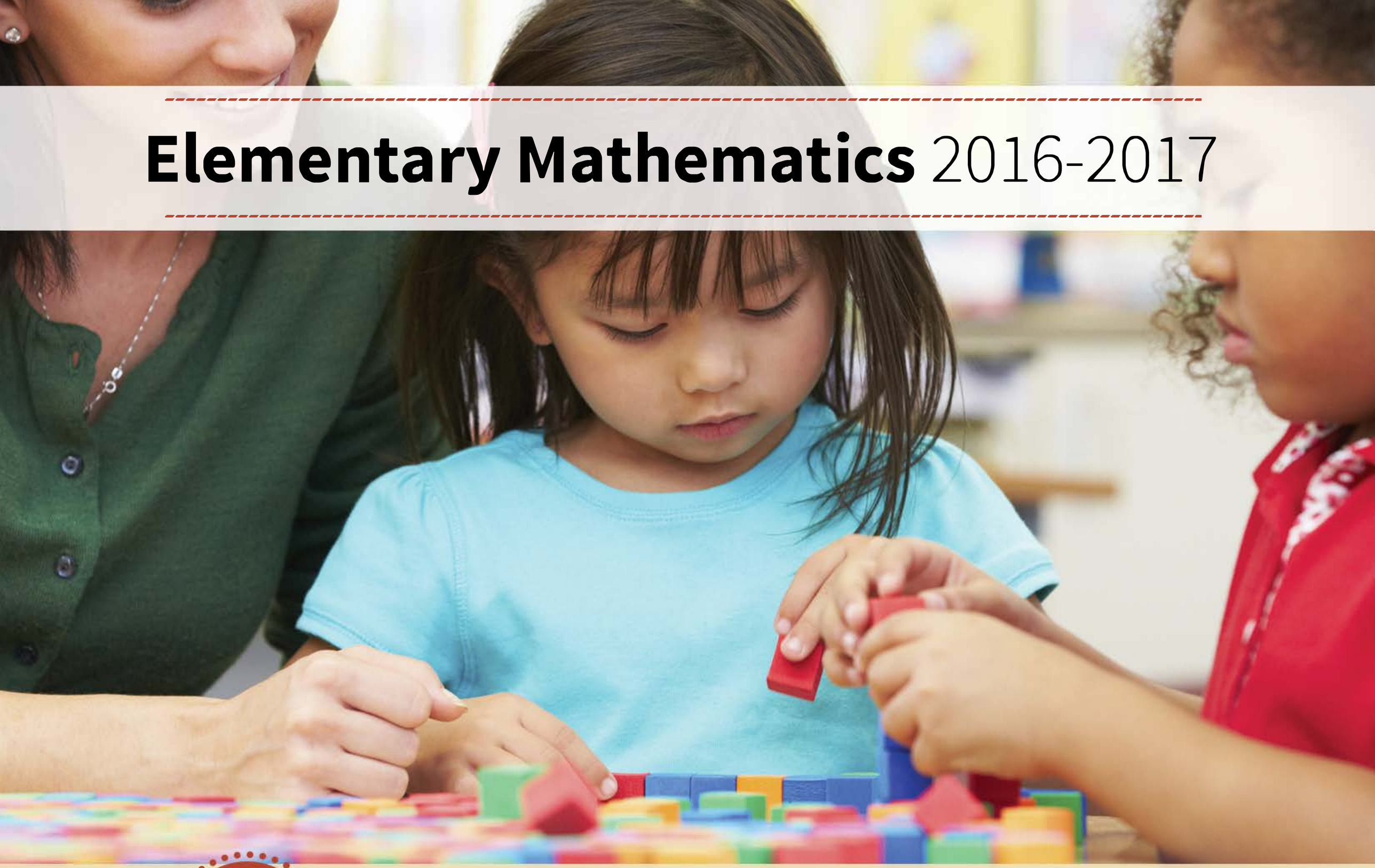
Elementary Mathematics 2016-2017



1st Grade

CANYONS
School District

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ENVISION MATH CURRICULUM MAP
CANYONS SCHOOL DISTRICT
2016-2017

Curriculum Mapping Purpose

Canyons School District's curriculum math maps are standards-based maps driven by the Utah Core State Standards for Mathematics and implemented using Pearson enVisionMATH 2.0. Student achievement is increased when both teachers and students know where they are going, why they are going there, and what is required of them to get there. The additional instructional days were intentionally built into the map to allow teachers to go into more depth on concepts and allow flexible pacing based on student need. Supporting resources for these additional days can be found in the General Information section.

Curriculum Maps are a tool for:

- **ALIGNMENT:** Provides support and coordination between concepts, skills, standards, curriculum, and assessments
- **COMMUNICATION:** Articulates expectations and learning goals for students
- **PLANNING:** Focuses instruction and targets critical information
- **COLLABORATION:** Promotes professionalism and fosters dialogue between colleagues about best practices in both instruction and assessment.
- **SCAFFOLDED INSTRUCTION AND GROUPING STRUCTURES:** The organization of a scaffolded classroom includes whole group, small group (e.g., teacher-led skill-based, cooperative learning), partner, and independent work where students are provided support towards mastery. As students assume more responsibility for the learning, gradual support is decreased in order to shift the responsibility for learning from the teacher to the students.

Canyons School District elementary math maps are created and published by the CSD Instructional Supports Department

General Information

Pacing

This curriculum map provides guidance for intertwining the Utah Core Math Standards and the enVision 2.0 curriculum. Following the map will allow students to access all core standards by the end of the year. To support students' mastery of the standards, targeted standard clusters have been identified. Attending to these targeted standards will allow teachers to focus instruction for the given topic and better assess students' understanding of each standard.

Intentional Planning

For each domain, the map specifies both procedural checks and application tasks. These tasks represent what students should know and be able to do after instruction. Understanding these tasks will assist with designing instruction around targeted standards and critical areas.

- **Procedural Check***:* The purpose of the procedural check is to identify if students have the basic procedural understanding of the mathematical concept being highlighted.
- **Application Task**: The purpose of the application task is to assess student ability to understand and apply the skill with a heightened level of depth and complexity.

Critical Areas for Conceptual Understanding

In addition to targeted standards, critical areas have been identified and are highlighted in blue within the scope and sequence of the map. Students are expected to demonstrate a conceptual understanding of these critical areas in order to be prepared for future grades. Additional instructional days have been scheduled into the scope and sequence to provide additional time for increasing conceptual understanding of the standards. Conceptual understanding requires a focus of depth and complexity which may go beyond the enVision lessons. The following resources may be useful for extending instruction to address depth of knowledge demands of the standards.

Online:

Illustrative Mathematics: Mathematical tasks aligned to the standards https://www.illustrativemathematics.org
Inside Mathematics: More mathematical tasks aligned to the standards
http://www.insidemathematics.org/index.php/tools-for-teachers
Illuminations: Lessons, interactives, and web links to support math instruction. http://illuminations.nctm.org

Print Resources:

Elementary and Middle School Mathematics: Teaching Developmentally by John A. Van De Walle

Assessment

Throughout the enVision 2.0 curriculum there are many opportunities to check for understanding with items such as the Quick Check, Do You Understand? Show Me, and Guided Practice. In addition, each topic ends with a Topic Assessment that can be given digitally or paper/pencil as well as a Performance Assessment.

Focused Review

It is critical to provide an ongoing review of previously taught concepts and skills. Teacher-directed, interactive reviews daily are ideal to assess student learning and inform instruction. Daily Common Core Review is provide daily within the enVisionMATH 2.0 program and may be used to provide a cumulative review. The math block allocates 5-10 minutes for a daily, focused review.

Homework

The struggle to develop new concepts should occur while the teacher is available to support and scaffold the learning and correct students' errors in thinking. Work that is sent home for students to complete should consist of concepts that have already been taught in class, been practiced, and the student can already do independently. Math homework should be used to build automaticity of skills already acquired and not for development of new skills without instruction. Practicing concepts incorrectly at home can reinforce errors in thinking and cause frustration for students and families. Practicing the skill to automaticity with homework assignments is appropriate after students have acquired the skill. *Reflex Math* is available for students in grades 2-5 and can be accessed at home as well as at school. *Reflex* Math *helps* students develop fluency with their basic facts in addition, subtraction multiplication and division and could be assigned as homework to support students' automaticity.

Online Supports for Unpacking the Core

For additional information about teaching math standards, please visit the following websites:

USOE Curriculum Guides *http://csdmathematics.weebly.com/usoe-elementary-curriculum-guides.html*

North Carolina http://www.ncpublicschools.org/acre/standards/common-core-tools/#unpacking

Howard County Public Schools https://grade4commoncoremath.wikispaces.hcpss.org (Change grade number to match yours—grade_commoncoremath.wikispaces.hcpss.org)

Delware—Under assessment examples http://www.doe.k12.de.us/aab/Mathematics/assessment_tools.shtml

EngageNY—Mathematics Modules--http://www.engageny.org/mathematics

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Systematic Vocabulary Routine- Math

Acquisition	**Introduction Phase** 1. Teacher writes/says the word. 2. Students repeat the word. 3. Multisyllabic breakdown 4. Teacher gives a student friendly definition, incorporating synonyms as appropriate. 5. Students restate definition with teacher guidance. 6. Teacher identifies any prefixes, suffixes, base/root words, origin, etc.	**Teacher/Student Responsibilities** T: The word is polygon. What word? S: polygon T: Let's clap/tap "polygon" into syllables. T & S: "pol" "y" "gon". T: How many syllables? S: 3 syllables T: A closed plane figure with three or more sides that is made up of line segments that do not cross. T & **S**: A closed plane figure with three or more sides that is made up of line segments that do not cross is called a _____. T: The prefix "poly" means much or many. So a polygon has not just one side, but many sides.
Building Automaticity	**Demonstration Phase** 7. Illustrate with examples/non-examples a) Concrete examples (*realia*) b) Visual representations—video, pictures, diagrams, etc. c) Physical gesture d) Verbal Examples e) Sentence Frames (ex. If I had to survive cold weather, I would need _____. 8. Check for students' understanding by discerning between examples and non-examples (repeat as necessary)	T: Look at the figures on this picture. This figure is a polygon because it is closed figure, it is made of line segments that do not cross. These figures are not polygons because they have curved lines, they are open, and some have crossed lines. T: (Example) Draw a polygon on the board? Ones tell your partner if this is a polygon and explain why or why not. S1: The figure is a polygon because it has line segments that are closed and they do not cross. T: (Non-example) Draw a figure that is not a polygon on the board. Twos tell your partner if this is a polygon and explain why or why not. S2: The figure is not a polygon because it is made of curved lines and it is also not closed.
Application	**Application Phase** 9. Deepen students' understanding by applying the word in a new context a) Teacher asks a deep processing question b) Students respond via a quick write and/or orally with a partner or in a small group or whole group setting.	• Students use the word in a sentence. The sentence must be at least five words long. • Number 2's will say the sentence while number 1's count the words in the sentence and makes sure the sentence is a true statement. They switch and follow the same procedure.

Evidence-Based Instructional Priorities
Applied to Math Instruction

Explicit Instruction

I Do - We Do - Y'all Do - You Do
Model - Guide Practice – Partner - Independent

Systematic

- ❑ Focused on critical content
- ❑ Skills, strategies, and concepts are sequenced logically
- ❑ Break down complex skills
- ❑ Lessons are organized and focused
- ❑ Instructional routines are used
- ❑ Examples and non-examples
- ❑ Step-by-step demonstrations
- ❑ C-R-A Model

Relentless

- ❑ Adequate initial practice
  NOTE: Students who struggle may require 10-30 more times as many practice opportunities than their peers.
- ❑ Distributed practice--frequent exposure to content/skill over time
- ❑ Daily review
- ❑ Daily focus on number sense and problem solving
- ❑ Teach to mastery
- ❑ Cumulative review periodically

Engaging

- ❑ Increasing Opportunities to Respond
- ❑ Explicit Vocabulary Instruction
- ❑ Feedback
- ❑ Instructional Grouping
- ❑ Acquire – Auto – Apply
- ❑ Classroom PBIS
- ❑ Create various contexts for problem solving that students can relate to
- ❑ Pacing

Increasing Opportunities to Respond

Saying, Writing, Doing

- ❑ **Choral Responses:** give think time, use a signal for response, repeat if all students don't respond
- ❑ **Partner Sharing**: Look-Lean-Whisper; Think-Pair-Share; Study-Tell-Help-Check
- ❑ **Individual Responses:** give wait time, individual shares after partner discussion, Cold Call, random calling pattern
- ❑ **Math Journals:** Quick Writes, vocabulary practice, draw visuals of math concepts
- ❑ **Individual White Boards**: use a signal for displaying, establish a routine, provide feedback
- ❑ **Manipulatives**: establish a routine, explain expectations, all students interact with materials, provide visual bridge to concept
- ❑ **Response Cards**: yes/no; odd/even; +/-; </>/=; etc.
- ❑ **Action Responses**: thumbs up/down; modeling operations, angles, or other math concepts, act it out, hand signals

Explicit Vocabulary Instruction

- ❑ **Introduce the word**
  - Teacher says the word and posts the word
  - All students repeat the word
  - Teacher gives a child-friendly definition
  - All students repeat the definition (with teacher guidance)
  - Repeat above steps as necessary
- ❑ **Demonstrate**
  - Provide an example
  - Provide a non-example
  - Repeat above steps as necessary
- ❑ **Apply**
  - Students turn to a partner and use the word in a sentence
  - Teacher shares a sentence using the word
- ❑ **Vocabulary Cards:** Grade-level vocabulary cards available on the math website; posted on Word Wall

Feedback

- ❑ Corrective and Affirmative
- ❑ Timely and Frequent
- ❑ Specific and Reinforcing

Instructional Grouping

- ❑ Whole group, Small groups, Partners
- ❑ Fluid and flexible
- ❑ Skill-Based Small Group Instruction for identified skill gaps or extension

