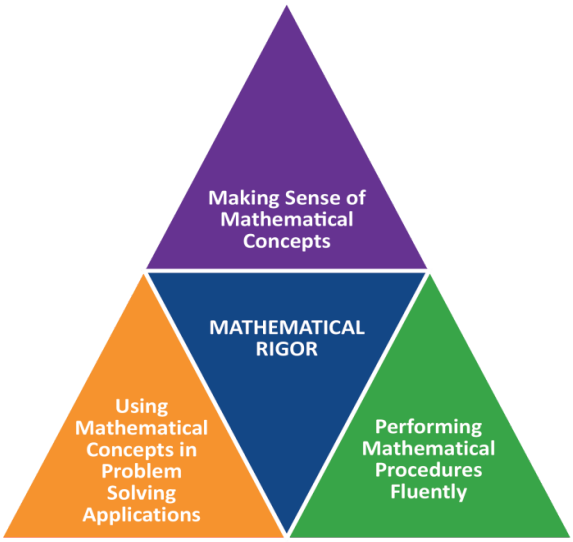
Cambridge Public Schools
Grade 1 Mathematics Curriculum Map
MATH IN FOCUS *2017-2018*

The Massachusetts Department of Elementary and Secondary Education adopted revised frameworks for mathematics in March 2017. Students who meet the standards outlined in the *2017 Massachusetts Framework for Mathematics* are able to identify problems, represent problems, justify conclusions, and apply mathematics to practical situations. They build a strong foundation for applying these understandings and skills to solve real world problems.

The Cambridge Public Schools is committed to providing all students with experiences that create lifelong problem solvers, who can collaborate, adapt, and adjust to a diverse and an ever-changing society. **We believe that students should engage with meaningful real-world problems everyday.**

To achieve mathematical understanding, students should be actively engaged in meaningful and rigorous mathematics. The Mathematics Curriculum Frameworks *content standards* and *practice standards* focus on developing students in the all of the following areas:

- **Conceptual understanding** – make sense of the math, reason about and understand math concepts and ideas
- **Procedural skills** – know mathematical facts, compute and do the math
- **Capacity** – solve a wide range of problems in various contexts by reasoning, thinking, and **applying** the mathematics they have learned.



When students are first introduced to a mathematical concept, they explore and investigate the concept by using concrete objects, visual models, drawings, or representations to build their understanding. This serves to develop a strong understanding of number sense, decomposing and composing numbers, the relationship between addition and subtraction, and multiplication and division. Students reach fluency by building understanding of mathematical concepts and by building automaticity in the recall of basic computation facts. As students apply their mathematical knowledge and skills to solve real-world problems, they also gain an understanding of the importance of mathematics throughout their lives.

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In grade 1, instructional time should focus on four critical areas:

(1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20;
(2) developing understanding of whole number relationships and place value, including grouping in tens and ones;
(3) developing understanding of linear measurement and measuring lengths as iterating length units; and
(4) reasoning about attributes of, and composing and decomposing geometric shapes.

(1.) Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., "making tens") to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the relationship between addition and subtraction.

(2.) Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop an understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). Through activities that build number sense, they understand the order of the counting numbers and their relative magnitudes.

(3.) Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement.[1]

(4.) Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.

[1] Students should apply the principle of transitivity of measurement to make indirect comparisons, but they need not use this technical term.

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Standards for Mathematical Practice

The 2011 framework introduces Standards for Mathematical Practice. These standards complement the content standards so that students increasingly engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle, and high school years. These standards are the same at all grades from Prekindergarten to 12th grade. These eight practices can be clustered into the following categories as shown in the chart below:

<table>
<tr><td rowspan="3">Habits of Mind of a Productive Mathematical Thinker:

MP.1: Make sense of problems and persevere in solving them.

MP.6: Attend to precision.</td><td>Reasoning and Explaining

MP.2: Reason abstractly and quantitatively.

MP.3: Construct viable arguments and critique the reasoning of others</td></tr>
<tr><td>Modeling and Using Tools

MP.4: Model with mathematics.

MP.5: Use appropriate tools strategically.</td></tr>
<tr><td>Seeing Structure and Generalizing

MP.7: Look for and make use of structure.

MP.8: Look for and express regularity in repeated reasoning.</td></tr>
</table>

The Standards for Mathematical Practice in Grade 1

The PreK – 12 Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. The following lists examples of what the practice standards look like in Grade 1.

