Framework
2.NOS.A Understand place value and representations of numbers.	Standards within this cluster directly contribute* to the Grade 2 Number and Operation Sense milestones within the Numbers & Number Sets and Estimation strands of the Numeracy Development Framework.
2.NOS.B Add and subtract within 20.	Standards within this cluster directly contribute* to the Grade 2 Number and Operation Sense milestones within the Operations strand of the Numeracy Development Framework.
2.NOS.C Use representations, place value understanding, and properties of operations to add and subtract.	Standards within this cluster directly contribute* to the Grade 2 Number and Operation Sense milestones within the Operations strand of the Numeracy Development Framework.
2.NOS.D Understand equal parts of a whole.	Standards within this cluster directly contribute* to the Grade 2 Number and Operation Sense milestones within the Fractions & Decimals 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.

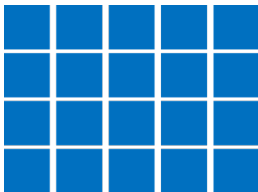
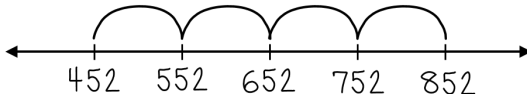
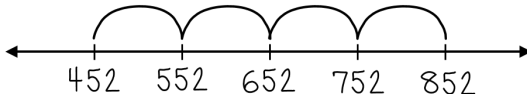
2.NOS.A UNDERSTAND PLACE VALUE AND REPRESENTATIONS OF NUMBERS.**2.NOS.A.1: Use understanding of 100 as a bundle of ten tens, called a “hundred,” and compose and decompose three-digit numbers.**

- a. Compose and decompose three-digit numbers into hundreds, tens, and ones by using objects, drawings, and/or equations (e.g., $328 = 300 + 20 + 8$ or 328 is thirty-two tens and 8 ones).
- b. Describe a given number as the correct number of hundreds, tens, and ones (e.g., 328 is three hundreds, two tens and eight ones).
- c. Compose and decompose three-digit numbers in more than one way (e.g., $439 = 400 + 39$ or $439 = 435 + 4$).

Content Progression	Examples and Clarifications	Students should have the opportunity to...						
Where are students coming from? - Understand 10 as a group of ten ones to compose and decompose two-digit numbers (1.NOS.B.3). Where are students going? - Apply and extend place value understanding to whole numbers within 10,000 (3.NOS.A.1).	- To compose a number means to put numbers together, and to decompose a number is to break apart the number into parts. - Use manipulatives to demonstrate 100 as a bundle of ten tens, called a “hundred.”  - Develop the understanding that the three digits of a three-digit number represent the number of hundreds, tens, and ones. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900, as referring to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones). - Use manipulatives to connect the meaning of each digit by visually representing the hundreds, tens, and ones. For example, the base ten models show that 142 is made up of 1 hundred, 4 tens and 2 ones, reinforcing the structure of place value.  - Compose and decompose numbers in a variety of ways. For example, 439 can be thought of as $435 + 4$, which is especially useful when adding $439 + 96$. Avoid limiting instruction to only decompositions of hundreds, tens, and ones.	- Explore composing and decomposing numbers in a variety of ways. Students may begin by using manipulatives to compose and decompose numbers. As students become more proficient, they may transition to using pictures and/or equations. - Represent and record compositions and decompositions in a variety of ways. For example, a student may represent 142 using visual models (shown to the left), written statements (1 hundred, 4 tens, and 2 ones is 142.), place value charts (shown below), and equations ($100 + 40 + 2 = 142$). <table border="1" data-bbox="1396 880 1713 1003"> <thead> <tr> <th>Hundreds</th><th>Tens</th><th>Ones</th></tr> </thead> <tbody> <tr> <td>1</td><td>4</td><td>2</td></tr> </tbody> </table> - Name the quantity given a set of hundreds, tens, and ones. For example, if given 3 hundreds, 5 tens, and 7 ones, the student names the quantity as 357. Explain the meaning of the digits in a three-digit number, recognizing the value. For example, a student may explain that “the 2 in 268 represents 2 hundreds or 20 tens, not 2” (SMP 2). Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key Grade 2 Number and Operation Sense milestones in the Numbers & Number Sets strand of the Numeracy Development Framework.	Hundreds	Tens	Ones	1	4	2
Hundreds	Tens	Ones						
1	4	2						

Previously 2.NBT.A.1

2.NOS.A.2: Count forward and backward within 1000 starting with any number.**a. Skip-count forward and backwards by 2s, 5s, 10s, and 100s.****b. Use skip-counting to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns.**

Content Progression	Examples and Clarifications	Students should have the opportunity to...																														
Where are students coming from? - Within 120, count forward and backward by ones starting at any number and skip count forward and backward by tens (1.NOS.A.1). Where are students going? - Skip count by 2s, 5s, and 10s to derive foundational multiplication facts (3.NOS.E.9).	- Students are expected to count forward and backward by 1s, 10s and 100s starting from any number within 1000. - When counting by 2s or 5s, students are expected to count beginning from a multiple of 2 or 5, respectively, within 1000. 2.NOS.A.2b: A rectangular array is an arrangement of objects in rows and columns. Connect rectangular arrays to equal groups. Each row has the same number of objects, and each column has the same number of objects. The rectangular array shown below shows 4 rows with 5 tiles in each row, or 5 columns with 4 tiles in each column.  2.NOS.A.2b: When skip counting to find total number of objects in a rectangular array, model counting in a variety of ways. For example, in the rectangular arrays shown below, students may count by 2s for the number of tiles in each column, or students may count by 5s for the number of tiles in each row. 2 4 6 8 10  or  5 10 <td> - Count forward and backward regularly as part of daily routines. Incorporate movement (e.g., clap, stomp, jump) when counting. Read books and play games that provide practice with counting. - Use hundreds charts and number lines to support students in visualizing the count sequence and making connections to the meaning of and relationship between numbers. Hundreds Chart <table><tr><td>181</td><td>182</td><td>183</td><td>184</td><td>185</td><td>186</td><td>187</td><td>188</td><td>189</td><td>190</td></tr><tr><td>191</td><td>192</td><td>193</td><td>194</td><td>195</td><td>196</td><td>197</td><td>198</td><td>199</td><td>200</td></tr><tr><td>201</td><td>202</td><td>203</td><td>204</td><td>205</td><td>206</td><td>207</td><td>208</td><td>209</td><td>210</td></tr></table> Number Line  - Begin exploring rectangular arrays through the use of square tiles. Students arrange tiles in rows and columns to create rectangular arrays. As students become more proficient, students may begin to partition rectangles to make or draw arrays. - Describe rectangular arrays using precise language describing equal groups, rows, and columns. - Make explicit connections between rectangular arrays, equal groups, and skip counting. - Recognize and explain the patterns within the count sequence (SMP 7). </td>	- Count forward and backward regularly as part of daily routines. Incorporate movement (e.g., clap, stomp, jump) when counting. Read books and play games that provide practice with counting. - Use hundreds charts and number lines to support students in visualizing the count sequence and making connections to the meaning of and relationship between numbers. Hundreds Chart <table><tr><td>181</td><td>182</td><td>183</td><td>184</td><td>185</td><td>186</td><td>187</td><td>188</td><td>189</td><td>190</td></tr><tr><td>191</td><td>192</td><td>193</td><td>194</td><td>195</td><td>196</td><td>197</td><td>198</td><td>199</td><td>200</td></tr><tr><td>201</td><td>202</td><td>203</td><td>204</td><td>205</td><td>206</td><td>207</td><td>208</td><td>209</td><td>210</td></tr></table> Number Line  - Begin exploring rectangular arrays through the use of square tiles. Students arrange tiles in rows and columns to create rectangular arrays. As students become more proficient, students may begin to partition rectangles to make or draw arrays. - Describe rectangular arrays using precise language describing equal groups, rows, and columns. - Make explicit connections between rectangular arrays, equal groups, and skip counting. - Recognize and explain the patterns within the count sequence (SMP 7).	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210
181	182	183	184	185	186	187	188	189	190																							
191	192	193	194	195	196	197	198	199	200																							
201	202	203	204	205	206	207	208	209	210																							