Acquire – Auto – Apply

- ❑ Learn (acquire) the skill
- ❑ Build the skill to automaticity
- ❑ Attend to fluency standards in the core
- ❑ Apply the skill

Classroom PBIS

- ❑ Forming clear behavior expectations
- ❑ Explicitly teaching expectations to students
- ❑ Reinforcing expectations with students
- ❑ Correcting of problem behaviors in a systematic manner

First Grade Overview

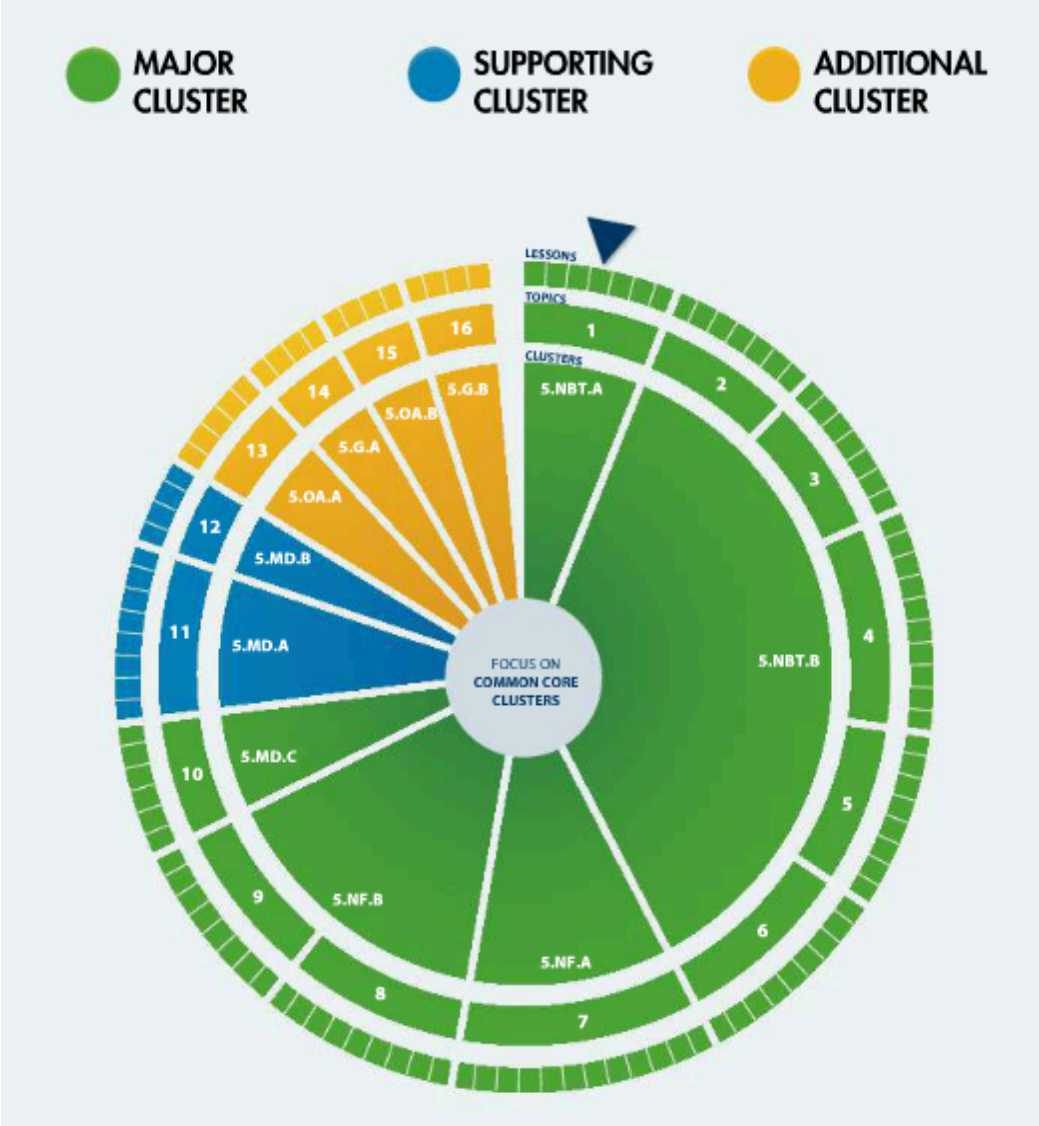
Mathematical Practices (1.MP)
The eight mathematical habits of mind that teachers seek to develop in their students.

Operations and Algebraic Thinking (1.OA)
- Represent and solve problems involving addition and subtraction.
- Understand and apply properties of operations and the relationship between addition and subtraction.
- Add and subtract within 20.
- Work with addition and subtraction equations.

Number and Operations in Base Ten (1.NBT)
- Extend the counting sequence.
- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

Measurement and Data (1.MD)
- Measure lengths indirectly and by iterating length units.
- Tell and write time.
- Represent and interpret data.

Geometry (1.G)
- Reason with shapes and their attributes.



Mathematics | Grade 1

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

(2) Students will develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They will compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They will 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 will understand the order of the counting numbers and their relative magnitudes.

(3) Students will 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.

(4) Students will compose and decompose plane or solid figures *(for example, 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 will 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.

Strand: MATHEMATICAL PRACTICES (1.MP)

The Standards for Mathematical Practice in first grade describe mathematical habits of mind that teachers should seek to develop in their students. Students become mathematically proficient in engaging with mathematical content and concepts as they learn, experience, and apply these skills and attitudes **(Standards 1.MP 1–8).**

- **Standard 1.MP.1 Make sense of problems and persevere in solving them.** Explain the meaning of a problem, look for entry points to begin work on the problem, and plan and choose a solution pathway. When a solution pathway does not make sense, look for another pathway that does. Explain connections between various solution strategies and representations. Upon finding a solution, look back at the problem to determine whether the solution is reasonable and accurate, often checking answers to problems using a different method or approach.

- **Standard 1.MP.2 Reason abstractly and quantitatively.** Make sense of quantities and their relationships in problem situations. Contextualize quantities and operations by using images or stories. Decontextualize a given situation and represent it symbolically. Interpret symbols as having meaning, not just as directions to carry out a procedure. Know and flexibly use different properties of operations, numbers, and geometric objects.

- **Standard 1.MP.3 Construct viable arguments and critique the reasoning of others.** Use stated assumptions, definitions, and previously established results to construct arguments. Explain and justify the mathematical reasoning underlying a strategy, solution, or conjecture by using concrete referents such as objects, drawings, diagrams, and actions. Listen to or read the arguments of others, decide whether they make sense, ask useful questions to clarify or improve the arguments, and build on those arguments.

- **Standard 1.MP.4 Model with mathematics.** Identify the mathematical elements of a situation and create a mathematical model that shows the relationships among them. Identify important quantities in a contextual situation, use mathematical models to show the relationships of those quantities, analyze the relationships, and draw conclusions. Models may be verbal, contextual, visual, symbolic, or physical.

- **Standard 1.MP.5 Use appropriate tools strategically.** Consider the tools that are available when solving a mathematical problem, whether in a real-world or mathematical context. Choose tools that are relevant and useful to the problem at hand, such as physical objects, drawings, diagrams, physical tools, technologies, or mathematical tools, such as estimation or a particular strategy or algorithm.

- **Standard 1.MP.6 Attend to precision.** Communicate precisely to others by crafting careful explanations that communicate mathematical reasoning by referring specifically to each important mathematical element, describing the relationships among them, and connecting their words clearly to representations. Calculate accurately and efficiently, and use clear and concise notation to record work.

- **Standard 1.MP.7 Look for and make use of structure.** Recognize and apply the structures of mathematics such as patterns, place value, the properties of operations, or the flexibility of numbers. See complicated things as single objects or as being composed of several objects.

- **Standard 1.MP.8 Look for and express regularity in repeated reasoning.** Notice repetitions in mathematics when solving multiple related problems. Use observations and reasoning to find shortcuts or generalizations. Evaluate the reasonableness of intermediate results.

Strand: OPERATIONS AND ALGEBRAIC THINKING (1.OA)

Represent and solve problems involving addition and subtraction within 20 **(Standards 1–2, 5–6).** Understand and apply properties of operations and the relationship between addition and subtraction **(Standards 3–4).** Work with addition and subtraction equations **(Standards 7–8).**

- **Standard 1.OA.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. *For example, use objects, drawings, and equations with a symbol for the unknown number to represent the problem.*

- **Standard 1.OA.2** Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20. *For example, use objects, drawings, and equations with a symbol for the unknown number to represent the problem.*

- **Standard 1.OA.3** Apply properties of operations as strategies to add and subtract. *For example: 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.)* First grade students need not use formal terms for these properties.

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

- **Standard 1.OA.5** Relate counting to addition and subtraction. *For example, by counting on 2 to add 2.*

- **Standard 1.OA.6** Add and subtract within 20.

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

  b. By the end of Grade 1, demonstrate fluency for addition and subtraction within 10.

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

- **Standard 1.OA.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* $8 + ? = 11$, $5 = ? - 3$, $6 + 6 = ?$

Strand: NUMBER AND OPERATIONS IN BASE TEN (1.NBT)

Extend the counting sequence **(Standard 1).** Understand place value **(Standards 2–3).** Use place value understanding and properties of operations to add and subtract **(Standards 4–6).**

- **Standard 1.NBT.1** Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

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

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

- **Standard 1.NBT.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 to tens and ones to ones, and that it is sometimes necessary to compose a ten.

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

- **Standard 1.NBT.6** Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), 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.

Strand: MEASUREMENT AND DATA (1.MD.)

Measure lengths indirectly and by iterating length units **(Standards 1–2).** Tell and write time **(Standard 3)**. Represent and interpret data **(Standard 4).** Identify the value of coins **(Standard 5).**

- **Standard 1.MD.1** Order three objects by length; compare the lengths of two objects indirectly by using a third object.
- **Standard 1.MD.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.*
- **Standard 1.MD.3** Tell and write time in hours and half-hours using analog and digital clocks.
- **Standard 1.MD.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.
- **Standard 1.MD.5** Identify the values of pennies, nickels, dimes and quarters and know their comparative values. *(For example, a dime is of greater value than a nickel.)* Use appropriate notation to designate a coin's value. *(For example, 5¢.)*

Strand: GEOMETRY (1.G.)

Reason with shapes and their attributes **(Standards 1–3).**

- **Standard 1.G.1** Distinguish between defining attributes *(for example, triangles are closed and three-sided)* versus non-defining attributes *(for example, color, orientation, overall size)*; build and draw shapes that possess defining attributes.
- **Standard 1.G.2** Compose shapes.
  - **a.** Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) to create a composite shape, and compose new shapes from the composite shape.
  - **b.** Compose three-dimensional 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. First grade students do not need to learn formal names such as "right rectangular prism."
- **Standard 1.G.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 or four of the shares. Understand that, for these examples, decomposing into more equal shares creates smaller shares.

MATHEMATICAL PRACTICES	
Previous	**2016/2017**
Mathematical Practices 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.	**Strand: MATHEMATICAL PRACTICES (1.MP)** The Standards for Mathematical Practice in first grade describe mathematical habits of mind that teachers should seek to develop in their students. Students become mathematically proficient in engaging with mathematical content and concepts as they learn, experience, and apply these skills and attitudes. **Standard 1.MP.1 Make sense of problems and persevere in solving them.** Explain the meaning of a problem, look for entry points to begin work on the problem, and plan and choose a solution pathway. When a solution pathway does not make sense, look for another pathway that does. Explain connections between various solution strategies and representations. Upon finding a solution, look back at the problem to determine whether the solution is reasonable and accurate, often checking answers to problems using a different method or approach. **Standard 1.MP.2 Reason abstractly and quantitatively.** Make sense of quantities and their relationships in problem situations. Contextualize quantities and operations by using images or stories. Decontextualize a given situation and represent it symbolically. Interpret symbols as having meaning, not just as directions to carry out a procedure. Know and flexibly use different properties of operations, numbers, and geometric objects. **Standard 1.MP.3 Construct viable arguments and critique the reasoning of others.** Use stated assumptions, definitions, and previously established results to construct arguments. Explain and justify the mathematical reasoning underlying a strategy, solution, or conjecture by using concrete referents such as objects, drawings, diagrams, and actions. Listen to or read the arguments of others, decide whether they make sense, ask useful questions to clarify or improve the arguments, and build on those arguments. **Standard 1.MP.4 Model with mathematics.** Identify the mathematical elements of a situation and create a mathematical model that shows the relationships among them. Identify important quantities in a contextual situation, use mathematical models to show the relationships of those quantities, analyze the relationships, and draw conclusions. Models may be verbal, contextual, visual, symbolic, or physical. **Standard 1.MP.5 Use appropriate tools strategically.** Consider the tools that are available when solving a mathematical problem, whether in a real-world or mathematical context. Choose tools that are relevant and useful to the problem at hand, such as physical objects , drawings, diagrams , physical tools, technologies , or mathematical tools such as estimation or a particular strategy or algorithm.

	Standard 1.MP.6 Attend to precision. Communicate precisely to others by crafting careful explanations that communicate mathematical reasoning by referring specifically to each important mathematical element, describing the relationships among them, and connecting their words clearly to representations. Calculate accurately and efficiently, and use clear and concise notation to record work. **Standard 1.MP.7 Look for and make use of structure.** Recognize and apply the structures of mathematics such as patterns, place value, the properties of operations, or the flexibility of numbers. See complicated things as single objects or as being composed of several objects. **Standard 1.MP.8 Look for and express regularity in repeated reasoning.** Notice repetitions in mathematics when solving multiple related problems. Use observations and reasoning to find shortcuts or generalizations. Evaluate the reasonableness of intermediate results.