Standards	***Explanations and Examples***
Students are expected to: **1. Make sense of problems and persevere in solving them**.	Mathematically proficient students in Grade 1 examine problems (tasks), can make sense of the meaning of the task and find an entry point or a way to start the task. Grade 1 students also develop a foundation for problem solving strategies and become independently proficient on using those strategies to solve new tasks. In Grade 1, students' work builds from Kindergarten and still heavily relies on concrete manipulatives and pictorial representations. The exception is when the CCSS uses to the word fluently, which denotes mental

	mathematics. Grade 1 students also are expected to persevere while solving tasks; that is, if students reach a point in which they are stuck, they can reexamine the task in a different way and continue to solve the task. Lastly, at the end of a task mathematically proficient students in Grade ask themselves the question, "Does my answer make sense?"
Students are expected to: **2. Reason abstractly and quantitatively.**	Mathematically proficient students in Grade 1 make sense of quantities and the relationships while solving tasks. This involves two processes: decontexualizing and contextualizing. In Grade 1, students represent situations by decontextualizing tasks into numbers and symbols. For example, in the task, There are 60 children on the playground and some children go line up. If there are 20 children still playing, how many children lined up? Grade 1 students are expected to translate that situation into the equation: 60 – 20 = ___ and then solve the task. Students also contextualize situations during the problem solving process. For example, while solving the task above, students refer to the context of the task to determine that they need to subtract 20 since the number of children on the playground is the total number except for the 20 that are still playing. The processes of reasoning also applies to Grade 1, as they look at ways to partition 2dimensional geometric figures into halves, and fourths.
Students are expected to: **3. Construct viable arguments and critique the reasoning of others.**	Mathematically proficient students in Grade 1 accurately use definitions and previously established answers to construct viable arguments about mathematics. For example, while solving the task, "There are 15 books on the shelf. If you take some books off the shelf and there are now 7 left, how many books did you take off the shelf?" students will use a variety of strategies to solve the task. After solving the class, Grade 1 students are expected to share problemsolving strategies and discuss the reasonableness of their classmates' strategies.
Students are expected to: **4. Model with mathematics.**	Mathematically proficient students in Grade 1 model reallife mathematical situations with a number sentence or an equation, and check to make sure that their equation accurately matches the problem context. Grade 1 students rely on concrete manipulatives and pictorial representations while solving tasks, but the expectation is that they will also write an equation to model problem situations. For example, while solving the task "there are 11 bananas on the counter. If you eat 4 bananas, how many are left?" Grade 1 students are expected to write the equation 11 – 4 = 7. Likewise, Grade 1 students are expected to create an appropriate problem situation from an equation. For example, students are expected to create a story

	problem for the equation 13 – 7 = 6.
Students are expected to: **5. Use appropriate tools strategically.**	Mathematically proficient students in Grade 1 have access to and use tools appropriately. These tools may include counters, place value (base ten) blocks, hundreds number boards, number lines, and concrete geometric shapes (e.g., pattern blocks, 3d solids). Students should also have experiences with educational technologies, such as calculators and virtual manipulatives that support conceptual understanding and higherorder thinking skills. During classroom instruction, students should have access to various mathematical tools as well as paper, and determine which tools are the most appropriate to use. For example, while solving 12 + 8 = __, students explain why place value blocks are more appropriate than counters.
Students are expected to: **6. Attend to precision.**	Mathematically proficient students in Grade 1 are precise in their communication, calculations, and measurements. In all mathematical tasks, students in Grade 1 describe their actions and strategies clearly, using gradelevel appropriate vocabulary accurately as well as giving precise explanations and reasoning regarding their process of finding solutions. For example, while measuring objects iteratively (repetitively), students check to make sure that there are no gaps or overlaps. During tasks involving number sense, students check their work to ensure the accuracy and reasonableness of solutions.
Students are expected to: **7. Look for and make use of structure.**	Mathematically proficient students in Grade 1 carefully look for patterns and structures in the number system and other areas of mathematics. While solving addition problems, students begin to recognize the commutative property, in that 7 + 4 = 11, and 4 + 7 = 11. While decomposing twodigit numbers, students realize that any twodigit number can be broken up into tens and ones, e.g. 35 = 30 + 5, 76 = 70 + 6. Further, Grade 1 students make use of structure when they work with subtraction as missing addend problems, such as 13 – 7 = __ can be written as 7 + __ = 13 and can be thought of as how much more do I need to add to 7 to get to 13?
Students are expected to: **8. Look for and express regularity in repeated reasoning**.	Mathematically proficient students in Grade 1 begin to look for regularity in problem structures when solving mathematical tasks. For example, when adding up three onedigit numbers and using the make 10 strategy or doubles strategy, students engage in future tasks looking for opportunities to employ those same strategies. For example, when solving 8 + 7 + 2, a student may say, “I know that 8 and 2 equal 10 and then I add 7 to get to 17. It helps to see if I can make a 10 out of 2 numbers when I start.” Further, students use repeated reasoning while solving a task with multiple correct answers. For example, in the task, “There are 12 crayons in the box.