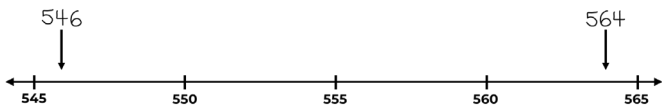
Previously 2.NBT.A.2; 2.OA.C.4; 2.G.A.2

2.NOS.A.3: Read and write numbers within 1000 using base-ten numerals, number names, and expanded form.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Read and write numerals to represent numbers within 120 (1.NOS.A.2). Where are students going? - Read and write whole numbers using base ten numerals, number names, and expanded form (3.NOS.A.1).	- Numbers can be represented in a variety of forms, using numerals, words, and equations. Base-ten numerals: 314 Number name: three-hundred fourteen Expanded form: $300 + 10 + 4$ - The focus of this standard should be on representations of numbers, not spelling. Providing a word bank or other scaffolds can support students in writing number names accurately. - Model precise mathematical language when reading whole numbers. The number, 648 is read as six hundred forty-eight. Avoid using “and” when reading multi-digit whole numbers (e.g., 648 is <u>not</u> read as six hundred and forty-eight).	- Make connections between the various forms. For example, a student may explain that 314 connects to $300 + 10 + 4$ because the value of each digit in 314 is shown as addends in the expanded form equation. - Use the various forms flexibly. If given base-ten numerals, students can identify the number name or expanded form, and they can also identify base-ten numerals and number names if given expanded form. - Explain the meaning of the digit in each place and how to represent numbers in different forms. Students begin to understand the number system abstractly (SMP 2). Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key Grade 2 Number and Operation Sense milestones in the Numbers & Number Sets strand of the Numeracy Development Framework.

Previously 2.NBT.A.3

2.NOS.A.4: Compare two numbers within 1000 by reasoning about the values of the hundreds, tens, and ones digits and/or the location of the numbers on a number line. Record the results of comparisons with the symbols $>$, $=$, and $<$.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Compare numbers within 100 (1.NOS.B.4). Where are students going? - Apply and extend place value understanding to whole numbers within 10,000 (3.NOS.A.1).	- When reasoning about the value of digits to compare, a student identifies the value of each digit, then compares the value of the hundreds digits first, followed by the tens and ones digits if needed. For example, to compare 546 and 564, a student may say, “Both numbers have 5 hundreds, so I need to compare the tens. 546 has 4 tens and 564 has 6 tens. Since 6 tens or 60 is greater than 4 tens or 40, 564 is greater than 546.” - When using a number line to compare, a student identifies the location of each number and analyzes their positions relative to one another. For example, a student may notice that 546 is to the left of 564 on the number line, indicating that 546 is less than 564.  - Connect the comparison to the value of and relationship between quantities. Avoid using “tricks” (e.g., alligator symbols) without connecting to the meaning of comparison.	- Use a variety of representations and strategies to compare numbers. - 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 support their reasoning. - Critique the reasoning of others. For example, if student A says that 658 is greater than 671, 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 Grade 2 Number and Operation Sense milestones in the Numbers & Number Sets strand of the Numeracy Development Framework.

Previously 2.NBT.A.4

2.NOS.A.5: Estimate quantities by reasoning about their location on a number line, their relationship to benchmark numbers (e.g. 10, 50, 100), and to assess reasonableness of sums and differences.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Estimate the location of numbers on a number line by reasoning about their relationship to benchmark numbers (1.NOS.B.6). Where are students going? - Use reasoning and number lines to estimate quantities and round to nearest 10 or 100 (3.NOS.A.1c). - Estimate sums and differences within 1,000 (3.NOS.D.6).	- Students are expected to estimate quantities within 1000. Students may begin using open number lines to help in visualizing numbers and their relative size. This understanding helps students to recognize the relationship between quantities and benchmark numbers, supporting their ability to make reasonable estimates. - Open number lines may be blank or partially labeled but should not have all numbers in the sequence labeled.  - When reasoning about a quantity's location on a number line, students consider where a number would fall on a number line in a given range. For example, if working with the number 68, a student may explain "68 is between 50 and 100. 68 is closer to 70 than to 60. So, 68 is almost halfway between 50 and 100."  - Benchmark numbers are familiar reference points. Often, benchmark numbers are multiples of 10, but they can also be other numbers that are familiar, such as 25 or 75. - When using benchmark numbers to estimate quantities, a student may determine that 68 is between 50 and 100. The student may recognize that 68 is close to 75, which would be reasonable estimate. - Estimation should be flexible. Avoid modeling or requiring prescriptive processes for estimation. - Pose "is it reasonable?" questions regularly to build estimation habits and to encourage students to consider reasonableness.	- Engage with physical number lines. Students may estimate location of given number on a number line taped to the classroom floor or large number line on classroom wall. For example, students may locate the location of 76 on physical number lines like those shown to the left. - Use provided number lines and to create their own number lines to estimate quantities. - Explain strategy for estimation. Students should be encouraged to use visual representations, such as number lines to explain. Students may also construct coherent chains of reasoning that connect mathematical ideas and evidence. - Discuss the reasonableness of estimations. For example, students may discuss which of the possible estimates is most reasonable given a quantity. Students may consider a specific context when assessing reasonableness. - Estimate before solving addition or subtraction problems to assess the reasonableness of an answer. For example, when solving $39 + 44$, a student may identify that both numbers are close to 40, so the sum should be close to 80 because $40 + 40 = 80$. - Apply estimation in authentic contexts (e.g., measurement, time, money). Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key Grade 2 Number and Operation Sense milestones in the Estimation strand of the Numeracy Development Framework.