OPERATIONS AND ALGEBRAIC THINKING	
Previous	**2016/2017**
Operations and algebraic thinking 1.OA **Represent and solve problems involving addition and subtraction.** ***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. **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. **Understand and apply properties of operations and the relationship between addition and subtraction.** ***1.OA.B*** **3.** Apply properties of operations as strategies to add	**Strand: OPERATIONS AND ALGEBRAIC THINKING (1.OA)** Represent and solve problems involving addition and subtraction within 20 **(Standards 1-2, 5-6).** Understand and apply properties of operations and the relationship between addition and subtraction **(Standards 3-4).** Work with addition and subtraction equations **(Standards 7-8).** **Standard 1.OA.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. *For example, use objects, drawings, and equations with a symbol for the unknown number to represent the problem.* **Standard 1.OA.2** Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20. *For example, use objects, drawings, and equations with a symbol for the unknown number to represent the problem.* **Standard 1.OA.3** Apply properties of operations as strategies to add and

and subtract. *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.)* **4.** Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.* **Add and subtract within 20. *1.OA.C*** **5.** Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). **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). **Work with addition and subtraction equations. *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.* **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 = ? .*	subtract. *For example: 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.)* First grade students need not use formal terms for these properties. **Standard 1.OA.4** Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.* **Standard 1.OA.5** Relate counting to addition and subtraction. *For example, by counting on 2 to add 2.* **Standard 1.OA.6** Add and subtract within 20. **a.** Use strategies such as counting on; making ten *(for example, 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14;* decomposing a number leading to a ten *(for example, 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9);* using the relationship between addition and subtraction *(for example, knowing that 8 + 4 = 12, one knows 12 – 8 = 4);* and creating equivalent but easier or known sums *(for example, adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13.* **b.** By the end of Grade 1, demonstrate fluency for addition and subtraction within 10. **Standard 1.OA.7** Understand the meaning of the equal sign, and determine whether 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.* **Standard 1.OA.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 = ?*

NUMBERS AND OPERATIONS IN BASE TEN	
Previous	**2016/2017**
Number and Operations in Base Ten 1.NBT **Extend the counting sequence. *1.NBT.A*** **1.** Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. **Understand place value. *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: **a.** 10 can be thought of as a bundle of ten ones-called a "ten." **b.** The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. **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). **3.** Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <. **Use place value understanding and properties of operations to add and subtract. *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.	**Strand: NUMBER AND OPERATIONS IN BASE TEN (1.NBT)** Extend the counting sequence **(Standard 1).** Understand place value **(Standards 2-3).** Use place value understanding and properties of operations to add and subtract **(Standards 4-6).** **Standard 1.NBT.1** Count o 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. **Standard 1.NBT.2** Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones, called a “ten.” b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. 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). **Standard 1.NBT.3** Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <. **Standard 1.NBT.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 to tens and ones to ones, and that it is sometimes necessary to compose a ten. **Standard 1.NBT.5** Given a two-digit number, mentally find 10 more

5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. **6.** Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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.	or 10 less than the number, without having to count; explain the reasoning used. **Standard 1.NBT.6** Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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.

MEASUREMENT AND DATA

Previous	2016/2017
Measure and estimate lengths in standard units. 1.MD **Measure lengths indirectly and by iterating length units.** ***1.MD.A*** **1.** Order three objects by length; compare the lengths of two objects indirectly by using a third object. **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.* **Tell and write time.** ***1.MD.B*** **3.** Tell and write time in hours and half-hours using analog and digital clocks. **Represent and interpret data.** ***1.MD.C*** **4.** Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number	**Strand: MEASUREMENT AND DATA (1.MD)** Measure lengths indirectly and by iterating length units **(Standards 1-2).** Tell and write time **(Standard 3).** Represent and interpret data **(Standard 4).** Identify the value of coins **(Standard 5).** **Standard 1.MD.1** Order three objects by length; compare the lengths of two objects indirectly by using a third object. **Standard 1.MD.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.* **Standard 1.MD.3** Tell and write time in hours and half-hours using analog and digital clocks. **Standard 1.MD.4** Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data

of data points, how many in each category, and how many more or less are in one category than in another.	points, how many in each category, and how many more or less are in one category than in another. **Standard 1.MD.5** Identify the value of pennies, nickels, dimes and quarters and know their comparative values. *(For example, a dime is of greater value than a nickel.)* Use appropriate notation to designate a coin's value. *(For example, 5¢.)*
GEOMETRY	
Previous	**2016/2017**
Geometry 1.G **Reason with shapes and their attributes.** ***1.G.A*** **1.** Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes that possess defining attributes. **2.** Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and com- pose new shapes from the composite shape.[7] **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. [7] Students do not need to learn formal names such as "right rectangular prism."	**Strand: GEOMETRY (1.G)** Reason with shapes and their attributes **(Standards 1-3**). **Standard 1.G.1** Distinguish between defining attributes *(for example triangles are closed and three-sided)* versus non-defining attributes *(for example, color, orientation, overall size);* build and draw shapes that possess defining attributes. **Standard 1.G.2** Compose shapes. a. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) to create a composite shape, and compose new shapes from the composite shape. b. Compose three-dimensional 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. First grade students do not need to learn formal names such as "right rectangular prism." **Standard 1.G.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 or four of the shares. Understand that, for these examples, decomposing into more equal shares creates small shares.

Utah Core Standards for Mathematics Progressions

	Kindergarten	1st Grade
Counting and Cardinality	• Count to 100 by ones and tens • Represent and write numbers for 0 - 20 • Count to tell the number of objects • Compare numbers; greater than, less than, equal • Compare written numerals between 1 and 10	

Operations and Algebraic Thinking	• Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from
	  o Represent addition and subtraction
	  o Solve addition and subtraction word problems within 10
	  o Decompose numbers less than or equal to 10
	  o For any number from 1 to 9, find the number that makes 10 when add to the given number
	  o Fluently add and subtract within 5
		• Represent and solve problems involving addition and subtraction within 20
		• Understand and apply properties of operations and the relationship between addition and subtraction
		  o Understand subtraction as an unknown-addend problem
		• Relate addition and subtraction with 20 to counting
		• Add and subtract within 20
		• Understand the meaning of the equal sign
		• Work with addition and subtraction equations

Numbers and Operations in Base Ten	• Work with numbers 11-19 to gain foundation for place value
	  o Compose and decompose numbers
		• Read, write, count and represent to 120
		• Understand place value of tens and ones
		• Compare two-digit numbers based on tens and ones
		• Use place value understanding and properties of operations to add and subtract
		  o Add within 100
		  o Mentally find 10 more or 10 less with two-digit numbers
		  o Subtract multiples of 10 in the range of 10 -90 from multiples of 10 in the range of 10-90

Measurement and Data	• Describe and compare measureable attributes such as length and weight • Directly compare two objects with the same measurable attribute in common and describe the difference • Classify objects and count the numbers of objects in categories	• Measure lengths indirectly and by iterating lengths units • Tell and write time in hours and half-hours using analog and digital clocks • Organize, represent and interpret data up to three categories • Identify and compare the values of pennies, nickels, dimes and quarters

Geometry	• Identify, name and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres)
	• Identify shapes as two-dimensional or three-dimensional
	• Analyze, compare, create and compose shapes
		• Reason with shapes and their attributes
		  o Distinguish between defining vs. non-defining attributes
		  o Compose two-dimensional or three-dimensional shapes to compose and create shapes
		  o Partition circles and rectangles into two and four equal shares

Utah Core Standards for Mathematics Progressions

	2nd Grade	3rd Grade
Operations and Algebraic Thinking	• Represent and solve one- and two-step word problems involving addition and subtraction within 100 • Fluently add and subtract within 20 using mental strategies • Work with equal groups of objects to gain foundations for multiplication • Use addition to find the total number of objects in rectangular arrays with up to 5 rows and up to 5 columns	• Represent and solve problems involving multiplication and division within 100 • Understand properties of multiplication and the relationship between multiplication and division • Multiply and divide within 100 • Solve two-step word problems involving the four operations and identify and explain patterns in arithmetic

Numbers and Operations in Base Ten	• Use place value understanding and properties of operations to add and subtract within 100
	  o Count, read and write within 1000
	  o Compare three-digit numbers using symbols
		• Use place value understanding and properties of operations to perform multi-digit arithmetic
		  o Round whole numbers to nearest 10 or 100
		  o Fluently add and subtract within 1000
		  o Multiply one-digit whole numbers by multiples of 10 in range 10-90

Numbers and Operations- Fractions		• Develop understanding of fractions as numbers with denominators 2, 3, 4, 6, 8 using number lines • Explain equivalence of fractions and compare by reasoning about their size
Measurement and Data	• Measure lengths of an object by selecting and using appropriate tools in standard units. • Measure and estimate lengths using units of inches, feet centimeters and meters • Measure to determine how much longer • Relate addition and subtraction to length within 100 • Represent whole numbers as distance from 0 on the number line • Work with time on digital and analog clocks to the nearest 5 minutes • Solve word problems involving money • Represent and interpret data by measuring objects and making repeated measurements of the same object • Represent and interpret data by drawing a picture graph and a bar graph to represent a data set up to four categories	• Solve problems involving measurement and estimation of intervals of time to the nearest minute • Solve problems involving measurement and estimation of liquid volumes and masses of objects using grams, kilograms and liters • Represent and interpret data using scaled picture and bar graphs • Generate measurement data by measuring lengths to halves and fourths • Geometric measurement: Understand concepts of area and relate area to multiplication and to addition • Geometric measurement: Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.
Geometry	• Recognize and draw shapes having specified attributes • Partition a rectangle into rows and columns • Partition circles and rectangles into two, three, or four equal shares	• Understand that shapes in different categories may share attributes • Partition shapes into parts with equal areas

Utah Core Standards for Mathematics Progressions

	4th Grade	5th Grade
Operations and Algebraic Thinking	• Use the four operations with whole numbers to solve word problems o Interpret a multiplication equation as a comparison o Involve multiplicative comparisons o Solve multistep word problems using whole numbers with whole number answers • Gain familiarity with factors and multiples in the range 1-100 • Generate and analyze patterns that follow a given rule	• Write and interpret numerical expressions o Use parenthesis, brackets, or braces in numerical expressions and evaluate expression with these symbols o Write simple expressions and interpret numerical expressions without evaluating them • Analyze patterns and relationships o Generate two numerical patterns using two given rules o Form ordered pairs
Numbers and Operations in Base Ten	• Generalize place value understanding for multi-digit whole numbers o Read, write, compare and expand multi-digit whole numbers o Round multi-digit numbers to any place • Fluently add and subtract multi-digit whole numbers using the • Use place value understanding and properties of operations to perform multi-digit multiplication o Multiply up to four digits by a one-digit number o Multiply two two-digit numbers using strategies and properties (illustrate and explain the calculations using equations, rectangular arrays and area models)	• Understand the place value system o Recognize a multi-digit number in the one place represents 10 times as much as it represents in the place to its right and 1/10 to its left o Explain patterns when multiplying by zero and explain patterns when a decimal is multiplied or divided o Use whole-number exponents to denote powers of 10 o Read, write and compare decimals to thousandths o Round to any place o Fluently multiply multi-digit whole numbers • Perform operations with multi-digit whole numbers and with decimal to hundredths o Fluently multiply multi-digit whole numbers o Find whole-number quotients of whole numbers up to four-digit dividends (illustrate and explain the calculations using equations, rectangular arrays and area models) o Add, subtract, multiply, and divide decimals to hundredths
Numbers and Operations-Fractions	• Extend understanding of fraction equivalence and ordering with denominators 2,3,4,5,6,8,10,12,10 o Explain and generate equivalent fractions using visual models o Compare with justification two fractions with different denominators and numerators and use the symbols >, =, <. • Build fractions from unit fractions by applying and extending previous understanding of operations on whole numbers o Understand addition and subtraction of fractions as joining and separating parts referring to the same whole o Decompose a fraction into a sum of fractions with same denominator o Add and subtract mixed numbers with like denominators o Solve word problems involving addition and subtraction of fractions having like denominators o Understand a fraction a/b as a multiple of 1/b and use this	• Use equivalent fractions as a strategy to add and subtract fractions o Add and subtract fractions with unlike denominators o Solve word problems involving addition and subtraction of fractions with unlike denominators • Apply and extend previous understandings of multiplication and division to multiply and divide fractions o Interpret a fraction as division of the numerator by the denominator o Solve word problems involving division of whole numbers o Find the are of a rectangle with fractional side lengths by tiling it with unit squares o Multiply fractional side lengths to find area of rectangle to get a rectangular areas o Interpret multiplication as scaling o Solve real world problems involving multiplication of

	understanding to multiply a fraction by a whole number o Solve word problems involving multiplication of a fraction by a whole number • Understand decimal notation for fractions and compare decimal fractions o Express a fraction with denominator 10 as an equivalent fraction with denominator 100 o Use decimal notation for fractions with denominators 10 or 100 o Compare two decimals to hundredths by reasoning about their size	fractions and mixed numbers o Divide a unit fraction by a whole number and whole numbers by unit fractions
Measurement and Data	• Solve problems involving measurement and conversion of measurements form a larger unit to a smaller unit o Know relative sizes of measurement units within one system of units including km, m, cm; kg, g, oz; l, ml; hr, min, sec. and express measurement equivalents in terms of a smaller unit, recording measurement in a two-column table o Use the four operations to solve problems involving distances, intervals of time, liquid volumes, masses of objects, and money including problems involving simple fractions or decimals o Represent measurement quantities using diagrams such as number line diagrams such as number line diagrams that feature a measurement scale o Apply the area and perimeter formulas in real world problems o Make a line plot to display data set of measurements in fractions of a unit ($\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$) • Represent and interpret data by making a line plot to display data set of measurements in fractions of a unit ($\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$) • Understand concepts of angle and measure angles o As angle is measured with reference to a circle o An angle that turns through *n* one-degree is said to have an angle measure of *n* degrees o Measure and sketch angles in whole-number degrees using a protractor o Recognize angles measures as additive o Solve addition and subtraction problems to find unknown angles	• Convert like measurement units within a given measurement system • Represent and Interpret data o Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$) o Use operations on fractions for this grade to solve problems from information on the line plot • Recognize volume as an attribute of solid figures and understand concepts of volume measurement. o Measure volume by counting unit cubes • Relate volume to the operations of multiplication and addition and solve real world problems involving volume o Find the volume of a right triangle by packing it with unit cubes o Apply formulas V=l x w x h and V= b x h o Recognize volume as additive o Find volume of solid figures composed of two non-overlapping right rectangular prisms
Geometry	• Draw points, lines, line segments, ray, angles (right, acute, obtuse), and perpendicular and parallel lines in two-dimensional figures • Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. • Recognize right triangles as a category and identify right triangles • Recognize a line of symmetry for a two-dimensional figure and identify line symmetric figures and draw lines of symmetry	• Graph points on the coordinate plane to solve real-world and mathematical problems in the first quadrant • Classify two-dimensional figures into categories based on their properties o Understand that attributes belonging to a category of two-dimensional figures belong to all subcategories o Classify two-dimensional figures in a hierarchy based on properties

CCSS
WHERE TO FOCUS
MATHEMATICS

An important subset of the major work in grades K–8 is the progression that leads toward middle school algebra.