	Some are red and some are blue. How many of each could there be?" Grade 1 students are expected to realize that the 12 crayons could include 6 of each color (6 + 6 = 12), 7 of one color and 5 of another (7 + 5 = 12), etc. In essence, students are repeatedly finding numbers that will add up to 12.

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Organization of the Pre-Kindergarten to Grade 8 Content Standards in the 2011 framework

The Pre-Kindergarten through Grade 8 content standards are organized by **grade level**. Within each grade level, standards are grouped first by **domain**, and then are further subdivided into **clusters** of related standards.

- **Standards** define what students should understand and be able to do.
- **Clusters** are groups of related standards. Note that standards from different clusters may sometimes be closely related, because mathematics is a connected subject.
- **Domains** are larger groups of related standards. Standards from different domains may sometimes be closely related.

The table below shows which domains are addressed at each grade level from Prekindergarten through Grade 5. When the domain ends, it is expected that students will show mastery of that content by the end of that grade (i.e., Students should mastery in Counting and Cardinality by the end of Kindergarten).

Grade	PreK	K	1	2	3	4	5	6	7	8
Domains	Counting and Cardinality									
	Operations and Algebraic Thinking									
		Number and Operations in Base Ten								
					Number and Operations – Fractions					
							The Number System			
								Ratios and Proportional Relationships		
								Expressions and Equations		
										Functions
	Measurement and Data									
	Geometry									
								Statistics and Probability		

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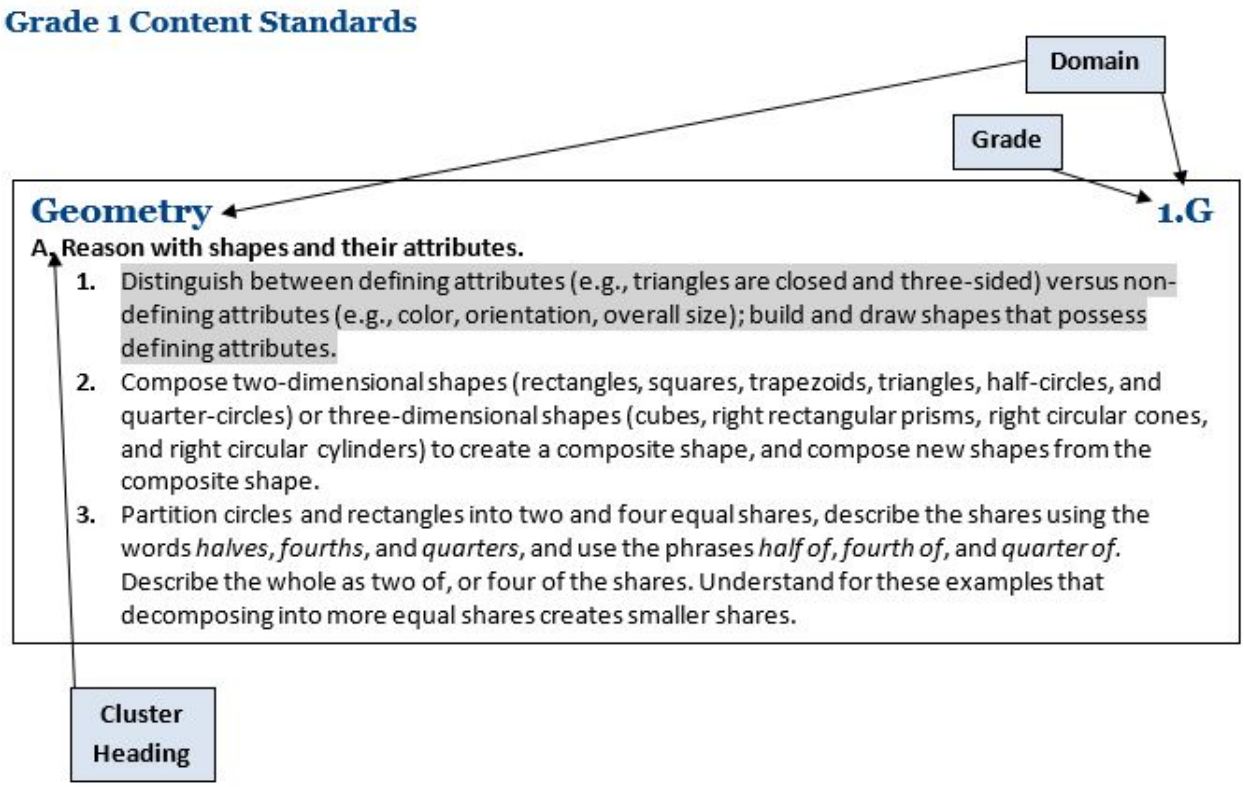
Standards Identifiers/Coding