Adopted 2025

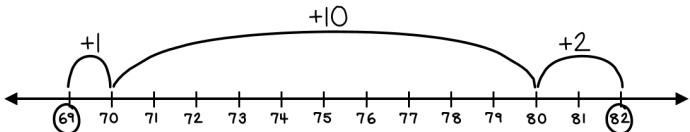
2.NOS.B ADD AND SUBTRACT WITHIN 20.**2.NOS.B.6: Recall or quickly derive addition and subtraction facts within 20.**

- a. Use counting, make ten, ten more/less, and doubling strategies to add and subtract.
- b. Use the use ten strategy (e.g., think of $9 + 1 + 6$ to solve $9 + 7$) and doubles plus one strategy (e.g., think of $4 + 4 + 1$ to solve $4 + 5$) to add and subtract.
- c. Use the inverse operation to add and subtract (e.g. think of $7 + ? = 15$ to solve $15 - 7 = ?$).

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Recall or quickly derive addition and subtraction facts within 20 (1.NOS.D.9). Where are students going? - Fluently add and subtract within 1,000 (3.NOS.D.7). Note: 2.NOS.B.6 focuses on developing mastery of addition and subtraction facts within 20, which build directly on the foundational work from Grade 1 (1.NOS.D.9). Continued practice and application across contexts are essential for mastery.	- Students continue to work toward mastery through the use of counting and reasoning strategies. - Model and encourage students to use reasoning to derive unknown facts (e.g., To solve $5 + 6$, the student may know that $5 + 5 = 10$ so $5 + 6$ is one more, 11. Or when solving $15 - 7$, students may notice that $7 + 7 = 14$, and 15 is just one more than 14 so $15 - 7$ is 8 because the difference is 7 and one more) as they work toward mastery. - Use equations with the equal sign in varying positions (e.g., $1 + 2 = 3$, $3 = 1 + 2$, etc.). - Provide a variety of opportunities for students to practice and demonstrate mastery. Avoid relying solely on timed tests and memorization.	- Engage in explicit strategy instruction, that allows time for exploration and practice. - Use a variety of representations, including manipulatives, number lines, hundreds charts, ten frames, and number bonds, as they continue to develop conceptual understanding of addition and subtraction. - Engage in Number Talks to promote flexible thinking and provide opportunities to explain their thinking and make connections to other strategies. - Construct coherent chains of reasoning to explain their strategy for finding a given sum or difference or proving their sum or difference is correct. Engaging in discussion around various strategies allows students still using counting strategies to make connections to more sophisticated strategies (SMP 2, SMP 3). - Discuss patterns and structure they notice while making tens, or using doubles to add and subtract, allowing students to make generalizations about how the strategies can help in learning addition and subtraction facts (SMP 7). Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key Grade 2 Number and Operation Sense milestones in the Operations strand of the Numeracy Development Framework.

Previously 2.OA.B.2

2.NOS.C USE REPRESENTATIONS, PLACE VALUE UNDERSTANDING, AND PROPERTIES OF OPERATIONS TO ADD AND SUBTRACT.**2.NOS.C.7: Represent whole number sums and differences within 100 using lengths on a number line.**

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Add within 100 using counting strategies and strategies based on place value (1.NOS.E.8). Where are students going? - Fluently add and subtract within 1000 (3.NOS.D.7). - Solve problems involving the addition and subtraction of time intervals (3.GR.A.2).	- Represent the difference between 82 and 69 by using a number line to solve the problem: The school bus will travel 82 miles to a sporting event. After traveling 69 miles, how many miles does the bus have left to travel to arrive at the sporting event?  - Use number lines flexibly. Avoid requiring students to start from same number every time (e.g., students should not be expected to always start number line at the first added in the given expression or equation).	- Use both partitioned and open number lines. - Use both horizontal and vertical number lines. When using horizontal number lines, make connections to rulers. When using vertical number lines, make connections to thermometers. - Model authentic and mathematical contexts by representing situations on a number line (SMP 4). - Develop their proficiency using number lines by initially making multiple “jumps” of one to perform operations. As students become more proficient, they will recognize the repeated calculations can be completed more efficiently through “jumps” of larger quantities (SMP 8). - Use number lines to explain mathematical thinking and explain how to solve an addition or subtraction problem.

Previously 2.MD.B.6

2.NOS.C.8: Fluently add and subtract within 100.

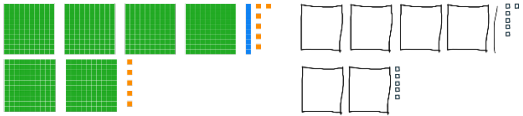
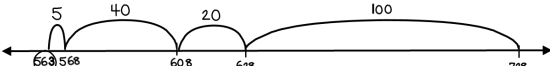
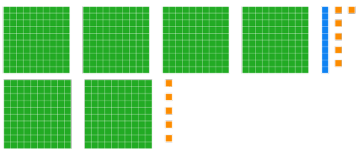
- a. Use strategies based on counting (e.g., counting on, counting back) and place value (e.g., partial sums, making tens, etc.) to add and subtract.
- b. Use properties of operations, and the inverse relationship between addition and subtraction to add and subtract.
- c. Determine and explain when a strategy is most efficient.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Add within 100 (1.NOS.E.10). - Subtract a 1-digit number from a 2-digit number without regrouping (1.NOS.E.13). Where are students going? - Fluently add and subtract within 1,000 (3.NOS.D.7).	- Model the various approaches and encourage flexibility. Avoid modeling or requiring a single approach. 2.NOS.C.8a: Use number lines and/or equations to represent counting strategies. Model and encourage students to count on or back in chunks to be more efficient. For example, a student may use the steps shown to solve $56 - 29$. $56 - \mathbf{6} = 50$ $50 - \mathbf{20} = 30$ $30 - \mathbf{1} = 29$ 2.NOS.C.8a: Apply place value understanding to use partial sums strategy, which involves decomposing addends by place value then adding tens to tens, ones to ones, then adding the partial sums to find the total. For example, a student may show the steps shown below to solve $37 + 48$. $37 = 30 + 7 \text{ and } 48 = 40 + 8$ $7 + 8 = 15$ $30 + 40 = 70$ $70 + 15 = 85$ 2.NOS.C.8c: When determining efficiency, consider the quantities involved, their relationships to benchmark numbers, and how those relationships influence strategy choice. Use think-alouds to model this decision-making process. For example, a student may explain “when solving $29 + 36$, I used the use ten strategy because 29 is close to 30. I took 1 from 36 and added it to 29 to make 30. Then, I added $30 + 35 = 65$.” - Use equations with equal sign in varying positions (e.g., $1 + 2 = 3$, $3 = 4 - 1$, etc.). Addition equations may include two or more addends.	- Make explicit connections between different approaches. - Use strategies flexibly, making decisions on which strategy or method to use based on the numbers or context of the given problem (SMP 5). - Engage in Number Talks to promote flexible thinking and provide opportunities to explain their thinking and make connections to other strategies. - Apply estimation strategies to assess the reasonableness of sums and differences (2.NOS.A.5). - Apply strategies to efficiently add more than two addends. Discuss how having more than two addends may impact strategy choice. Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key Grade 2 Number and Operation Sense milestones in the Operations strand of the Numeracy Development Framework.