K	1	2	3	4	5	6	7	8
Know number names and the count sequence Count to tell the number of objects Compare numbers Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from Work with numbers 11-19 to gain foundations for place value	Represent and solve problems involving addition and subtraction Understand and apply properties of operations and the relationship between addition and subtraction Add and subtract within 20 Work with addition and subtraction equations Extend the counting sequence Understand place value Use place value understanding and properties of operations to add and subtract Measure lengths indirectly and by iterating length units	Represent and solve problems involving addition and subtraction Add and subtract within 20 Understand place value Use place value understanding and properties of operations to add and subtract Measure and estimate lengths in standard units Relate addition and subtraction to length	Represent & solve problems involving multiplication and division Understand properties of multiplication and the relationship between multiplication and division Multiply & divide within 100 Solve problems involving the four operations, and identify & explain patterns in arithmetic Develop understanding of fractions as numbers Solve problems involving measurement and estimation of intervals of time, liquid volumes, & masses of objects Geometric measurement: understand concepts of area and relate area to multiplication and to addition	Use the four operations with whole numbers to solve problems Generalize place value understanding for multi-digit whole numbers Use place value understanding and properties of operations to perform multidigit arithmetic Extend understanding of fraction equivalence and ordering Build fractions from unit fractions by applying and extending previous understandings of operations Understand decimal notation for fractions, and compare decimal fractions	Understand the place value system Perform operations with multi-digit whole numbers and decimals to hundredths Use equivalent fractions as a strategy to add and subtract fractions Apply and extend previous understandings of multiplication and division to multiply and divide fractions Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition Graph points in the coordinate plane to solve real-world and mathematical problems*	Apply and extend previous understandings of multiplication and division to divide fractions by fractions Apply and extend previous understandings of numbers to the system of rational numbers Understand ratio concepts and use ratio reasoning to solve problems Apply and extend previous understandings of arithmetic to algebraic expressions Reason about and solve one-variable equations and inequalities Represent and analyze quantitative relationships between dependent and independent variables	Apply and extend previous understanding of operations with fractions to add, subtract, multiply, and divide rational numbers Analyze proportional relationships and use them to solve real-world and mathematical problems Use properties of operations to generate equivalent expressions Solve real-life and mathematical problems using numerical and algebraic expressions and equations	Work with radical and integer exponents Understand the connections between proportional relationships, lines, and linear equations** Analyze and solve linear equations and pairs of simultaneous linear equations Define, evaluate, and compare functions Use functions to model relationships between quantities

* Indicates a cluster that is well thought of as a part of a student's progress to algebra, but that is currently not designated as major by the assessment consortia in their draft materials. Apart from the one asterisked exception, the clusters listed here are a subset of those designated as major in the assessment consortia's draft documents.
** Depends on similarity ideas from geometry to show that slope can be defined and then used to show that a linear equation has a graph which is a straight line and conversely.

The Utah Core Standards for Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important processes and proficiencies with longstanding importance in mathematics education.

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

2. Reason abstractly and quantitatively.

3. Construct viable arguments and critique the reasoning of others.

4. Model with mathematics.

5. Use appropriate tools strategically.

6. Attend to precision.

7. Look for and make use of structure.

8. Look for and express regularity in repeated reasoning.

Connecting the Standards for Mathematical Practice to the Standards for Mathematical Content

"The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word "understand" are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices" (CCSS, 2010).

Common Core State Standards
Standards for Mathematical Practice
Questions for Teachers to Ask

Make sense of problems and persevere in solving them	Reason abstractly and quantitatively	Construct viable arguments and critique the reasoning of others	Model with mathematics
Teachers ask: • What is this problem asking? • How could you start this problem? • How could you make this problem easier to solve? • How is ___'s way of solving the problem like/different from yours? • Does your plan make sense? Why or why not? • What tools/manipulatives might help you? • What are you having trouble with? • How can you check this?	*Teachers ask:* • What does the number ____ represent in the problem? • How can you represent the problem with symbols and numbers? • Create a representation of the problem.	*Teachers ask:* • How is your answer different than _____'s? • How can you prove that your answer is correct? • What math language will help you prove your answer? • What examples could prove or disprove your argument? • What do you think about _____'s argument • What is wrong with ____'s thinking? • What questions do you have for ____? **it is important that the teacher poses tasks that involve arguments or critiques*	*Teachers ask:* • Write a number sentence to describe this situation • What do you already know about solving this problem? • What connections do you see? • Why do the results make sense? • Is this working or do you need to change your model? **It is important that the teacher poses tasks that involve real world situations*
Use appropriate tools strategically	**Attend to precision**	**Look for and make use of structure**	**Look for and express regularity in repeated reasoning**
Teachers ask: • How could you use manipulatives or a drawing to show your thinking? • Which tool/manipulative would be best for this problem? • What other resources could help you solve this problem?	*Teachers ask:* • What does the word ____ mean? • Explain what you did to solve the problem. • Compare your answer to _____'s answer • What labels could you use? • How do you know your answer is accurate? • Did you use the most efficient way to solve the problem?	*Teachers ask:* • Why does this happen? • How is ____ related to ____? • Why is this important to the problem? • What do you know about ____ that you can apply to this situation? • How can you use what you know to explain why this works? • What patterns do you see? **deductive reasoning (moving from general to specific)*	*Teachers ask:* • What generalizations can you make? • Can you find a shortcut to solve the problem? How would your shortcut make the problem easier? • How could this problem help you solve another problem? **inductive reasoning (moving from specific to general)*

Grades 1-5 CSD Math Block 90 Minutes Daily

Numeracy Component	Range of Time	Focus of Instruction		Instructional Materials	
				Hard Copy	**Digital**

Review	5-10 minutes	• Focused Review
		  ○ Identified skill deficit that have been identified through formative assessment to review (DWSBB, exit ticket, whiteboards, etc.)
		  ○ Cumulative review of previously taught skills and standards
			Check for Understanding (Formative Assessment)
			Monitor progress towards mastery of grade-level core standard
				• Daily Common Core Review
				• Today's Challenge
				• Review What you Know
					• Today's Challenge

Vocabulary	3-5 minutes	• Teach Appropriate Vocabulary using the Systematic Vocabulary Routine		• Systematic Vocabulary Routine • Vocabulary Review Activity • My Word Cards	
Lesson Objectives	1-3 Minutes	• Content Objectives- What are students going to learn? • Language Objectives- How will students demonstrate learning through reading, writing, speaking, or listening?		• Lesson objectives are posted and referred to throughout the lesson • Objectives include both content and math practice standards	

Concept/Skill Development (Acquisition, Automaticity & Application)	30-45 minutes	Develop the Concept:
		• Acquisition: Students develop understanding of skills through the CRA Model
		  ○ Concrete: Hands-on (manipulatives)
		  ○ Representational: Visual (pictures or video)
		  ○ Abstract: Symbolic (numbers or algorithm)
		• Automaticity: Students perform skills flexibly, accurately, and efficiently
		• Application: Students apply skills to solve problems in new contexts
				• Problem-Based Interactive Learning
				• Visual Learning Bridge
				  ○ (K-2) Do You Understand? Show Me!
				  ○ 3-5) Convince Me!
				  ○ Guided Practice
				  ○ Independent Practice (Quick Check)
					• Solve and Share (Problem Based Learning)
					• Visual Learning Animation Plus
					• Convince Me! (3-5)
					• Do You Understand? (K-2)
					• Student and Teacher eTexts
					• Listen and Look Videos (teacher)
					•

Skill-Based Instruction: Pre-teach, Review, Reinforce & Extend	30-45 minutes	• Pre-teach upcoming concepts to groups and individual students that need support/scaffolding • Students practice concepts independently as appropriate • Reteach with skill-based groups who need extra support/scaffolding • Provide extension opportunities for students who have shown mastery of the concept/skill • Build Fluency with math facts and computation		• Intervention Activity • ON-level and Advanced Activity Centers • Reteach • Leveled Assignment • Differentiated Center materials • Close/Assess and Differentiate	• Practice Buddy • Reflex (grades 2-5)

Skill-Based Instruction: Assisting All Students to Succeed in Mathematics

Skill-Based Instruction is additional support given to students during the math block by the teacher aimed at building targeted math skills. This is in addition to core instruction given to entire class.

enVision 2.0 supports skill-based instruction with the following resources:

- **Intervention Activity** (Assess and Differentiate section at the end of each lesson) Students needing intervention get focused instruction from the teacher.
- **Math Diagnosis and Intervention System 2.0 (**MDIS**)** Provides additional lessons to focus intervention for students.
- **Item Analysis for Diagnosis and Intervention (**RtI**)** Provided with assessments to support analyzing gaps in mastery of standards
- **Reteaching** Problem sets at the end of each topic that connect to the math standards

Skill-based instruction is explicit & systematic *(I do, we do, y'all do, and you do)*	***Examples***
Provide additional **concrete models** to build understanding **with accompanying teacher think-alouds**	• Use manipulatives such as place value blocks, Unifix cubes, and fraction circles. • Use visual representations such as number lines, arrays, and bar diagrams. • Teacher Think-Aloud: *"When I have fourteen cubes, I can create one ten stick and I have four cubes left over to make 14."*
Provide students opportunities to understand the **relationship between the abstract symbols and visual representations.**	• The = sign means that we have the same amount on both sides of the equal sign. ✪ ✪ ✪ = ✪ ✪ ✪
Provide numerous **examples with accompanying teacher think-alouds**	Skill: Addition of Fractions Examples: • ½ + ¼ = • ¼ + ¼ = Teacher Think-Aloud: *"We know that when we add fractions with common denominators the denominator will stay the same because we still have the same size piece. So when I add ¼ + ¼ I have* $^2/_4$ *because I have 2, ¼ pieces."*
Provide **students** with opportunities to **solve problems** in a group **and communicate problem-solving strategies.**	• Students effectively communicate their strategies to *one another* using appropriate mathematical vocabulary. • Students effectively communicate their strategies to the *teacher* using appropriate mathematical vocabulary.
Provide students ongoing, **specific feedback** that clarifies what students did correctly or what they need to improve.	• Student correctly answers that 5 + 3 = 8. Teacher says, "Yes, that is correct. The total of five and three is eight." • Student incorrectly identifies that 5 + 3 = 7. Teacher says, "Five plus three is not seven. Pull out your unifix cubes and show me the problem with your cubes." *Student counts the cubes and answers that 5 + 3 = 8.* "That is correct. The total of five and three is eight. Thank you for trying again."
Provide **frequent cumulative review** to ensure that knowledge is maintained over time.	Skill: Adding Decimals • Teacher quickly reviews multi-digit addition with an emphasis on place value.
Provide opportunity for **students to apply the skill in word problems.**	Skill: Area - finding the area of a rectangle given the side lengths. • Students create word problems using the area of squares for example a student creates the following problem, *"Bobbie is tiling the kitchen floor with square foot tiles. The floor has side lengths of 10 feet and*

	12 feet. How many tiles are needed to cover the floor?"

During skill-based instruction, students not with the teacher could engage in the following math center activities:

Center Options	Description
Center Activities from enVision 2.0	• At the end of each enVision2.0 lesson in the Assess and Differentiate section are the On-Level and Advanced Center Activities which include: Center Games, Problem-Solving Reading Mat, Math and Science Activity
Digital Centers from enVision 2.0	• The following digital components from enVision 2.0 could be utilized by students during math centers: Today's Challenge, Game from the Game Center, Digital Math Tool Activities, Another Look video, Bounce Pages, Practice Buddy (grades 3-5)
Technology	• Reflex- Students work independently in grades 2-5 to build fluency of basic math facts • Students use appropriate technology to deepen their understanding of math.
Fluency	• Fluency is built on any skill that has been taught throughout the year (*e.g., previous instruction focused on fact families and pairs of students work together and to create fact families using number cards, including numbers 0-9. The student created fact families would be recorded on a piece of paper or graphic organizer.)*
Four-Square Math	• Students are given a four square graphic organizer with a previously learned vocabulary word or concept in the middle of the graphic. The four areas to write could include any of the following: three words or pictures that help you remember the word, characteristics, non-example, example, a statement that is true about the word, three words related to the word, or a conclusion statement. • Students write a math practice standard in the middle of the four square and could add any of the following to the squares: characteristics of the MP, list what students do when they engage in the MP, write questions that you would ask your partner when you are focusing on the MP, six word summary of the MP, etc.
Literature in Math	• Students read or look at a book that relates to the current or past math concept. The teacher provides questions or sentence starters for the group at the center to support discussion after reading.
Manipulatives	• Students manipulate math tools to complete a grade level task.
Math Journals	• Students write or draw in math journals to summarize their learning. • Students review their notes and star key ideas.
Problem-Solving using DOK 3	• Students in small groups are presented with an application problem that requires reasoning, problem solving, and justification of their thought process by using words, pictures or equations. • Tasks are available at the following websites: http://www.insidemathematics.org https://www.illustrativemathematics.org http://illuminations.nctm.org
Vocabulary	• Students match previously taught vocabulary words with illustrations. After finding a match the student would define the word. • Students do a word sort with the enVision vocabulary cards. • Students find similarities and differences in words using a Venn Diagram.