Each standard has a unique identifier that consists of the grade level, (PK, K, 1, 2, 3, 4, 5, 6, 7, or 8), the domain code, and the standard number, as shown in the example below. The standard below is identified as **1.G.A.1**, identifying it as a grade 1 standard in the Geometry Domain, and as the first standard in that domain. Standard 1.G.A.1 is the first standard in his cluster of standards.



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<u>Unit 1: Chapters 1 and 2</u>
September 6 - October 4

Assessments:
FAST Screener - aMath 9/5 – 10/20
Unit 1 Common Assessment by 10/6 (Optional)

Data Meeting/Reteach/Extend- 10/10 – 10/17

Chapter 1: Numbers to 1
September 6 – September 20 (10 days)

Chapter Notes:
- The first four chapters are the most crucial for developing number sense. The number bond model for composing and decomposing numbers will be used in later grades, as will the ten-frame.
- Use this chapter to introduce mathematical tools that students will use throughout the year (number lines, cubes, tiles etc)

Standards:

- Students should experience counting from different starting points (e.g., start at 83; count to 120). To extend students' understanding of counting, they should be given opportunities to count backwards by ones and tens. They should also investigate patterns in the base10 system.

Chapter 2: Number Bonds
September 21 – October 5 (11 days)

Chapter Notes:
- The number bond model is introduced for the first time here. This will be the foundation for composing and decomposing numbers throughout Math in Focus.
- Spending time developing number bonds using manipulatives is essential (see hands on activity pg 31 teacher edition)
- Ten frames are first introduced in kindergarten and will be reintroduced in Chapter 3. It is suggested that 10 Frames be introduced in this chapter as a concrete representation of partpartwhole relationships in addition.

Standards:

1.OA.B.3 **Apply properties of operations as strategies to add and subtract[2]. Examples: If 8 + 3 = 11 is *known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)***

Scope of Standard:
- Students should understand the important ideas of the following properties:
  - Identity property of addition (e.g., 6 = 6 + 0)
  - Identity property of subtraction (e.g., 9 – 0 = 9)
  - Commutative property of addition (e.g., 4 + 5 = 5 + 4)
  - Associative property of addition (e.g., 3 + 9 + 1 = 3 + 10 = 13)
- Students need several experiences investigating whether the commutative property works with subtraction. The intent is not for students to experiment with negative numbers but only to recognize that taking 5 from 8 is not the same as taking 8 from 5. Students should recognize that they will be working with numbers later on that will allow them to subtract larger numbers from smaller numbers. However, in first grade we do not work with negative numbers.

1.OA.C.6 **Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use mental strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).**

Scope of Standard:

- The 2011 Massachusetts Math Framework Grade 1 standards require addition and subtraction within 20 with fluency within 10 and identify multiple strategies. Students are required to have automaticity of number facts in Grade 2.
- This standard focuses on students being able to fluently add and subtract numbers to 10 and having experiences adding and subtracting within 20. By studying patterns and relationships in addition facts and relating addition and subtraction, students build a foundation for fluency with addition and subtraction facts. Fluency refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently.

[2] Students need not use formal terms for these properties.

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Unit 2: Chapters 3 and 4
October 18 – November 21

Assessments:
Unit 2 Common Assessment by 11/29 (Optional)

Data Meeting/Reteach/Extend- 12/1 – 12/7

Chapter 3: Addition to 10
October 18 – November 7 (15 days)

Standards:

1.OA.A.1 **Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. (See Table 1 at the end of this Pacing Guide)**

Scope of Standard:

- The 2011 Massachusetts Math Framework Grade 1 standards focus on addition and subtraction within 20 and require using a symbol for an unknown number in an equation. Use the addition symbol (+) to represent joining situations, the subtraction symbol (–) to represent separating situations, and the equal sign (=) to represent a relationship regarding quantity between one side of the equation and the other.
- A helpful strategy is for students to recognize sets of objects in common patterned arrangements (06) to tell how many without counting (subitizing).
- Contextual problems that are closely connected to students' lives should be used to develop fluency with addition and subtraction. It is important to attend to the difficulty level of the problem situations in relation to the position of the unknown: Result Unknown, Total Unknown, and Both Addends Unknown problems are the least complex for students. The next level of difficulty includes Change Unknown, Addend Unknown, and Difference Unknown. The most difficult are Start Unknown and versions of Bigger and Smaller Unknown (compare problems) .
- Students will be expected to solve all types of story problems (including subtraction story problems) by the end of the year.