Previously 2.NBT.B.5; 2.NBT.B.6

2.NOS.C.9: Add and subtract within 1000, recognizing that when adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

- Use concrete models or drawings to add and subtract.
- Use strategies based on place value (counting on, partial sums, making tens, etc.) to add and subtract.
- Use properties of operations, and/or the relationship between addition and subtraction to add and subtract.
- Represent and explain the calculation by connecting the strategy used to the meaning of addition and subtraction.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Add within 100 including adding a two-digit number and a one-digit number and adding a two-digit number and a multiple of 10 (1.NOS.E.10). Where are students going? - Fluently add and subtract within 1000 (3.NOS.D.7).	- Students continue to build understanding of addition and subtraction through a balance of concrete, semi-concrete, and abstract approaches. Avoid moving to abstract approaches too quickly without ensuring students have sufficient experience with concrete and semi-concrete approaches. 2.NOS.C.9a: A student may use concrete models to represent and solve, $416 + 205$. As students become more proficient, they will transition to using drawings.  2.NOS.C.9b: Students may use partial sums to add. For example, when adding $416 + 205$, a student may decompose each addend into hundreds, tens, and ones to be added separately. $\begin{array}{r} 416 = 400 + 10 + 6 \\ 205 = 200 + 5 \end{array}$ $\begin{array}{r} 400 + 200 = 600 \\ 10 + 0 = 10 \\ 6 + 5 = 11 \\ 600 + 10 + 11 = 621 \end{array}$ 2.NOS.C.9d: When solving $728 - 165$, a student may use a number line to represent and solve. The student may explain "I can break 165 into $100 + 60 + 5$. Then I can subtract each part from 728. 60 can be broken into $40 + 20$ to make subtraction easier. The difference is 563."  - Use equations with equal sign in varying positions (e.g., $1 + 2 = 3$, $3 = 4 - 1$, etc.).	- Make explicit connections between different representations or approaches. For example, a student may connect their use of concrete models to partial sums, recognizing that hundreds are added to hundreds, tens are added to tens, and ones are added to ones in each of these methods.  $\begin{array}{r} 416 \\ + 205 \\ \hline 621 \end{array}$ $\begin{array}{r} 400 + 200 = 600 \\ 10 + 0 = 10 \\ 6 + 5 = 11 \end{array}$ - Use strategies flexibly, making decisions on which strategy or method to use based on the numbers or context of the given problem (SMP 5). - Construct coherent chains of reasoning to explain their selected strategy for finding a given sum or difference. Engaging in discussion around various strategies allows students using less efficient strategies to make connections to more sophisticated strategies (SMP 2, SMP 3).

Previously 2.NBT.B.7; 2.NBT.B.9

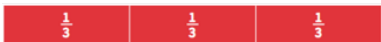
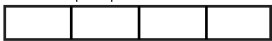
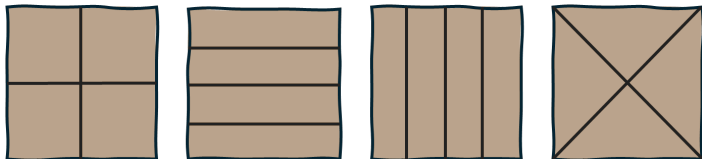
2.NOS.C.10: Mentally add and subtract 10 or 100 to a given number 100-900.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Identify 10 more or 10 less than a given number (1.NOS.E.11). Where are students going? - Fluently add and subtract within 1,000 (3.NOS.D.7).	- Hundreds charts support students in visualizing the structure of numbers, making connections to place value, and recognizing the relationship between numbers. - Number lines support students in visualizing the sequence of numbers and recognizing the relationship between numbers. - Presenting problems in context can support students in making sense of and performing mental computation.	- Mentally add or subtract 10 or 100 to given numbers as part of daily routines. - Recognize and explain place value patterns (SMP 7).

Previously 2.NBT.B.8

2.NOS.D UNDERSTAND EQUAL PARTS OF A WHOLE.

2.NOS.D.11: Partition circles and rectangles into equal shares (halves, thirds, and fourths) recognizing that equal shares do not need to have the same shape. Determine how many equal shares are needed to make a whole (e.g., three thirds).

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Partition circles and rectangles into equal shares, halves and fourths (1.NOS.F.14). Where are students going? - Partition shapes into equal parts and represent with fractions; explain meaning of fraction in terms of the whole and equal shares (3.NOS.F.10).	- Build students' conceptual understanding by connecting fractions to contexts that are familiar to students, such as sharing a candy bar. Students may represent fractions using physical objects, manipulatives, or drawings.    - As students explore and partition circles and rectangles of varying sizes, support students to recognize and verbalize that when creating more equal parts or equal shares, the equal parts or equal shares must be smaller. - Students will use words (e.g., one-half, one-third, one-fourth). Students are not expected to use fraction notation (e.g., $\frac{1}{2}$), but fraction notation can be modeled for students. - Provide examples of both pre-partitioned and unpartitioned representations. pre-partitioned  unpartitioned 	- Partition circles and rectangles in multiple ways to represent halves, thirds, and fourths. - Use examples and counterexamples to justify or refute mathematical claims. For example, a student may use the counterexample shown below to refute the statement that all shapes cut into two pieces represent halves (SMP 3).  - Use visual or contextual representations to explain that equal shares do not need to have the same shape. For example, if cutting a brownie into fourths, the brownie could be cut in different ways with the equal shares being different shapes (SMP 3).  - Make connections to time when discussing halves and quarters (2.GR.C.7; 2.GR.C.8). Make connections to money when discussing quarters (2.GR.C.9). Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key Grade 1 Number and Operation Sense milestones in the Fractions & Decimals strand of the Numeracy Development Framework.

Previously 2.G.A.3

Algebraic Thinking (AT)

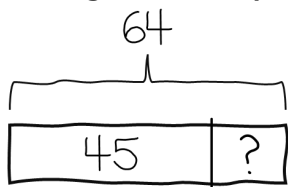
Algebraic Thinking (AT) Clusters	Connections to the Numeracy Development Framework
2.AT.A Solve problems involving addition and subtraction.	Standards within this cluster directly contribute* to the Grade 2 Algebraic Thinking milestones within the Creating Equations & Inequalities and Solving Equations & Inequalities strands of the Numeracy Development Framework.
2.AT.B Recognize patterns in numbers.	Standards within this cluster reinforce important mathematical concepts and provide opportunities for meaningful practice and application of skills, supporting 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.