1st Grade
Year-at-a-Glance 2016-2017

Flexible Pacing	Strands/Standards	enVision 2.0 Math Topic Titles	TOPICS	District Assessment Dates
Aug 29-Nov-18 57 Days	**Mathematical Practices: 2, 3, 7** Operations and Algebraic Thinking: Standards 1-6 (1.OA.A, 1.OA.B, 1.OA.C)	• **Solve Addition and Subtraction Problems to 10 (9 Lessons)**	Topic 1	Due by November 11 District-Wide Standards-Based Benchmark #1
		• **Fluently Add and Subtraction Within 10 (10 Lessons)**	Topic 2	
		• **Addition Facts to 20: Use Strategies (10 Lessons)**	Topic 3	
		• **Subtraction Facts to 20: Use Strategies (9 Lessons)**	Topic 4	
Nov 21-Feb 9 46 Days	**Mathematical Practices: 1, 6, 7, 8** Operations and Algebraic Thinking: Standards 1-8 (1.OA.D) Measurement and Data: Standard 4 (1.MD.C) Numbers & Operations in Base 10: Standards 1-3 (1.NBT.A & B)	• **Work with Addition and Subtraction Equations (7 Lessons)**	Topic 5	Due by February 24 District-Wide Standards-Based Benchmark #2
		• **Represent and Interpret Data (5 Lessons)**	Topic 6	
		• **Extend and Counting Sequence (7 Lessons)**	Topic 7	
		• **Understand Place Value (6 Lessons)**	Topic 8	
Feb 13 – Apr 28 48 Days	**Mathematical Practices: 1, 4, 5** Numbers & Operations in Base 10: Standards 2-6 (1.NBT.B & C) Measurement and Data: Standards 1-2 (1.MD.A)	• **Compare Two-Digit Numbers (6 Lessons)**	Topic 9	Due by April 28 District-Wide Standards-Based Benchmark #3
		• **Use Models and Strategies to Add Tens and Ones (9 Lessons)**	Topic 10	
		• **Use Models and Strategies to Subtract Tens (7 Lessons)**	Topic 11	
		• **Measure Lengths (5 Lessons)**	Topic 12	
May 1 – June 6 25 Days	**Mathematical Practices: 1, 2, 4** Measurement and Data: Standard 3 (1.MD.B) Geometry: Standards 1-3 (1.G.A)	• **Time (4 Lessons)**	Topic 13	Due by June 6 District-Wide Standards-Based Benchmark #4
		• **Reason with Shapes and Their Attributes (9 Lessons)**	Topic 14	
		• **Equal Shares of Circles and Rectangles (4 Lessons)**	Topic 15	

DWSBB 1: August 29-November 18 **Flexible Pacing: 57 days**

OPERATIONS AND ALGEBRAIC THINKING (OA)
Topic 1 - Solve Addition and Subtraction Problems to 10

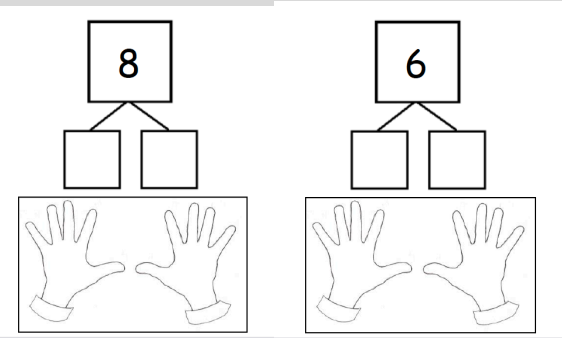
Report Card Learning Targets
I can….
- Solve addition and subtraction word problems using pictures and equations
- Understand the relationship between addition and subtraction

TOPIC 1

Coherence		**pp. 1C-1D**
Look back: **Grade K-** • Count • Understand Addition and Subtraction	**Topic 1:** • Real-Life Contexts • Understand Addition and Subtraction Situations	**Look Ahead:** **Later in Grade 1-** • Add and Subtract Within 20 • Add and Subtract Data • Add and Subtract Tens and Ones **Grade 2-** • Fluency with Facts to 20 • Solve Addition and Subtraction Problems
Rigor		**p. 1E**
Conceptual Understanding: • Understand Addition and Subtraction • Understand a Situation Beyond Key Words	**Procedural Skill and Fluency:** • Sums and Differences	**Applications:** • Operations in Context

Focus	**Strand: Mathematical Practice Standard #3** **p. 1F**
1.MP.3	**Construct viable arguments and critique the reasoning of others.** Use stated assumptions, definitions, and previously established results to construct arguments. Explain and justify the mathematical reasoning underlying a strategy, solution, or conjecture by using concrete referents such as objects, drawings, diagrams, and actions. Listen to or read the arguments of others, decide whether they make sense, ask useful questions to clarify or improve the arguments, and build on those arguments. ***First grade students construct math arguments as they solve addition and subtraction problems and explain their work.*** I can provide complete and clear explanations of my thinking and work. I can decide if other students' explanations make sense; I can clarify or improve other students' arguments.

	I can use counterexamples when appropriate.		
Focus	**Standards**	**Curriculum Supports – enVision 2.0**	**Vocabulary**
1.OA.1 **1.OA.2** **(1.OA.A)**	**Strand: Operations and Algebraic Thinking** First grade students will represent and solve problems involving addition and subtraction within 20. **Standard 1.OA.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. *For example, use objects, drawings, and equations with a symbol for the unknown number to represent the problem.* **Standard 1.OA.2** Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20. *For example, use objects, drawings, and equations with a symbol for the unknown number to represent the problem.*	**Topic 1: Solve Addition and Subtraction Problems to 10** *(pp. 1I-1K)* **1-1** Solve Problems: Add To *(pp. 9-14)* **1-2** Solve Problems: Put Together *(pp. 15-20)* **1-3** Solve Problems; Both Addends Unknown *(pp. 21-26)* **1-4** Solve Problems: Take From *(pp. 27-32)* **1-5** Solve Problems: Compare Situations *(pp. 33-38)* **1-6** Continue to Solve Problems: Compare Situations *(pp. 39-44)* **1-7** Practice Solving Problems: Add To *(pp. 45-50)* **1-8** Solve Problems: Put Together/Take Apart *(pp. 51-56)* **1-9 Math Practices and Problem Solving: Construct Arguments** *(pp. 57-62)*	**Topic 1:** • add • sum • plus • equals • equation • parts • whole • difference • subtract • minus • more • fewer • addend
	Assessment Options:	**Topic 1 Assessment –** Solve Addition and Subtraction Problems to 10 ***(print or online)*** *(pp. 69-72)* **Topic 1 Performance Assessment –** Solve Addition and Subtraction Problems to 10 *(pp. 73-74)*	

	Assessment Tasks – Topic 1	
	Procedural Check	**Application Task**
1.OA.1	Color the number of fingers shown from left to right. Then fill in the parts. Make the number of fingers on one hand a part.  (DOK 1) Eight horses were in the field. Five of them were black. How many of the horses were brown? (DOK 1)	Kate has 4 markers. Jill has 9 markers. How many fewer markers does Kate have than Jill? Write a number sentence that matches this story. (DOK 2) Mia frosted 6 cupcakes. Some of them are chocolate. 4 of them are vanilla. How many are chocolate? Draw a picture to justify your answer. (DOK 3)
1.OA.2	Mr. Fisher has 5 chocolate chips cookies, 6 oatmeal raisin cookies and 3 sugar cookies. How many cookies does Mr. Fisher have? (DOK 1)	Suzy was riding the bus and looked out the window. She saw two moms walking their dogs. Each mom was walking two dogs. How many dog ears were there in all? There were _____ dog ears in all. I know this because _____. (DOK 3)

DWSBB 1: August 29-November 18 **Flexible Pacing: 57 days**

OPERATIONS AND ALGEBRAIC THINKING (OA)
Topic 2 - Fluently Add and Subtract Within 10
Topic 3 - Addition Facts to 20: Use Strategies

Report Card Learning Targets
I can….

- Solve addition and subtraction word problems using pictures and equations
- Understand the relationship between addition and subtraction
- Add within 20
- Subtract within 20

TOPICS 2 and 3

Coherence **pp. 75C-75D**

Look back:	Topics 2 and 3:	Look Ahead:
Grade K- • Understand Addition and Subtraction • Decompose Numbers	• Addition Strategies • Decomposition • Doubles and Near Doubles • Think Addition to Subtract • Solve Word Problems • Properties and Relationships	**Later in Grade 1-** • Subtract Within 20 • Add and Subtract Data • Tens and Ones **Grade 2-** • Fluency with Addition and Subtraction Within 20 • Addition and Subtraction with Greater Numbers • Solve Addition and Subtraction problems

Rigor **p. 75E**

Conceptual Understanding:	Procedural Skill and Fluency:	Applications:
• Build on Counting Skills • Find Patterns and Relationships in Addition and Subtraction Equations • Understand 10 as a Benchmark Number	• Add and Subtract Within 10 • Add Within 20	• Addition and Subtraction Situations

Focus	Strand: Mathematical Practice Standard #7 and #3		p. 75F
1.MP.7 **1.MP.3**	**7. Look for and make use of structure.** (Topic 2) Recognize and apply the structures of mathematics such as patterns, place value, the properties of operations, or the flexibility of numbers. See complicated things as single objects or as being composed of several objects. I can analyze and describe patterns in numbers. ***First grade students use structure to apply the Commutative Property to find missing addends.*** I can analyze and describe patterns in numbers. I can procedures and objects to represent, describe, and work with them in different ways. **3. Construct viable arguments and critique the reasoning of others.** (Topic 3) Use stated assumptions, definitions, and previously established results to construct arguments. Explain and justify the mathematical reasoning underlying a strategy, solution, or conjecture by using concrete referents such as objects, drawings, diagrams, and actions. Listen to or read the arguments of others, decide whether they make sense, ask useful questions to clarify or improve the arguments, and build on those arguments. ***First grade students critique the reasoning of others as they determine the best strategies to solve addition and subtraction problems.*** I can ask questions to understand other people's thinking. I can identify mistakes in other people's thinking. I can provide suggestions for improving other people's thinking.		
Focus	**Standards**	**Curriculum Supports – enVision 2.0**	**Vocabulary**
1.OA.5 **1.OA.6** **(1.OA.C)**	**Strand: Operations and Algebraic Thinking** First grade students will represent and solve problems involving addition and subtraction within 20. **Standard 1.OA.5** Relate counting to addition and subtraction. *For example, by counting on 2 to add 2.* **Standard 1.OA.6** Add and subtract within 20. a. Use strategies such as counting on; making ten (*for example, 8+6 = 8+2+4 = 10+4 = 14);* decomposing a number leading to a ten (*for example, 13–4 =*	**Topic 2: Fluently Add and Subtract Within 10** *(pp. 75I-75L)* **2-1** Count On To Add *(pp. 79-84)* **2-2** Doubles *(pp. 85-90)* **2-3** Near Doubles *(pp. 91-96)* **2-4** Facts With 5 On A Ten-Frame *(pp. 97-102)* **2-5** Add In Any Order *(pp. 103-108)* **2-6** Count Back To Subtract *(pp. 109-114)* **2-7** Think Addition To Subtract *(pp. 115-120)* **2-8** Continue To Think Addition To Subtract *(pp. 121-126)* **2-9** Solve Word Problems With Facts To 10 *(pp. 127-132)* **2-10 Math Practices and Problem Solving:** **Look for and Use Structure** *(pp.133-138)*	**Topic 2:** • number line • doubles fact • near doubles fact

	13–3–1 = 10–1 = 9); using the relationship between addition and subtraction (*for example, knowing that 8+4 = 12, one knows 12–8 = 4);* and creating equivalent but easier or known sums (*for example, adding 6+7 by creating the known equivalent 6+6 +1 = 12+1 = 13).* b. By the end of Grade 1, demonstrate fluency for addition and subtraction within 10.	**Topic 3: Addition Facts to 20: Use Strategies** *(pp. 151A-151D)* **3-1** Count On To Add *(pp. 155-160)* **3-2** Count On To Add Using An Open Number Line *(pp. 161-166)* **3-3** Doubles *(pp. 167-172)* **3-4** Doubles Plus 1 *(pp. 173-178)* **3-5** Doubles Plus 2 *(pp. 179-184)* **3-6** Make 10 To Add *(pp. 185-190)* **3-7** Continue To Make 10 To Add *(pp. 191-196)* **3-8** Explain Addition Strategies *(pp.197-202)* **3-9** Solve Addition Word Problems With Facts To 20 *(pp. 203-208)* **3-10 Math Practices and Problem Solving: Critique Reasoning** *(pp. 209-214)*	**Topic 3:** • open number line • doubles-plus-1 fact • doubles-plus-2 fact • make 10
	Assessment Options:	**Topic 2 Assessment –** Fluently Add and Subtract Within 10 *(pp. 145-148)* **Topic 2 Performance Assessment –** Fluently Add and Subtract Within 10 *(pp. 149-150)* **Topic 3 Assessment –** Addition Facts to 20: Use Strategies *(print or online) (pp. 221-224)* **Topic 3 Performance Assessment –** Addition Facts to 20: Use Strategies *(pp. 225-226)*	