1.OA.B.3 **Apply properties of operations as strategies to add and subtract[3]. Examples: If 8 + 3 = 11 is *known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)***

1.OA.C.5 **Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).**

Scope of Standard:

- Students' multiple experiences with counting may hinder their understanding of counting on and counting back as connected to addition and subtraction. To help them make these connections when students count on 3 from 4, they should write this as 4 + 3 = 7. When students count back (3) from 7, they should connect this to 7 – 3 = 4. Students often have difficulty knowing where to begin their count when counting backward.

[3] Students need not use formal terms for these properties.

1.OA.C.6 **Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use mental strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).**

Scope of Standard:

- The 2011 Massachusetts Math Framework Grade 1 standards require addition and subtraction within 20 with fluency within 10 and identify multiple strategies. Students are required to have automaticity of number facts in Grade 2.
- This standard focuses on students being able to fluently add and subtract numbers to 10 and having experiences adding and subtracting within 20. By studying patterns and relationships in addition facts and relating addition and subtraction, students build a foundation for fluency with addition and subtraction facts. Fluency refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently.

1.OA.D.7 **Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.**

Scope of Standard:

- Students' multiple experiences with counting may hinder their understanding of counting on and counting back as connected to addition and subtraction. To help them make these connections when students count on 3 from 4, they should write this as 4 + 3 = 7. When students count back (3) from 7, they should connect this to 7 – 3 = 4. Students often have difficulty knowing where to begin their count when counting backward.
- Interchanging the language of "equal to" and "the same as" as well as "not equal to" and "not the same as" will help students grasp the meaning of the equal sign. Students should understand that " equality " means "the same quantity as." In order for students to avoid the common pitfall that the equal sign means "to do something" or that the equal sign means "the answer is," they need to be able to:
  - Express their understanding of the meaning of the equal sign
  - Accept sentences other than a + b = c as true (a = a, c = a + b, a = a + 0, a + b = b + a)
  - Know that the equal sign represents a relationship between two equal quantities
  - Compare expressions without calculating
- These key skills are hierarchical in nature and need to be developed over time. Experiences determining if equations are true or false help student develop these skills. Initially, students develop an understanding of the meaning of equality using models. However, the goal is for students to reason

at a more abstract level. At all times students should justify their answers, make conjectures (e.g., if you add a number and then subtract that same number, you always get zero), and make estimations.

- Once students have a solid foundation of the key skills listed above, they can begin to rewrite true/false statements using the symbols, < and >.

1.OA.D.8 **Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = ___ – 3, 6 + 6 = ___.**

Scope of Standard:

- Students need to understand the meaning of the equal sign and know that the quantity on one side of the equal sign must be the same quantity on the other side of the equal sign. They should be exposed to problems with the unknown in different positions. Having students create word problems for given equations will help them make sense of the equation and develop strategic thinking.

Chapter 4: Subtraction Facts to 10

November 8 – November 21 (12 days)

Chapter Notes:

- There are many opportunities within this chapter to highlight the relationships between addition and subtraction. Children are encouraged to interpret and model subtraction situations using ten frames, number bonds and counters. Children are using these models to subtract using three strategies: taking away, counting on, and counting back. (52 =3, 3 + __= 5)

Standards:

1.OA.A.1 **Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. (See Table 1 at the end of this Pacing Guide)**

1.OA.B.4 **Understand subtraction as an unknown addendproblem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.**

Scope of Standard:

- When determining the answer to a subtraction problem, 12 – 5, students think, "If I have 5, how many more do I need to make 12?" Encouraging students to record this symbolically, 5 + ? = 12, will develop their understanding of the relationship between addition and subtraction. Some strategies they may use are counting objects, creating drawings, counting up, using number lines or 10 frames to determine an answer (refer to Table 1 at the end of this pacing guide to consider the difficulty level of this standard).

1.OA.C.5 **Relate counting to addition and subtraction (e.g., by counting on 2 to add 2) .**

1.OA.C.6 **Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use mental strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 =**

10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).