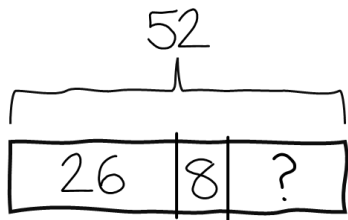
2.AT.A SOLVE PROBLEMS INVOLVING ADDITION AND SUBTRACTION.

2.AT.A.1: Use addition and subtraction within 100 to solve one-step problems in context involving an unknown in any situation or position by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Add and subtract within 20 involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions (1.AT.A.2). Where are students going? - Use multiplication and division within 100 to solve one-step problems in context (3.AT.A.1). - Use the four operations to solve two-step problems in context (3.AT.A.2).	- Addition and subtraction problems should be presented in authentic contexts. Refer to Addition and Subtraction Situations by Grade Level for examples of addition and subtraction situations with unknowns in all positions. - Support students in making sense of addition and subtraction situations in context. Model and encourage students to retell, act it out, draw pictures, etc. Avoid using key word identification in word problems (e.g., CUBES method) as this does not support students problem solving and may lead to misconceptions. - As students continue to develop understanding of addition and subtraction, support them in making connections to part-whole relationships. When solving the problem shown below, students recognize the 45 points and the points scored during the fourth quarter are combined to make the total points scored. A basketball team scored 45 points. They scored more points during the fourth quarter. The team ended the game with 64 points. How many points did the team score during the fourth quarter?  The diagram shows a horizontal rectangle divided into two equal parts by a vertical line. Above the entire rectangle is the number 64. Inside the left part of the rectangle is the number 45. Inside the right part of the rectangle is a question mark (?). - A variety of representations and strategies can be used to represent and solve addition and subtraction problems. Avoid modeling or requiring a specific representation or strategy.	- Continue to build understanding of addition and subtraction as operations through the exploration of contextual problems. - Describe what is happening in an addition or subtraction situation in their own words (SMP 1). - Discuss the meaning of quantities in the presented contexts and how the quantities are related (SMP 2). Students should have the opportunity to determine the information needed to answer the mathematical question. - Represent addition or subtraction situations mathematically by selecting and applying appropriate representations (e.g., manipulatives, drawings, number lines, equations, etc.). Develop flexibility in their use of various strategies. - Engage in problem contexts that involve measurement (e.g., finding the difference between two lengths). - Engage in problem contexts that involve saving and spending (e.g., You have \$59 saved. You saved \$14 this week. How much have you saved altogether?). \$ Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key Grade 2 Algebraic Thinking milestones in the Creating Equations & Inequalities strand of the Numeracy Development Framework.

Previously 2.OA.A.1; 2.MD.B.5

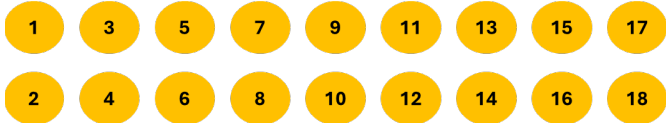
2.AT.A.2: Use addition and/or subtraction within 100 to solve two-step problems in context involving an unknown in any situation or position by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Add and subtract within 20 involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions (1.AT.A.2). Where are students going? - Use the four operations to solve two-step problems in context (3.AT.A.2).	- Addition and subtraction problems should be presented in authentic contexts. Refer to Addition and Subtraction Situations by Grade Level for examples of addition and subtraction situations with unknowns in all positions. - Support students in making sense of addition and subtraction situations in context. Model and encourage students to retell, act it out, draw pictures, etc. Avoid using key word identification (e.g., CUBES method) as this does not support student's problem solving and may lead to misconceptions. - As students continue to develop understanding of addition and subtraction, support them in making connections to part-whole relationships. When solving the problem shown below, students recognize the mystery books, biographies, and comic books are combined to make the total number of books ordered. The librarian orders 52 new books. He orders 26 mystery books, 8 biographies, and some comic books. How many comic books did the librarian order?  - A variety of representations and strategies can be used to represent and solve addition and subtraction problems. Avoid modeling or requiring a specific representation or strategy.	- Continue to build understanding of addition and subtraction as operations through the exploration of contextual problems. - Describe what is happening in an addition or subtraction situation in their own words (SMP 1). - Discuss the meaning of quantities in the presented contexts and how the quantities are related (SMP 2). Students should have the opportunity to determine the information needed to answer the mathematical question. - Represent addition or subtraction situations mathematically by selecting and applying appropriate representations (e.g., manipulatives, drawings, number lines, equations, etc.). Develop flexibility in their use of various strategies. Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key Grade 2 Algebraic Thinking milestones in the Creating Equations & Inequalities and Solving Equations & Inequalities strands of the Numeracy Development Framework.

Previously 2.OA.A.1; 2.MD.B.5

2.AT.B RECOGNIZE PATTERNS IN NUMBERS.

2.AT.B.3: Determine whether a group of objects within 20 has an odd or even number of members (e.g., by pairing objects or counting them by 2s). Write an equation to express an even number as a sum of two equal addends.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Understand the meaning of the equal sign and determine if addition and subtraction equation are true (1.AT.A.1). - Skip count by 2s (2.NOS.A.2). Where are students going? - Represent and interpret multiplication of two factors (3.NOS.B.2). - Identify arithmetic patterns and explain them using properties of operations (3.AT.A.3).	- Students use manipulatives to represent situations to determine whether group of objects is odd or even. In the example below, a student may use manipulatives to pair objects without leftovers to identify that 18 is even. Students may skip count by 2s when counting pairs. The class has 18 students. When working in pairs will each student have a partner?  Each person in the class will have a partner. 18 is an even number. - In the next example, the student may use manipulatives to create two equal groups and notice there is one leftover, so 13 is odd. There are 13 players on the soccer team. The coach is creating two teams during practice. Will the teams have equal number of players?  - Provide concrete experiences for students to develop an understanding of odd and even. Avoid relying solely on the pattern of odd numbers have 1, 3, 5, 7, 9 in the ones place and even numbers have 0, 2, 4, 6, 8 in the ones place to identify odd and even numbers.	- Pair and group objects to explore the concept of even and odd. Encourage students to skip count by 2s when counting pairs. - Apply even and odd to authentic contexts. - Write equations to represent even numbers. - Connect even numbers to doubles facts (e.g., $9 + 9 = 18$) and odd numbers to doubles plus one facts (e.g., $6 + 6 + 1 = 13$). - Use visual, symbolic, or contextual representations to explain why a given number is even or odd (SMP 3).