	Assessment Tasks – Topics 2 and 3	
	Procedural Check	**Application Task**
1.OA.5	**The number is 7.** What is 2 more than the 7? What is 3 more than 7? What is 5 more that 7? What is 2 less than 7? What is 4 less than 7? What is 6 less than 16? (DOK 2)	When Austin solved his next problem on the number line, he was counting up. He started at a certain number, and he counted up 4. When he stopped, he was at a number less than 12. What are three different numbers could he have started at? _____ _____ _____ Draw a number line to prove each choice. (DOK 3)
1.OA.6	Circle the numbers in the box that can be added to make the number. 9 3 4 6 6 1 3 5 8 6 2 3 (DOK 1)	9 beads spilled on the floor. A student picks up 4. How many beads are still on the floor? Write a number sentence and a statement to share your solution. Extension: If the 9 beads had been picked up by 2 students, how many beads might each student have picked up. Make number sentences and pictures to explain your thinking. (DOK 2)

DWSBB 1: August 29-November 18 **Flexible Pacing: 57 days**

OPERATIONS AND ALGEBRAIC THINKING (OA)
Topic 4 - Subtraction Facts to 20: Use Strategies

Report Card Learning Targets
I can….
- Understand the relationship between addition and subtraction
- Add within 20
- Subtract within 20

TOPIC 4

Coherence **pp. 227C-227D**

Look back:	Topic 4:	Look Ahead:
Grade K- • Counting • Making 10 • Related Facts within 5 • Subtraction Word Problems **Earlier in Grade 1-** • Using Addition to Subtract within 10 • Word Problems within 10	• Connecting Addition and Subtraction • Pulling It All Together	**Later in Grade 1-** • Solving Problems About Data • Subtracting Tens **Grade 2-** • Fluency with Facts to 20 • Subtracting within 100 • Subtracting within 1,000

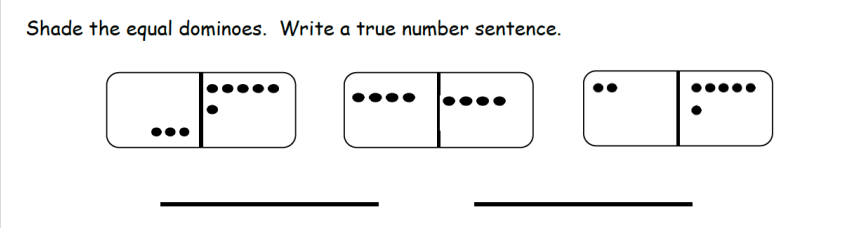
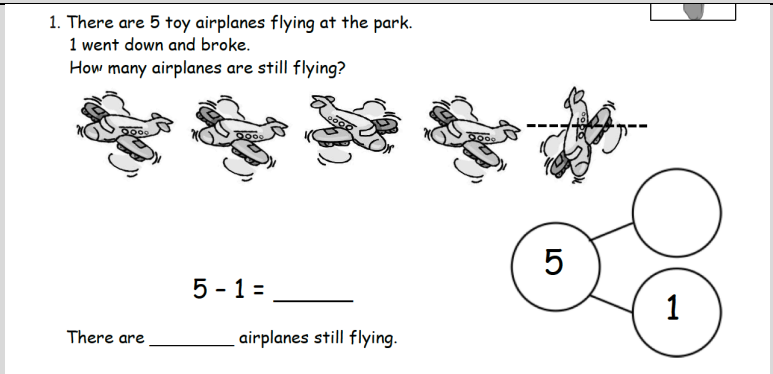
Rigor **p. 227E**

Conceptual Understanding:	Procedural Skill and Fluency:	Applications:
• Understand 10 as a Benchmark Number • The Addition-Subtraction Relationship • Understanding Different Problem Situations	• Using Strategies to Subtract within 20	• Addition and Subtraction Situations

Focus	Strand: Mathematical Practice Standard #2		p. 227F
1.MP.2	**Reason abstractly and quantitatively.** Make sense of quantities and their relationships in problem situations. Contextualize quantities and operations by using images or stories. Decontextualize a given situation and represent it symbolically. Interpret symbols as having meaning, not just as directions to carry out a procedure. Know and flexibly use different properties of operations, numbers, and geometric objects. ***First grade students use reasoning as they think about how numbers in word problems are related.*** I can identify and understand the quantities in the problem. I can show and explain how quantities are related. I can translate real-world contexts correctly to numbers, expressions, equations, or concrete or pictorial representations. I can connect numbers, expressions, equations, or concrete or pictorial representations back to real-world contexts.		
Focus	**Standards**	**Curriculum Supports – enVision 2.0**	**Vocabulary**
1.OA.3 **1.OA.4** **(1.OA.B)**	**Strand: Operations and Algebraic Thinking** First grade students will understand and apply properties of operations and the relationship between addition and subtraction. **Standard 1.OA.3** Apply properties of operations as strategies to add and subtract. *For example: 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.)* First grade students need not use formal terms for these properties. **Standard 1.OA.4** Understand subtraction as an unknown-addend problem. *For example, subtract 10-8 by finding the number that makes 10 when added to 8.*	**Topic 4: Subtraction Facts to 20: Use Strategies** *(pp. 227I-227K)* **4-1** Count To Subtract *(pp. 231-236)* **4-2** Make 10 to Subtract *(pp. 237-242)* **4-3** Continue To Make 10 To Subtract *(pp. 243-248)* **4-4** Fact Families *(pp. 249-254)* **4-5** Use Addition To Subtract *(pp. 255-260)* **4-6** Continue To Use Addition To Subtract *(pp. 261-266)* **4-7** Explain Subtraction Strategies *(pp. 267-272)* **4-8** Solve Word Problems With Facts To 20 *(pp. 273-278)* **4-9 Math Practices and Problem Solving: Reasoning** *(pp. 279-284)*	**Topic 4:** • fact family • related facts

	Assessment Options:	**Topic 4 Assessment –** Subtraction Facts to 20: Use Strategies *(print or online)* *(pp. 291-294)* **Topic 4 Performance Assessment –** Subtraction Facts to 20: Use Strategies *(pp. 295-296)*	

District Wide Standards-based Benchmark #1 due by November 18

	Assessment Tasks – Topic 4	
	Procedural Check	**Application Task**
1.OA.3	 (DOK 1) Write the missing number that makes the number sentence true? 6 + 2 = _____ + 6 _____ + 3 = 3 + 4 (DOK 1)	Joe has 9 marbles. Find all of the many ways he can make nine with the marbles. Draw a picture, write a number sentence and use words to justify your thinking. (DOK 3) Kayla earned 5 stickers from her teacher on Monday and 3 stickers from her teacher on Tuesday. Bryce earned 3 stickers from his teacher on Monday and 5 stickers on Tuesday. Kayla says they have the same number of stickers. Is she correct? Explain why or why not using pictures, numbers and/or words. (DOK 3)
1.OA.4	 (DOK 1)	There are 8 apples and 2 have worms. How many apples do not have worms? Use a ten frame to prove your answer. (DOK 3) A ten frame has one row filled in. Draw the ten frame and write a number sentence that goes with your picture. (DOK 2)

DWSBB 2: November 21-February 9 **Flexible Pacing: 46 days**

OPERATIONS AND ALGEBRAIC THINKING (OA)
Topic 5 – Work with Addition and Subtraction Equations

Report Card Learning Targets
I can….
- Solve addition and subtraction word problems using pictures and equations
- Understand the relationship between addition and subtraction
- Add within 20
- Subtract within 20

TOPIC 5

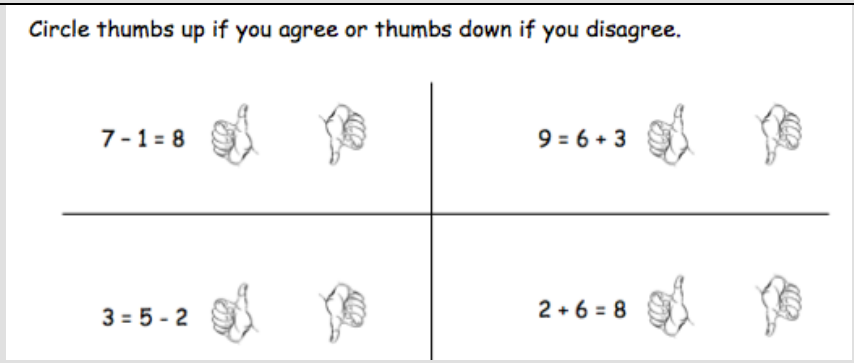
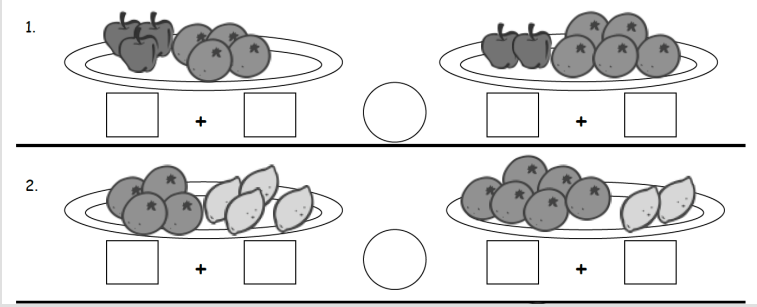
Coherence **pp. 297C-297D**

Look back:	Topic 5:	Look Ahead:
Grade K- • Compare Numbers • Meanings of Addition and Subtraction **Earlier in Grade 1-** • Add and Subtract Within 20 • Properties and Strategies • Missing Addends	• Equality • True Equations • Addition and Subtraction Computation • Properties of Equations • Addition and Subtraction Situations	**Later in Grade 1-** • Compare Numbers • Addition and Subtraction Equations with Larger Numbers **Grade 2-** • Continued Work with Addition and Subtraction Equations • One- and Two-Step Word Problems • Compare Larger Numbers

Rigor **p. 297E**

Conceptual Understanding:	Procedural Skill and Fluency:	Applications:
• Understand the Equal Sign • True and False Equations	• Use the Associative Property to Add	• Addition and Subtraction Situations

Focus	Strand: Mathematical Practice Standard #6		p. 297F
1.MP.6	**Attend to precision.** Communicate precisely to others by crafting careful explanations that communicate mathematical reasoning by referring specifically to each important mathematical element, describing the relationships among them, and connecting their words clearly to representations. Calculate accurately and efficiently, and use clear and concise notation to record work. ***First grade students attend to precision when using the equal sign to symbolize the notion of "the same value as."*** I can compute accurately. I can use symbols appropriately. I can accurately use problem-solving strategies. I can calculate efficiently, accurately, and fluently.		
Focus	**Standards**	**Curriculum Supports – enVision 2.0**	**Vocabulary**
1.OA.7 **1.OA.8** **(1.OA.D)**	**Strand: Operations and Algebraic Thinking** First grade students will work with addition and subtraction equations. **Standard 1.OA.7** Understand the meaning of the equal sign, and determine whether 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* **Standard 1.OA.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 = ?*	**Topic 5: Work with Addition and Subtraction Equations** *(pp. 297I-297K)* **5-1** Find The Unknown Numbers *(pp. 299-304)* **5-2** True Or False Equations *(pp. 305-310)* **5-3** Make True Equations *(pp. 311-316)* **5-4** Word Problems With Three Addends *(pp. 317-322)* **5-5** Add Three Numbers *(pp. 323-328)* **5-6** Solve Addition and Subtraction Word Problems *(pp. 329-334)* **5-7 Math Practices and Problem Solving: Precision** *(pp. 335-340)*	**Topic 5:** No new vocabulary words Review as needed
	Assessment Options:	**Topic 5 Assessment –** Work with Addition and Subtraction Equations *(print or online) (pp. 345-346)* **Topic 5 Performance Assessment –** Work with Addition and Subtraction Equations *(pp. 347-348)*	

	Assessment Tasks – Topic 5	
	Procedural Check	**Application Task**
1.OA.7	 (DOK 1)	Write an expression that matches the groups on each plate. If the plate has the same amount of fruit, write the equal sign between the expressions.  (DOK 2) Look at the number sentence in the box. What number will make that number sentence true? **6 + ? = 9 – 1** ? = ____ Draw a picture to prove your answer. (DOK 3)
1.OA.8	What goes with 2 to make 5? 2 + □ = 5 What goes with 3 to make 6? 3 + □ = 6 What goes with 4 to make 9? 4 + □= 9 (DOK 1)	This is a skill-based task. There is no problem task associated with it.

DWSBB 2: November 21-February 9 **Flexible Pacing: 46 days**

MEASUREMENT AND DATA (MD)
Topic 6 - Represent and Interpret Data

Report Card Learning Targets –
I can….
- Represent and interpret data
- Identify and compare the values of pennies, nickels, dimes and quarters

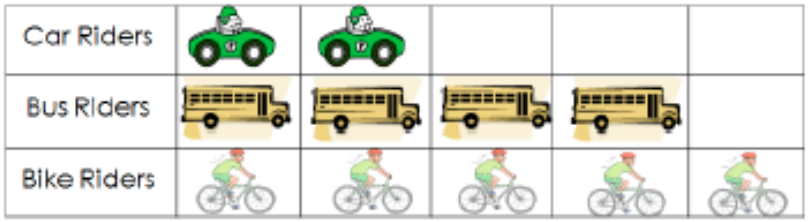
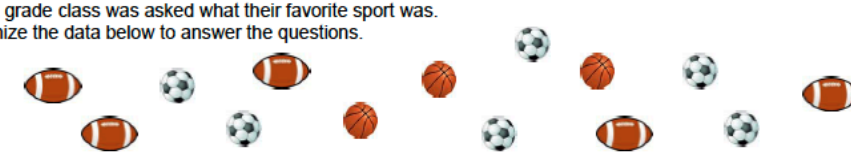
TOPIC 6

Coherence		**pp. 349C-349D**
Look back: **Grade K-** • Compare Groups and Numbers • Sort Objects **Earlier in Grade 1-** • Addition and Subtraction Situations	**Topic 6:** • Data Analysis • Addition and Subtraction Situations • Represent and Solve Addition and Subtraction Problems	**Look Ahead:** **Later in Grade 1-** • Data Analysis **Grade 2-** • Graphs and Data

Rigor		**p. 349E**
Conceptual Understanding: • Organize Data • Collect and Represent Data • Retrieve and Analyze Data	**Procedural Skill and Fluency:** • Represent and Interpret Data	**Applications:** • Addition and Subtraction Situations

Focus	**Strand: Mathematical Practice Standard #1** **p. 349F**
1.MP.1	**Make sense of problems and persevere in solving them.** Explain the meaning of a problem, look for entry points to begin work on the problem, and plan and choose a solution pathway. When a solution pathway does not make sense, look for another pathway that does. Explain connections between various solution strategies and representations. Upon finding a solution, look back at the problem to determine whether the solution is reasonable and accurate, often checking answers to problems using a different method or approach. ***First grade students make sense of data representations to identify what a problem is asking for.*** I can think about a plan before jumping into the solution. I can, if needed, organize data or use representations to help make sense of the problem. I can identify likely strategies for solving the problem. I do not give up when stuck. I can look for ways to get past being stuck. I can try alternative ways to solve the problem when stuck.