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1.OA.D.8 **Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = ___ – 3, 6 + 6 = ___.**

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Unit 3: Chapters 5 and 7
December 7 – January 18

Assessments:
Math Interim Assessment 1 by 12/22
FAST Screener – aMath 1/2 – 1/26
Unit 3 Common Assessment by 1/22(Optional)

Data Meeting/Reteach/Extend- 1/23 – 1/29

Chapter 5: Shapes
December 7 December 22 (14 days)

Chapter Notes:
- Omit the following sessions 5.5, 5.6 as they are not Grade 1 standards.
- See additional resources to provide additional experiences identifying attributes of shape, and the composition and decomposition of 2D and 3D shapes.

Standards:
1.G.A.1 **Distinguish between defining attributes (e.g., triangles are closed and threesided) versus nondefining attributes (e.g., color, orientation, overall size); for a wide variety of shapes; build and draw shapes to possess defining attributes.**

Scope of Standard:
- The 2011 Massachusetts Math Framework Grade 1 standards emphasize distinction between defining and nondefining attributes.
- Attributes refer to any characteristic of a shape. Students use attribute language to describe a given twodimensional shape: number of sides, number of vertices/points, straight sides, closed. A child might describe a triangle as "right side up" or "red." These attributes are not defining because they are not relevant to whether a shape is a triangle or not. Students should articulate ideas such as, "A triangle is a triangle because it has three straight sides and is closed." It is important that students are exposed to both regular and irregular shapes so that they can communicate defining attributes.
- Students should also use appropriate language to describe a given threedimensional shape: number of faces, number of vertices/points, number of edges.
- Students should compare and contrast two and threedimensional figures using defining attributes.

1.G.A.2 **Compose twodimensional shapes (rectangles, squares, trapezoids, triangles, halfcircles, and quartercircles) or threedimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.**[4]

Scope of Standard:

- The ability to describe, use and visualize the effect of composing and decomposing shapes is an important mathematical skill. It is not only relevant to geometry, but is related to children's ability to compose and decompose numbers. Students may use pattern blocks, plastic shapes, tangrams, or computer environments to make new shapes. The teacher can provide students with cutouts of shapes and ask them to combine them to make a particular shape.

[4]Students do not need to learn formal names such as "right rectangular prism."

1.G.A.3 **Partition circles and rectangles into two and four equal shares, describe the shares using the words halves , fourths , and quarters , and use the phrases half of , fourth of , and quarter of . Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.**

Scope of Standard:

- Students need experiences with different sized circles and rectangles to recognize that when they cut something into two equal pieces, each piece will equal one half of its original whole. Children should recognize that halves of two different wholes are not necessarily the same size. Also they should reason that decomposing equal shares into more equal shares results in smaller equal shares.

Chapter 7: Numbers to 20
January 3 – January 20 (13 days)

Chapter Notes:

- Chapter 6 contains content that is not in the 1st grade Common Core Standards. As a result, omit this chapter and continue instruction with Chapter 7. ELL could benefit from the lessons in Chapter 6 because the students may not be fluent with ordinal numbers and position.
- Chapter 7 is a critical chapter for place value and understanding of teen numbers. Students must be able to build teen numbers as ten plus so many ones in order to learn strategies for adding over ten.
- This is a good opportunity to introduce dimes and pennies and connect it to place value.

Standards:

1.NBT.B.2 **Understand that the two digits of a twodigit number represent amounts of tens and ones. Understand the following as special cases: 1.NBT.2.a 10 can be thought of as a bundle of ten ones—called a "ten." 1.NBT.2.b The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.**

Scope of Standard:

● Students can count between 10 and 20 objects and make a bundle of 10 with or without some left over. As students are representing the various amounts, it is important that an emphasis is placed on the language associated with the quantity. For example, 53 should be expressed in multiple aqways such as 53 ones or 5 groups of ten with 3 ones leftover. When students read numbers, they read them in standard form as well as using place value concepts. For example, 53 should be read as ―fifty three as well as five tens, 3 ones. Reading 10, 20, 30, 40, 50 as ―one ten, 2 tens, 3 tens, etc. helps students see the patterns in the number system.

1.NBT.B.3 **Compare two twodigit numbers based on meanings of the tens and ones digits,**

recording the results of comparisons with the symbols >, =, and <.

Scope of Standard:

- Students use models that represent two sets of numbers. To compare, students first attend to the number of tens, then, if necessary, to the number of ones. Students may also use pictures, number lines, and spoken or written words to compare two numbers. Comparative language includes but is not limited to more than, less than, greater than, most, greatest, least, same as, equal to and not equal to.