Previously 2.OA.C.3

Geometric Reasoning and Measurement (GR)

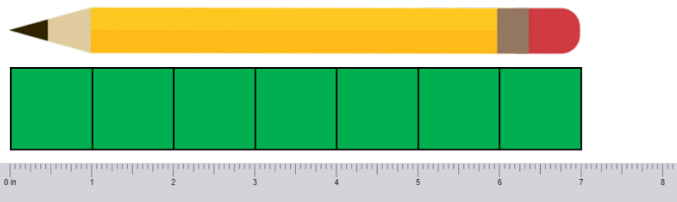
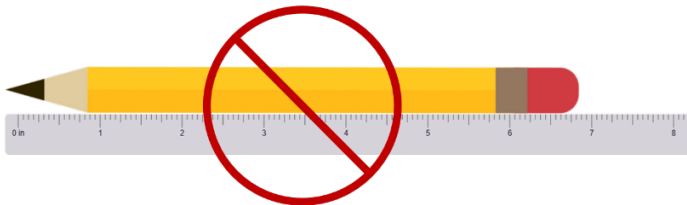
Geometric Reasoning Clusters	Connections to the Numeracy Development Framework
2.GR.A Measure and estimate lengths in standard units.	Standards within this cluster directly contribute* to the Grade 2 Geometric Reasoning milestones within the Measurement strand of the Numeracy Development Framework.
2.GR.B Reason with shapes and their attributes.	Standards within this cluster directly contribute* to the Grade 2 Geometric Reasoning milestones within the Spatial Reasoning strand of the Numeracy Development Framework.
2.GR.C Work with time and money.	Standards within this cluster reinforce important mathematical concepts and provide opportunities for meaningful practice and application of skills, supporting 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.

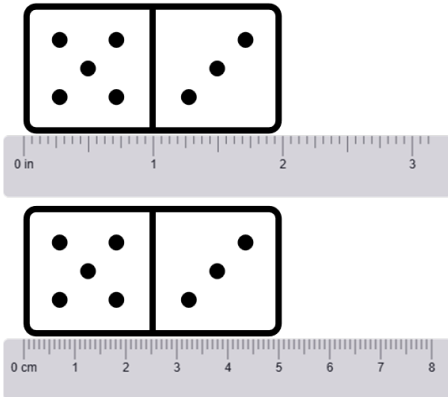
2.GR.A MEASURE AND ESTIMATE LENGTHS IN STANDARD UNITS.

2.GR.A.1: Measure the length of an object to the nearest whole unit by using appropriate tools (e.g., rulers, yardsticks, meter sticks, and measuring tapes).

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Use non-standard units to measure length (1.GR.A.2). Where are students going? - Measure objects using different length units and compare the two measurements relative to the size of the unit chosen (2.GR.A.2).	- As students transition from non-standard units (used in Grade 1) to standard units, students may begin using inch tiles to measure. Students can iterate inch tiles to identify length of the pencil shown below. Model proper alignment when measuring.  - The iteration of square inch tiles can then be connected to the use of a ruler as a more efficient and accurate way to measure larger objects. - Grade 2 students will measure lengths to the nearest whole unit. Select objects whose lengths clearly align with or are close to whole-unit measurements to support accurate estimation. - Students must make decisions about which measuring tool to use when measuring lengths. For example, when measuring the length of the classroom a student may determine that using a yardstick or meter stick would be appropriate but when measuring the length of a desk a ruler would be appropriate.	- Explore using multiple tools when measuring lengths to discover relationships between tools and sizes of objects. - Estimate before measuring lengths to make decisions and select the most appropriate tool (SMP 5). - Practice using measurement tools to ensure precise measurements, aligning the 0 marker on the tool and not just the edge of the measuring tool (SMP 6).   - Use measurement vocabulary when explaining their process and describing attributes of objects. Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key Grade 2 Geometric Reasoning milestones in the Measurement strand of the Numeracy Development Framework.

Previously 2.MD.A.1

2.GR.A.2: Measure the length of an object twice using different length units. Compare the two measurements relative to the size of the unit chosen.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Use non-standard units to measure length (1.GR.A.2). - Measure the length of an object to the nearest whole unit (2.GR.A.1). Where are students going? - Apply relationship between measurement units to convert measurements (4.GR.A.1).	- Through repeated experiences, students come to understand that the size of the unit used in measurement affects the result. Support students in recognizing and explaining that smaller units lead to larger numerical measurements because more of them are needed to cover the same length. - When measuring a domino tile using both inches and centimeters, a student may identify that “the domino tile is about 2 inches and about 5 centimeters.” A teacher may ask students to explain why the measurements differ. 	- Experiment by measuring objects using different units. Through the experimentation, students will begin to discuss what they are noticing as they measure the same object with different length units. - Use precise measurement language to construct coherent chains of reasoning. For example, after measuring the domino tile in inches and centimeters, a student may explain that “centimeters are smaller units it takes more to match the length of the domino” (SMP 3, SMP 6). - Make connections between the size of a unit and the number of units needed (SMP 7).

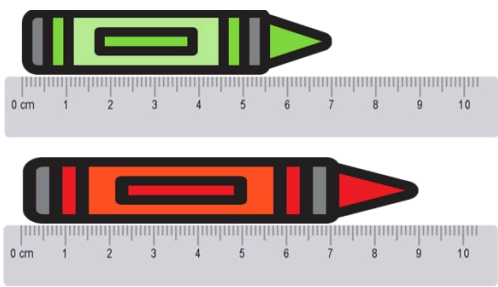
Previously 2.MD.A.2

2.GR.A.3: Estimate lengths using units of inches, feet, centimeters, and meters.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Use non-standard units to measure length (1.GR.A.2). Where are students going? - Measure and estimate liquid volumes and masses of objects (3.GR.A.3).	- To estimate effectively, students must develop a sense of the length of the standard units. - Emphasize that estimation is about reasonableness, not exactness. Students may identify a reasonable range of estimates (e.g., the height of the slide between 6 and 7 feet). - Model appropriate estimation language (e.g., about, a little more, a little less, close to). - Differentiate between estimate and measure. When we estimate a length, we are considering an approximate measurement without the use of a measurement tool. When we measure a length, we are using a measurement tool to find a precise measurement. Avoid using estimate and measure interchangeably.	- Engage in measurement estimation as part of regular routines. - Explore objects to establish their own measurement benchmarks. For example, a student may identify a small paperclip as a benchmark for 1 inch. - Verify the accuracy of their estimation by measuring the object. - Justify their estimates using reasoning and comparisons. Use precision measurement language in explanations (SMP 6). Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key Grade 2 Geometric Reasoning milestones in the Measurement strand of the Numeracy Development Framework.

Previously 2.MD.A.3

2.GR.A.4: Measure to determine how much longer one object is than another, expressing the difference in length in terms of a standard-length unit.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Compare the lengths of two objects indirectly by using a third object (1.G.A.1). Where are students going? - Solve problems in measurement contexts (3.GR.A.4).	When measuring two crayons, a student selects centimeters as an appropriate unit and uses a ruler to measure. After measuring, the student expresses the difference by stating “the red crayon is 2 centimeters longer than the green crayon.” 	- Use measurement tools to measure classroom objects and compare their lengths, recording the results of the comparison. - Model their comparisons using drawings or statements.