Focus	Standards	Curriculum Supports – enVision 2.0	Vocabulary
1.MD.4 **1.MD.5** **(1.MD.C)**	**Strand: Measurement and Data** First grade students will represent and interpret data. First grade students will identify the value of coins. **Standard 1.MD.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. **Standard 1.MD.5** Identify the values of pennies, nickels, dimes and quarters and know their comparative values. (*For example, a dime is of greater value than a nickel.*) Use appropriate notation to designate a coin's value. (*For example, 5¢.)*	**Topic 6: Represent and Interpret Data** *(pp. 349I-349J)* **6-1** Organize Data Into Three Categories *(pp. 353-358)* **6-2** Collect and Represent Data *(pp. 359-364)* **6-3** Interpret Data *(pp. 365-370)* **6-4** Continue to Interpret Data *(pp. 371-376)* **6-5 Math Practices and Problem Solving: Make Sense and Persevere** *(pp. 377-382)*	**Topic 6:** • tally marks • data • tally chart • picture graph • survey
	Assessment Options:	**Topic 6 Assessment –** Represent and Interpret Data *(print or online)* *(pp. 387-388)* **Topic 6 Performance Assessment –** Represent and Interpret Data *(pp. 389-390)*	

	Assessment Tasks – Topic 6	
	Procedural Check	**Application Task**
1.MD.4	**Skill-Based Task:** Mr. Smith's class took a survey of how they get school every day. How Do You Get to School?  How many students ride in a car to get to school? How many students ride a bike to get to school? How many students ride on a bus to get to school? How many more students ride their bike to school than ride the bus to school? How many fewer students ride in a car than ride a bike to get to school? (DOK 1)	A first grade class was asked what their favorite sport was. Organize the data below to answer the questions.  How many students are in each category? How many more students like soccer than basketball? How many fewer students like football than soccer? (DOK 2)
1.MD.5	Erin emptied her piggy bank and the following coins came out. Identify each coin and its value.  (DOK 1)	If I have 5 pennies then it is equal to having a _____ . If I have 5 pennies then it is less than a _____. If I have 5 pennies then it is greater than _____ . Prove with coins, pictures, words or numbers that your answers are true. (DOK 3)

DWSBB 2: November 21-February 9 **Flexible Pacing: 46 days**

NUMBER AND OPERATIONS IN BASE TEN (NBT)
Topic 7 - Extend the Counting Sequence

Report Card Learning Targets
I can….
- Count to 120
- Read and write to 120

TOPIC 7

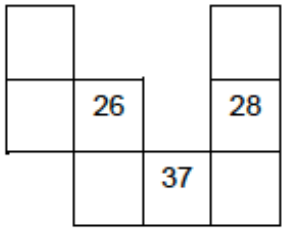
Coherence **pp. 391C-391D**

Look back:	Topic 7:	Look Ahead:
Grade K- • Write Numerals 0-20 • Counting Sequence **Earlier in Grade 1-** • Count On and Back	• Progression of Counting Skills • Use of Tools • Count by Tens	**Later in Grade 1-** • Place Value • Use Counting to Add and Subtract **Grade 2-** • Develop Strategies to Add and Subtract • Numbers to 1,000

Rigor **p. 391E**

Conceptual Understanding:	Procedural Skill and Fluency:	Applications:
• Understand That 10 Ones Is 1 Ten • Relate Counting to Place Value	• Count to 120	• Counting Situations

Focus	Strand: Mathematical Practice Standard #8 **p. 391F**
1.MP.8	**Look for and express regularity in repeated reasoning.** Notice repetitions in mathematics when solving multiple related problems. Use observations and reasoning to find shortcuts or generalizations. Evaluate the reasonableness of intermediate results. ***First grade students find shortcuts involving counting groups of 10 to count ungrouped objects.*** I can notice and describe when certain calculations or steps in a procedure are repeated. I can generalize from examples or repeated observations. I can recognize and understand appropriate shortcuts. I can evaluate the reasonableness of intermediate results.

Focus	Standards	Curriculum Supports – enVision 2.0	Vocabulary
1.NBT.1 (1.NBT.A)	**Strand: Number and Operations in Base Ten** First grade students will extend the counting sequence. **Standard 1.NBT.1** Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.	**Topic 7: Extend the Counting Sequence** *(pp. 391I-391K)* **7-1** Count By 10s To 120 *(pp. 395-400)* **7-2** Count By 1s To 120 *(pp. 401-406)* **7-3** Count On A Number Chart To 120 *(pp. 407-412)* **7-4** Count By 1s Or 10s To 120 *(pp. 413-418)* **7-5** Count On An Open Number line *(pp. 419-424)* **7-6** Count And Write Numerals *(pp. 425-430)* **7-7 Math Practices and Problem Solving: Repeated Reasoning** *(pp. 431-436)*	**Topic 7:** • hundred chart • tens digit • row • ones digit • column
	Assessment Options:	**Topic 7 Assessment –** Extend the Counting Sequence *(print or online) (pp. 441-442)* **Topic 7 Performance Assessment –** Extend the Counting Sequence *(pp. 443-444)*	
	Assessment Tasks – Topic 7		
	Procedural Check	**Application Task**	
1.NBT.1	• Have students put number cards in counting sequence. • In small segments, have students write numbers within 0-120 in order. (DOK 1)	Use a partial hundreds chart and fill in missing numbers using counting pattern skills.  (DOK 2)	

DWSBB 2: November 21-February 9 **Flexible Pacing: 46 days**

NUMBER AND OPERATIONS IN BASE TEN (NBT)
Topic 8 - Understand Place Value

Report Card Learning Targets Share with Topic 9 – same standards
I can….
- Understand place value to the 10's place
- Compare two-digit numbers using symbols (<,=,>)

TOPIC 8

Coherence **pp. 445C-445D**

Look back:	Topic 8:	Look Ahead:
Grade K- • Compare Numbers to 10 • Numbers 11 to 20 **Earlier in Grade 1-** • Numbers to 120	• Understand 2-Digit Numbers • Compare 2-Digit Numbers • 10 More and 10 Less	**Later in Grade 1-** • Add Tens and Ones; Subtract Tens **Grade 2-** • Addition and Subtraction Within 100

Rigor **p. 445E**

Conceptual Understanding:	Procedural Skill and Fluency:	Applications:
• Place Value with 2-Digit Numbers • Decompose 2-Digit Numbers	• Compare 2-Digit Numbers	• Real-World Contexts

Focus	Strand: Mathematical Practice Standard #7 p. 445F
1.MP.7	**Look for and make use of structure.** Recognize and apply the structures of mathematics such as patterns, place value, the properties of operations, or the flexibility of numbers. See complicated things as single objects or as being composed of several objects. ***First grade students look for structure when showing the different ways to represent a 2-digit number using tens and ones.*** I can analyze and describe patterns in numbers. I can analyze expressions, equations, procedures, and objects to represent, describe, and work with them in different ways.

Focus	Standards	Curriculum Supports – enVision 2.0	Vocabulary
1.NBT.2 **1.NBT.3** **(1.NBT.B)**	**Strand: Number and Operations in Base Ten** First grade students will understand place value. **Standard 1.NBT.2** Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones called a "ten." b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. 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). **Standard 1.NBT.3** Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.	**Topic 8: Understand Place Value** *(pp. 445I-445J)* **8-1** Make Numbers 11-19 *(pp. 449-454)* **8-2** Numbers Made with Tens *(pp. 455-460)* **8-3** Count with Groups of Tens and Leftovers *(pp. 461-466)* **8-4** Tens and Ones *(pp. 467-472)* **8-5** Continue with Tens and Ones *(pp. 473-478)* **8-6 Math Practices and Problem Solving: Look For and Use Structure** *(pp. 479-484)*	**Topic 8:** • tens • ones
	Assessment Options:	**Topic 8 Assessment –** Understand Place Value *(print or online) (pp. 489-490)* **Topic 8 Performance Assessment –** Understand Place Value *(pp. 491-492)*	
District Wide Standards-based Benchmark #2 due by February 9			

	Assessment Tasks – Topic 8	
	Procedural Check	**Application Task**
1.NBT.2	Use place value cards to help students identify the value of the number in the tens place and the value of the number in the ones place and represent it in expanded form.  (DOK 1)	22 cubes can be grouped many different way and still be 22. Draw and use words to justify all the many ways 22 can be grouped. (DOK 3)
1.NBT.3	Students will explain how they know a number is more, less or equal to another given numbers in all forms including concrete, pictorial and abstract. (DOK 3)	On Halloween night Meg and Troy count their Halloween candy. Meg has 64 pieces of candy and Troy has 59. Who has less candy? Explain how you know this. (DOK 3)

DWSBB 3: February 13-April 28 **Flexible Pacing: 48 days**

NUMBER AND OPERATIONS IN BASE TEN (NBT)
Topic 9 - Compare Two-Digit Numbers

Report Card Learning Targets
I can….
- Understand place value to the 10's place
- Compare two-digit numbers using symbols (<,=,>)

TOPIC 9

Coherence		**pp. 445C-445D**
Look back: **Grade K-** • Compare Numbers to 10 • Numbers 11 to 20 **Earlier in Grade 1-** • Numbers to 120	**Topic 9:** • Understand 2-Digit Numbers • Compare 2-Digit Numbers • 10 More and 10 Less	**Look Ahead:** **Later in Grade 1-** • Add Tens and Ones; Subtract Tens **Grade 2-** • Addition and Subtraction Within 100

Rigor		**p. 445E**
Conceptual Understanding: • Place Value with 2-Digit Numbers • Decompose 2-Digit Numbers	**Procedural Skill and Fluency:** • Compare 2-Digit Numbers	**Applications:** • Real-World Contexts

Focus	**Strand: Mathematical Practice Standard #1**	**p. 445F**
1.MP.1	**Make sense of problems and persevere in solving them.** Explain the meaning of a problem, look for entry points to begin work on the problem, and plan and choose a solution pathway. When a solution pathway does not make sense, look for another pathway that does. Explain connections between various solution strategies and representations. Upon finding a solution, look back at the problem to determine whether the solution is reasonable and accurate, often checking answers to problems using a different method or approach. ***First grade students can persevere as they narrow down possible answers to solve problems involving place value.*** I can give a good explanation of the problem. I can think about a plan before jumping into the solution. I can identify likely strategies for solving the problem. I can make sure the answer makes sense before stopping work. I can look for ways to get past being stuck and try alternative ways to solve the problem when stuck.	

Focus	Standards	Curriculum Supports – enVision 2.0	Vocabulary
1.NBT.2 **1.NBT.3** **(1.NBT.B)**	**Strand: Number and Operations in Base Ten** First grade students will understand place value. **Standard 1.NBT.2** Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones called a "ten." b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. 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). **Standard 1.NBT.3** Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.	**Topic 9: Compare Two-Digit Numbers** *(pp. 493A-493B)* **9-1** 1 more, 1 less; 10 more, 10 less *(pp. 497-502)* **9-2** Make Numbers on a Hundred Chart *(pp. 503-508)* **9-3** Compare Numbers *(pp. 509-514)* **9-4** Compare Numbers with Symbols *(pp. 515-520)* **9-5** Compare Numbers on a Number Line *(pp. 521-526)* **9-6 Math Practices and Problem Solving: Make Sense and Persevere** *(pp. 527-532)*	**Topic 9:** • less • compare • greater than (>) • less than (<)
	Assessment Options:	**Topic 9 Assessment –** Compare Two-Digit Numbers *(print or online) (pp. 537-538)* **Topic 9 Performance Assessment –** Compare Two-Digit Numbers *(pp. 539-540)*	

	Assessment Tasks – Topic 9	
	Procedural Check	**Application Task**
1.NBT.2	Students draw a picture of a two-digit number showing tens and ones. Students will be able to look at a two-digit number and identify which number is in the tens place and which number is in the ones place. (DOK 1)	Give students a paper with many pictures of the same small object. Ask the students to circle sets of ten (these are not organized on the paper), find how many objects there are and represent the number in expanded form. (DOK 2)
1.NBT.3	Compare the following numbers: 42 _____ 45 21 _____ 12 6 _____ 89 (DOK 1)	Crew was given the following numbers to add to his number line. **47, 9, 22, 98, 0** 1 5 10 50 100 As you place each number on the line, write two ways you know your thinking is correct. (DOK 3)

DWSBB 3: February 13-April 28 **Flexible Pacing: 48 days**

NUMBER AND OPERATIONS IN BASE TEN (NBT)
Topic 10 - Use Models and Strategies to Add Tens and Ones
Topic 11 - Use Models and Strategies to Subtract Tens

Report Card Learning Targets
I can….
- Understand addition to 100 using models
- Add and subtract by groups of 10

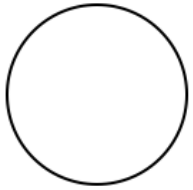
TOPICS 10 and 11

Coherence		**pp. 541C-541D**
Look back: **Grade K-** • Numbers to 100 **Earlier in Grade 1-** • Hundred Chart and Open Number Line • Place Value: Tens and Ones	**Topics 10 and 11:** • Connect Operations Using Models • Connect Operations Using Mental Math • Connect Operations Using a Hundred Chart • Connect Operations Using an Open Number Line • Connect Strategies	**Look Ahead:** **Grade 2-** • Add Within 100 Using Strategies • Fluently Add Within 100 • Subtract Within 100 Using Strategies • Fluently Subtract Within 100 Using Strategies

Rigor		**p. 541E**
Conceptual Understanding: • Strategies Based on Place-Value Concepts • Understand the Inverse Relationship Between Addition and Subtraction	**Procedural Skill and Fluency:** • Use Addition and Subtraction Strategies	**Applications:** • Real-World Applications

Focus	**Strand: Mathematical Practice Standard #4**	**p. 541F**
1.MP.4	**Model with mathematics.** Identify the mathematical elements of a situation and create a mathematical model that shows the relationships among them. Identify important quantities in a contextual situation, use mathematical models to show the relationships of those quantities, analyze the relationships, and draw conclusions. Models may be verbal, contextual, visual, symbolic, or physical. ***First grade students use strategies they know, such as working on an open number line, to model subtracting tens.*** I can identify the correct prior knowledge that needs to be applied to solve a problem. I can use numbers, symbols, and words to solve problems. I can identify the operation(s) needed to solve a problem.	