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Unit 4: Chapters 8 and 9
January 29 – March 2

Assessments:
Unit 4 Common Assessment by 2/28 (Optional)
Common Interim Assessment 2 by 3/30

Data Meeting/Reteach/Extend- 3/1 – 3/7

Chapter 8: Addition and Subtraction Facts to 20
January 29 – February 5 (15 days)

Chapter Notes:
- In this chapter, students should be introduced to and explore a wide range of strategies. Use mental strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).
- See additional resources to address the following standards that are not fully met in Math in Focus:
- In 1.OA.1 students are expected to read, interpret, and solve story problems.
- In 1.OA.2 students solve addition word problems with 3 addends.
- Include Double Ten Frames as a model to add numbers within 20.

Standards:

1.OA.A.1 **Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. (See Table 1 at the end of this Pacing Guide)**

1.OA.A.2 **Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.**

Scope of Standard:
- To further students' understanding of the concept of addition, students create word problems with three addends. They can also increase their estimation skills by creating problems in which the sum is less than 5, 10 or 20. They use properties of operations and different strategies to find the sum of three whole numbers such as:
  - Counting on and counting on again (e.g., to add 3 + 2 + 4 a student writes 3 + 2 + 4 = ? and thinks, "3, 4, 5, that's 2 more, 6, 7, 8, 9 that's 4 more so 3 + 2 + 4 = 9."

- Making tens (e.g., 4 + 8 + 6 = 4 + 6 + 8 = 10 + 8 = 18)
- Using "plus 10, minus 1" to add 9 (e.g., 3 + 9 + 6 A student thinks, "9 is close to 10 so I am going to add 10 plus 3 plus 6 which gives me 19. Since I added 1 too many, I need to take 1 away so the answer is 18.)
- Decomposing numbers between 10 and 20 into 1 ten plus some ones to facilitate adding the ones
- Using doubles
- Using near doubles (e.g., 5 + 6 + 3 = 5 + 5 + 1 + 3 = 10 + 4 =14)

1.OA.B.3 **Apply properties of operations as strategies to add and subtract. Examples: If 8 + 3 = 11 is 5 known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)**

1.OA.B.4 **Understand subtraction as an unknown addend problem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.**

1.OA.C.6 **Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use mental strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).**

1.OA.D.7 **Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.**

1.OA.D.8 **Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = ___ – 3, 6 + 6 = ___.**

1.NBT.C.4 **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, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.**

[5]Students need not use formal terms for these properties.

Chapter 9: Length
February 6– February 16 (8 days)

Chapter Notes:
- In this chapter ELL students will benefit from extra support with vocabulary.

Standards:

1.MD.A.1 **Order three objects by length; compare the lengths of two objects indirectly by using a third object.**

Scope of standard:
- In order for students to be able to compare objects, students need to understand that length is measured from one end point to another end point. They determine which of two objects is longer, by physically aligning the objects. Typical language of length includes taller, shorter, longer, and higher. When students use bigger or smaller as a comparison, they should explain what they mean by the word. Some objects may have more than one measurement of length, so students identify the length they are measuring. Both the length and the width of an object are measurements of length.

1.MD.A.2 **Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.**

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Unit 5: Chapters 11, 12, and 16
March 8 – April 25

Assessments:
Common Interim Assessment 2 by 3/30
Unit 5 Common Assessment by 4/27 (Optional)

Data Meeting/Reteach/Extend- 4/30– 5/4

Chapter 11: Picture Graphs and Bar Graphs
March 8 March 20 (9 days)

Chapter Notes:
- Chapter 10, Weight, covers content not in the 1st grade Common Core Standards. As a result, omit this chapter and continue instruction with Chapter 11.

Standards:

1.OA.D.8 ***Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = ___ – 3, 6 + 6 = ___.***

1.MD.C.4 **Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.**

Scope of Standard:
- Students create object graphs and tally charts using data relevant to their lives (e.g., favorite ice cream, eye color, pets, etc.). Graphs may be constructed by groups of students as well as by individual students.
- Counting objects should be reinforced when collecting, representing, and interpreting data. Students describe the object graphs and tally charts they create. They should also ask and answer questions based on these charts or graphs that reinforce other mathematics concepts such as sorting and comparing. The data chosen or questions asked give students opportunities to reinforce their understanding of place value, identifying ten more and ten less, relating counting to addition and subtraction and using comparative language and symbols.

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Chapter 12: Numbers to 40 & Chapter 16: Numbers to 120
March 21 – April 25 (20 days)

Chapter Notes:

- Chapter 12 is a continuation of chapter 7, numbers to 20. The children will be introduced to base ten rods in this chapter. Base ten rods will be used as a model throughout the Math in Focus curriculum. It is useful to provide students with connecting cubes so they can construct a rod of 10.
- Both Chapters 12 and 16 build an understanding of Place Value. Combining these chapters allows students to generalize place value concepts to numbers above 100 and differentiate according to student need.