Previously 2.MD.A.4

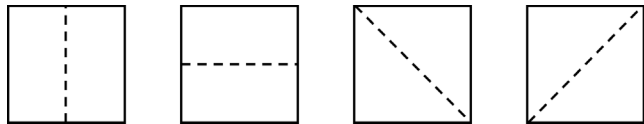
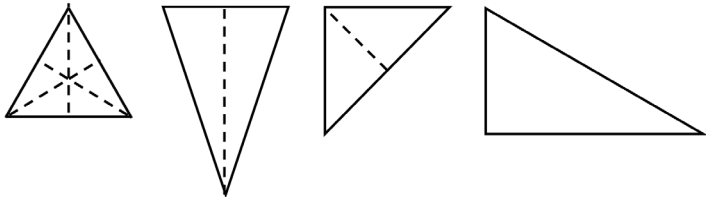
2.GR.B REASON WITH SHAPES AND THEIR ATTRIBUTES.

2.GR.B.5: Identify and draw shapes (triangles, quadrilaterals, pentagons, hexagons, and cubes) having specific attributes, such as a given number of angles or a given number of equal faces.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Distinguish between defining and non-defining attributes (1.GR.B.3). Where are students going? - Explain that shapes in different categories may share attributes which can define a larger category (3.GR.B.5).	- Students are expected to identify and draw two-dimensional shapes (triangles, quadrilaterals, pentagons, hexagons). Students are expected to identify three-dimensional shapes (cubes). - 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.  - Given specific attributes, students should be able to identify and draw the shapes. For example, if asked to draw a shape with 3 sides and 3 angles, the student would draw a triangle. Or if asked to identify the shape that has 6 equal faces, the student would identify a cube. Students are not expected to draw a cube. - Carefully select examples to distinguish between two- and three-dimensional shapes. For instance, the face of a die is a square (two-dimensional), while the entire die is a cube (three-dimensional). Avoid using examples that may be misleading.	- Engage in hands-on experiences with everyday objects when identifying shapes. - Explain their reasoning using attributes of the shapes. - Use precise language to describe defining attributes of shapes, such as sides and corners/angles (SMP 6).

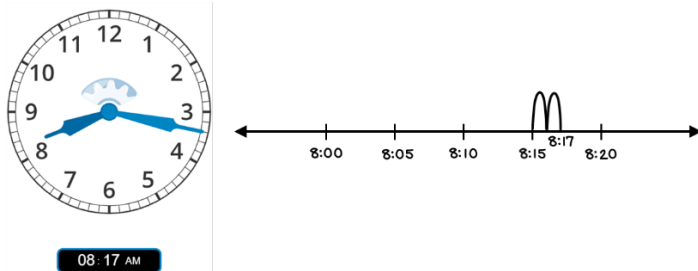
Previously 2.G.A.1

2.GR.B.6: Explain that a line of symmetry for a two-dimensional figure is a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Describe shapes using defining attributes (K.GR.B.5, 1.GR.B.3). Where are students going? - Recognize and apply attributes and properties to explain different categories of shapes (3.GR.B.5).	- Line symmetry is when a shape or figured can be folded along a line so that both halves match exactly  - It is important to provide a variety of shapes or figures when exploring symmetry. For example, when exploring symmetry of triangles, students must analyze different kinds of triangles to avoid inaccurate generalizations. 	- Fold paper, use mirrors, or use tracing paper to explore and find lines of symmetry. - Draw and test lines of symmetry of various figures/shapes. - Find examples of symmetry in everyday objects (e.g., face, butterfly, flower). - Examine examples and non-examples of line symmetric shapes and figures. Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key Grade 2 Geometric Reasoning milestones in the Spatial Reasoning strand of the Numeracy Development Framework.

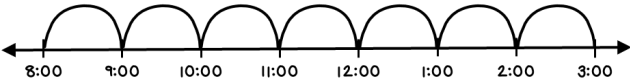
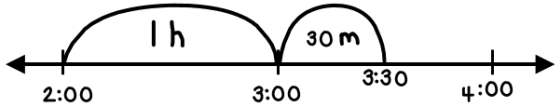
Previously 4.G.A.3

2.GR.C WORK WITH TIME AND MONEY.**2.GR.C.7: Tell and represent time to the nearest minute using multiple representations (e.g., digital clocks, analog clocks, number lines).**

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Tell time in hours, half hours, and quarter hours (1.GR.C.5). Where are students going? - Solve problems in contexts involving time intervals (3.GR.A.2).	- Students continue to develop the concept of time as a measure that tells us when events happen and how long the events last. Clocks (analog and digital) and timers can be used to help students understand time. - Provide both analog and digital representations of times to the nearest minute. Students can also use number lines to represent time to the nearest minute, in preparation for working with elapsed time.  The image shows an analog clock on the left with the hour hand between 8 and 9, and the minute hand pointing to 3 (15 minutes past the hour). Below the clock is a digital display showing '08:17 AM'. To the right of the clock is a horizontal number line starting at 8:00 and ending at 8:20, with tick marks every 5 minutes (8:00, 8:05, 8:10, 8:15, 8:20). A marker is placed on the line between 8:15 and 8:20, labeled '8:17'. - Connect time to everyday events, including identifying whether a given time is in the a.m. or p.m. - While students should be familiar with reading both digital and analog clocks, instruction should prioritize conceptual understanding of time. Analog clocks are not an instructional focus and should not monopolize instructional time.	- Engage in daily routines that support students' understanding of time and telling time. - Use digital and analog clocks throughout the day (e.g., classroom schedule, lunch time). - Discuss the patterns or structures when exploring the clock. For example, students may explain the connection to skip counting or discuss how the movement of one hand impacts the movement of the other (SMP 7). - Make connections to fractions when discussing half and quarter hours (2.NOS.D.11).

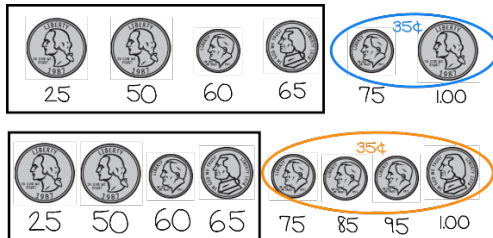
Previously 2.MD.C.7

2.GR.C.8: Estimate and calculate elapsed time to the hour and half hour (e.g. If the school day begins at 8 a.m. and ends at 3 p.m., the school day lasts 7 hours).