Standards:

1.NBT.B.2 **Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: 1.NBT.2.a 10 can be thought of as a bundle of ten ones—called a "ten." 1.NBT.2.c The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).**

Scope of Standard:

- Students can count between 10 and 20 objects and make a bundle of 10 with or without some left over. As students are representing the various amounts, it is important that an emphasis is placed on the language associated with the quantity. For example, 53 should be expressed in multiple ways such as 53 ones or 5 groups of ten with 3 ones leftover. When students read numbers, they read them in standard form as well as using place value concepts. For example, 53 should be read as ―fifty three as well as five tens, 3 ones. Reading 10, 20, 30, 40, 50 as ―one ten, 2 tens, 3 tens, etc. helps students see the patterns in the number system.

1.NBT.B.3 **Compare two twodigit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.**

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Unit 6: Chapters 14, 15 and 19
May 7 – May 30

Assessments:
FAST Screener – aMath 5/1 – 6/1
Unit 6 Common Assessment by 6/15 (Optional)

Data Meeting/Reteach/Extend- 5/31– 6/6

Chapter 14: Mental Math Strategies
May 7May 15 (7 days)

Unit Notes:
- The mental math chapter is intended to improve student number sense and for students to apply their understandings from prior chapters particularly around flexibility with composing and decomposing numbers. Students continue to explore efficient strategies based on based on place value, properties of operations, and/or the relationship between addition and subtraction.
- The length of this unit is shortened because this content can reasonably be embedded in chapters 3, 4, and 8.

Standards:

1.OA.A.1 **Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. (See Table 1 at the end of this Pacing Guide)**

1.OA.B.3 **Apply properties of operations as strategies to add and subtract. Examples: If 8 + 3 = 11 is 6 known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)**

1.OA.C.6 **Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use mental strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13)**

1.OA.D.8 **Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = ___ – 3, 6 + 6 = ___.**

1.NBT.C.4 **Add within 100, including adding a twodigit number and a onedigit number, and adding a twodigit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding twodigit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.**

1.NBT.C.5 **Given a twodigit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.**

Scope of Standard:

- This standard requires students to understand and apply the concept of 10, which leads to future place value concepts. It is critical for students to do this without counting. Prior use of models such as base ten blocks, number lines, and 100s charts helps facilitate this understanding. It also helps students see the pattern involved when adding or subtracting 10.

Chapter 15: Calendar and Time
Chapter 19: Money
May 16 – May 30 (8 days)

Chapter Notes:

- **Calendar content is not covered in the 1 st grade Common Core Standards.**
- **It is recommended that routines for time and money are incorporated all year and these chapters are meant to solidify the students' understandings.**

Standards:

1.MD.B.3 **Tell and write time in hours and halfhours using analog and digital clocks.**

Scope of Standard:

- Students can build paper analog clocks in order to gain familiarity with the hour hand and minute hands.

Table 1. Common addition and subtraction situations[2]

	Result Unknown	Change Unknown	Start Unknown
Add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? 2 + 3 = ?	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? 2 + ? = 5	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? ? + 3 = 5
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? 5 – 2 = ?	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? 5 – ? = 3	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? ? – 2 = 3

	Total Unknown	Addend Unknown	Both Addends Unknown[3]
Put Together/ Take Apart[4]	Three red apples and two green apples are on the table. How many apples are on the table? 3 + 2 = ?	Five apples are on the table. Three are red and the rest are green. How many apples are green? 3 + ? = 5, 5 – 3 = ?	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 5 = 0 + 5, 5 = 5 + 0 5 = 1 + 4, 5 = 4 + 1 5 = 2 + 3, 5 = 3 + 2

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare[5]	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version):	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with "fewer"): Lucy has three fewer apples than Julie. Julie

[2] Adapted from Boxes 2–4 of *Mathematics Learning in Early Childhood*, National Research Council (2009, pp. 32–33).
[3] These take apart situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean *makes* or *results in* but always does mean *is the same number as*.
[4] Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation, especially for small numbers less than or equal to 10.
[5] For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using *more* for the bigger unknown and using *less* for the smaller unknown). The other versions are more difficult.

	Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? 2 + ? = 5, 5 – 2 = ?	apples. How many apples does Julie have? 2 + 3 = ?, 3 + 2 = ?	has five apples. How many apples does Lucy have? 5 – 3 = ?, ? + 3 = 5