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? Estimate time intervals for activities (1.GR.C.5). Where are students going? Solve problems in contexts involving time intervals (3.GR.A.2).	- This standard emphasizes students' ability to estimate and calculate elapsed time to the hour and half hour using standard time (12-hour clock format). - Elapsed time is the time that passes between the start of an event and the end of the event. - When estimating elapsed time, students use benchmark times. For example, if estimating the elapsed time of a football game that began at 1:05 p.m. and ended at 3:55, a student may explain that 1:05 p.m. is close to 1:00 p.m. and 3:55 p.m. is close to 4:00 p.m. Then the student can determine the time between 1:00 p.m. and 4:00 p.m., which is 3 hours, to estimate that the football game was about 3 hours long. - When calculating elapsed time, students use number lines to represent addition and subtraction of time intervals as in the examples shown below. If the school day begins at 8 a.m. and ends at 3 p.m., the school day lasts 7 hours.  If a movie starts at 2:00 p.m. and ends at 3:30 p.m., students determine the elapsed time is 1 hour and 30 minutes.  - When presenting contexts involving elapsed time, label the times using a.m. and p.m. Students will use a.m. and p.m. when recording time and elapsed time.	- Engage in daily routines that support students' understanding of time, including estimating and calculating time intervals. - Use digital clocks, analog clocks, and both partitioned and open number lines when estimating and calculating elapsed time. - Make sense of time and relationship between times. For example, students explain how a number line can represent how hours and half hours can be added on a number line (SMP 2). - Solve problems in authentic contexts and use representations to explain mathematical ideas. - Make connections to fractions when discussing half and quarter hours (2.NOS.D.11).

Adopted 2025

2.GR.C.9: Count mixed sets of coins and bills to solve problems in context (within \$20.00) involving bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Identify and know the value of coins and bills (1.GR.C.6). Where are students going? - Solve problems in context involving money (3.AT.A.1, 3.AT.A.2).	- Use both physical coins, manipulatives, and images. When using images of coins and bills, use both front and back of the coin or bill so students become familiar with both. - When first introducing counting sets of coins, provide sets of the same coin to support students in recognizing the connection to skip counting. Transition to counting mixed sets but continue to encourage the use of sorting and skip counting to support efficiency. - Model how to organize a mixed set of coins by like coins to make skip counting more efficient.  For example, a student could group the dimes together and pennies together then begin counting by tens when counting the set shown below and transition to count by fives and then ones.  - Mixed coin and bill sets should be provided with visuals but also as a list of coins and bills (e.g., four-dollar bills, three dimes, one nickel, and two pennies).	- Engage in hands-on experiences and daily routines as they develop the concept of money and counting mixed sets. - Reason about the value of coins and bills to determine totals both numerically and in context, and to explain their thinking (SMP 2). - Explore equivalent amounts with a variety of coin or bill combinations. For example, a student recognizes that \$1.20 can be created with a one-dollar bill and two dimes or with four quarters and four nickels. - Record money amounts using symbols (\$) and ¢ appropriately. The use of dollar and cent notation (\$1.25) should be modeled for students. - Solve problems in context by making connections between counting coins and bills, addition and subtraction. For example, a student can determine the amount of change needed if a customer buys an eraser from the school store that costs 65¢ and pays with a one-dollar bill. The student may begin at 65¢ and count on to find the correct amount of change, as shown in the examples below.  - Participate in pretend play or a classroom store to practice using money in authentic contexts, including buying and spending. \$ - Make connections to fractions when discussing the value of quarters (2.NOS.D.11).

Previously 2.MD.C.8

Reasoning with Data and Statistics (DS)

Reasoning with Data and Statistics Clusters	Connections to the Numeracy Development Framework
2.DS.A Represent and interpret data.	Standards within this cluster directly contribute* to the Grade 2 Reasoning with Data, Statistics, and Probability milestones within the Collecting & Representing Data and Interpreting & Analyzing 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.

2.DS.A REPRESENT AND INTERPRET DATA.**2.DS.A.1: Ask and answer questions by collecting, organizing and summarizing data.**

- a. Craft a question that can be answered by collecting categorical and numerical data.
- b. Collect and organize data using surveys, making observations, or measuring.
- c. Represent categorical data using picture graphs and bar graphs. Represent numerical data using line plots.
- d. Summarize the data presented in data visualizations using “most,” “least,” “greater than,” “less than,” and “equal to” and determine what questions can be answered with a given data set.

Content Progression	Examples and Clarifications	Students should have the opportunity to...
Where are students coming from? - Ask and answer questions by collecting, organizing (in tally charts and picture graphs), and summarizing categorical data (1.DS.A.1). Where are students going? - Ask and answer questions by collecting, organizing (in picture graphs, bar graphs, and line plots), and summarizing data (3.DS.A.1).	- Understanding data goes beyond making graphs—it involves engaging in the full statistical process: asking meaningful questions, collecting and organizing data, and interpreting results to make sense of the world. Authentic applications help students see data as a tool for inquiry and decision-making, not just representation. - Categorical data refers to data that can be sorted into groups or categories (e.g., transportation to school or choice for class field trip, etc.). - Numerical data refers to data that can be counted or measured and can be expressed as a number (e.g., heights of students, temperature). 2.DS.A.1a: Students generate questions based on experiences or interests. The questions generated should be statistical questions that involve variability and can only be answered by collecting data. 2.DS.A.1b: Categorical data can be collected using a survey or through observation, for example a student may survey classmates about favorite playground equipment or may observe the activities that students engage in during recess. When collecting numerical data, students may conduct surveys (e.g., survey classmates on their age), count, or measure (e.g., measure the height of classroom plants). <i>Continued on next page</i>	- Work with authentic data that is relevant and of interest to them. - Explore examples and non-examples of appropriate statistical questions (e.g., “How old is our school building?” is not a statistical question because there is one answer, there is no variability). - Explore examples and non-examples of questions that can be answered based on a data set. For example, given <i>Heights of Students in Our Class</i> data (shown in 2.DS.A.1c to the left), students may identify the following example and non-example. Example: What is the most common height in our class? Non-example: Who is the tallest person in the class? - Discuss the similarities and differences of picture graphs, bar graphs, and line plots and the benefits of using one instead of another. - Identify the total number of data points and connect this to the context of the data. - Connect data summaries to authentic decision making, for example, a student may use <i>Favorite Playground Equipment</i> (shown in 2.DS.A.1c to the left) data to recommend that the school purchases more balls than other equipment when purchasing new playground equipment. Students must have multiple opportunities and varied ways to demonstrate mastery, as this standard constitutes key Grade 2 Reasoning with Data and Statistics milestones in the Collecting &

References

Ebby, C. B., Hulbert, E. T., & Broadhead, R. M. (2020). *A focus on addition and subtraction: Bringing mathematics education research to the classroom* (1st ed.). Routledge.

Van de Walle, J. A., Karp, K. S., & Bay-Williams, J. M. (2020). *Elementary and middle school mathematics: Teaching developmentally* (10th ed.). Pearson

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.