Focus	Standards	Curriculum Supports – enVision 2.0	Vocabulary
1.NBT.4 **1.NBT.5** **1.NBT.6** **(1.NBT.C)**	**Strand: Number and Operations in Base Ten** First grade students will use place value understanding and properties of operations to add and subtract. **Standard 1.NBT.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 to tens, ones to ones; and that it is sometimes necessary to compose a ten. **Standard 1.NBT.5** Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. **Standard 1.NBT.6** Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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.	**Topic 10: Use Models and Strategies to Add Tens and Ones** *(pp. 541I-541K)* **10-1** Add Tens Using Models *(pp. 543-548)* **10-2** Mental Math: Ten More Than A Number *(pp. 549-554)* **10-3** Add Tens and Ones Using a Hundred Chart *(pp. 555-560)* **10-4** Add Tens and Ones Using an Open Number Line *(pp. 561-566)* **10-5** Add Tens and Ones Using Models *(pp. 567-572)* **10-6** Make a Ten to Add *(pp. 573-578)* **10-7** Add Using Place Value *(pp. 579-584)* **10-8** Practice Adding Using Strategies *(pp. 585-590)* **10-9 Math Practices and Problem Solving: Model with Math** *(pp. 591-596)* **Topic 11: Use Models and Strategies to Subtract Tens** *(pp. 609A-609B)* **11-1** Subtract Tens Using Models *(pp. 611-616)* **11-2** Subtract Tens Using a Hundred Chart *(pp. 617-622)* **11-3** Subtract Tens Using an Open Number Line *(pp. 623-628)* **11-4** Use Addition to Subtract Tens *(pp. 629-634)* **11-5** Mental Math: Ten Less Than a Number *(pp. 635-640)* **11-6** Use Strategies to Practice Subtraction *(pp. 641-646)* **11-7 Math Practices and Problem Solving: Model with Math** *(pp. 647-652)*	**Topic 10:** No new vocabulary words Review as needed **Topic 11:** No new vocabulary words Review as needed

	Assessment Options: **Topic 10 Assessment –** Use Models and Strategies to Add Tens and Ones *(print or online) (pp. 603-606)* **Topic 10 Performance Assessment –** Use Models and Strategies to Add Tens and Ones *(pp. 607-608)*	**Topic 11 Assessment –** Use Models and Strategies to Subtract Tens *(print or online) (pp. 657-658)* **Topic 11 Performance Assessment –** Use Models and Strategies to Subtract Tens *(pp. 659-660)*	
	Assessment Tasks – Topics 10 and 11		
	Procedural Check	**Application Task**	
1.NBT.4	Use sticks | and dots ● to show 7 + 44. Write the sum in the circle.  (DOK 1)	24 red apples and 8 green apples are on the tables. How many apples are on the table? Explain your thinking with pictures or words. 10 apples are in the basket. Mary put 10 more apples in the basket. How many apples are in the basket? Explain your thinking with pictures or words. (DOK 3)	
1.NBT.5	Students will draw a picture to model 10 more than 50. Students will draw a picture to model 10 less than 50. (DOK 1)	Write the number that is 10 more and 10 less than the following: _____40_____ _____60_____ _____20_____ Use picture models or words to justify your thinking. (DOK 3)	
1.NBT.6	Students will demonstrate subtracting tens from multiples of ten using manipulatives and on paper using the following problem: There are 60 students in the gym. 30 students leave. How many students are still in the gym? (DOK 1)	Sarah's mom bought 8 boxes of Capri Suns with ten in each box. At Sarah's party friends drank 30 drinks. How do you know how many drinks Sarah has left? Draw to explain your thinking (DOK 3) Jake's class had 30 tadpoles in a tank. 10 turned into frogs. How many frogs are in the tank? How many tadpoles are in the tank? Explain your reasoning for solving the problem. Write an equation to show how you solved the problem. (DOK 3)	

DWSBB 3: February 13-April 28 **Flexible Pacing: 48 days**

MEASUREMENT AND DATA (MD)
Topic 12 - Measure Lengths

Report Card Learning Targets
I can….
- Measure and order objects based on length

TOPIC 12

Coherence **pp. 661C-661D**

Look back:	Topic 12:	Look Ahead:
Grade K- • Compare Numbers • Compare by Length and Height **Earlier in Grade 1-** • Count and Compare Numbers	• Direct and Indirect Measurement	**Later in Grade 1-** • Two-Dimensional Shapes **Grade 2-** • Standard Measurement Units

Rigor **p. 661E**

Conceptual Understanding:	Procedural Skill and Fluency:	Applications:
• Transitivity • Length Units and the Iteration of Length Units	• Measurement Skills	• Measure Real-World Objects

Focus	Strand: Mathematical Practice Standard #5 p. 661F
1.MP.5	**Use appropriate tools strategically.** Consider the tools that are available when solving a mathematical problem, whether in a real-world or mathematical context. Choose tools that are relevant and useful to the problem at hand such as physical objects, drawings, diagrams, physical tools, technologies or mathematical tools, such as estimation or a particular strategy or algorithm. ***First grade students learn to choose and use appropriate tools when measuring given items including straight and curved items***. I can identify available tools. I can think about correct tools to use without prompting. I use tools correctly and accurately. I know when to use a particular tool. I can decide if the results obtained using a particular tool make sense.

Focus	Standards	Curriculum Supports – enVision 2.0	Vocabulary
1.MD.1 **1.MD.2** **(1.MD.A)**	**Strand: Measurement and Data** First grade students will measure lengths indirectly and by iterating length units. **Standard 1.MD.1** Order three objects by length; compare the lengths of two objects indirectly by using a third object. **Standard 1.MD.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.*	**Topic 12: Measure Lengths** *(pp. 661I-661J)* **12-1** Compare and Order by Length *(pp. 667-672)* **12-2** Indirect Measurement *(pp. 673-678)* **12-3** Use Units to Measure Length *(pp. 679-684)* **12-4** Continue to Measure Length *(pp. 685-690)* **12-5 Math Practices and Problem Solving: Use Appropriate Tools** *(pp. 691-696)*	**Topic 12:** • length • longer • longest • shorter • shortest • measure • length unit
	Assessment Options:	**Topic 12 Assessment –** Measure Lengths *(print or online) (pp. 701-702)* **Topic 12 Performance Assessment –** Measure Lengths *(pp. 703-704)*	
District Wide Standards-based Benchmark #3 due April 28th			

	Assessment Tasks – Topic 12	
	Procedural Check	**Application Task**
1.MD.1	Given three objects, students will order them from longest/tallest to shortest, or shortest to longest/tallest. (DOK 1) Given two objects, students will select a third object to use as a tool for comparing the first two objects. (DOK 2)	Here are some sample problem tasks: Johnny, Sally, and Juan are students in first grade. Johnny is taller than Sally. Sally is shorter than Juan. Who is the tallest? Who is not the tallest and not the shortest? Write to explain how you know. (DOK 3) In order to make more room in our classroom for Grandparents' Day, we are going to put the bookcase in the coat closet. How can we find out if the bookcase will fit in the coat closet without moving it? (DOK 2)
1.MD.2	Provide a paper with a variety of lines (different lengths and directions). Have students use a few different manipulatives to measure the same line (e.g., Skittles, marshmallows, cubes, counters, etc.). (DOK 1)	You got a new book from the library. It is 10 paperclips tall and 8 paperclips wide. Will the book fit in your backpack? Write or draw to explain how you know. (DOK 3)

DWSBB 4: May 1-June 6 **Flexible Pacing: 25 days**

MEASUREMENT AND DATA (MD)
Topic 13 – Time

Report Card Learning Targets
I can….
- Tell and write time in hours and half-hours

TOPIC 13

Coherence		**pp. 705C-705D**
Look back: **Grade K-** • Write Numerals to 12 **Earlier in Grade 1-** • Write Numerals to 120	**Topic 13:** • Connect Analog and Digital Clocks	**Look Ahead:** **Grade 2-** • Tell Time to Five Minutes • Use A.M. and P.M.
Rigor		**p. 705E**
Conceptual Understanding: • Understand the Hour and Minute Hands • Understand Telling Time	**Procedural Skill and Fluency:** • There are no standards in this cluster that call for fluency.	**Applications:** • Real-World Contexts

Focus	**Strand: Mathematical Practice Standard #2**	**p. 705F**
1.MP.2	**Reason abstractly and quantitatively.** Make sense of quantities and their relationships in problem situations. Contextualize quantities and operations by using images or stories. Decontextualize a given situation and represent it symbolically. Interpret symbols as having meaning, not just as directions to carry out a procedure. Know and flexibly use different properties of operations, numbers, and geometric objects. ***First grade students use quantitative reasoning to relate number on a digital clock to the hands on an analog clock.*** I can identify and understand the quantities in the problem. I can show and explain how quantities are related. I can translate real-world contexts correctly to numbers, expressions, equations, or concrete or pictorial representations.	

Focus	**Standards**	**Curriculum Supports – enVision 2.0**	**Vocabulary**
1.MD.3 (1.MD.B)	**Strand: Measurement and Data** First grade students will tell and write time.	**Topic 13: Time** *(pp. 705I-705J)* **13-1** Understand the Hour and Minute Hands *(pp. 709-714)*	**Topic 13:** • hour • hour hand

	Standard 1.MD.3 Tell and write time in hours and half-hours using analog and digital clocks.	**13-2** Tell and Write Time to the Hour *(pp. 715-720)* **13-3** Tell and Write Time to the Half Hour *(pp. 721-726)* **13-4 Math Practices and Problem Solving: Reasoning** *(pp. 727-732)*	• minute • minute hand • o'clock • half hour
	Assessment Options:	**Topic 13 Assessment –** Time *(print or online) (pp. 737-738)* **Topic 13 Performance Assessment –** Time *(pp. 739-740)*	
	Assessment Tasks – Topic 13		
	Procedural Check	**Application Task**	
1.MD.3	Copy a page of blank clocks or a page with some clocks filled in (with either the analog or the digital time). Student will fill in the missing information. (DOK 1)	Your friend in kindergarten hasn't learned to tell time yet. He can describe where the hands are, but you need to help him know what time it is. For example: The long hand is on the 12, the short hand is on the 4. What time is it? The hour hand is half way between the 7 and the 8. The minute hand is on the 6. What time is it? Write to explain how you know. (DOK 2)	

DWSBB 4: May 1-June 6 **Flexible Pacing: 25 days**

GEOMETRY (G)
Topic 14 – Reason with Shapes and Their Attributes
Topic 15 – Equal Shares of Circles and Rectangles

Report Card Learning Targets
I can….
- Build and draw shapes having specific characteristics
- Divide circles and rectangles into halves and fourths

TOPICS 14 and 15

Coherence		**pp. 741C-741D**
Look back: **Grade K-** • Name Flat and Solid Shapes Based on Attributes • Analyze, Compare, Build, Draw, and Compose Shapes	**Topics 14 and 15:** • Attributes of 2-D and 3-D Shapes • Compose 2-D and 3-D Shapes • Use Composite 2-D and 3-D Shapes to Make More Shapes • Compose and Decompose 2-D Shapes	**Look Ahead:** **Grade 2-** • Identify and Draw Shapes • Partition Shapes
Rigor		**p. 741E**
Conceptual Understanding: • Defining and Non-Defining Attributes of Shapes • Compose Shapes • Partition Shapes into Equal Shares	**Procedural Skill and Fluency:** • There are no standards in this cluster that call for fluency.	**Applications:** • Real-World Applications

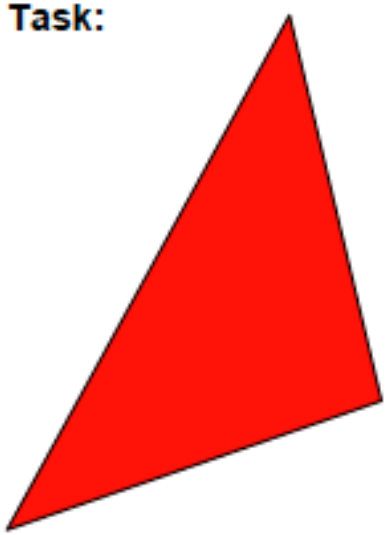
Focus	**Strand: Mathematical Practice Standards #1 and #4** **p. 741F**
1.MP.1 **1.MP.4**	**1. Make sense of problems and persevere in solving them.** (Topic 14) Explain the meaning of a problem, look for entry points to begin work on the problem, and plan and choose a solution pathway. When a solution pathway does not make sense, look for another pathway that does. Explain connections between various solution strategies and representations. Upon finding a solution, look back at the problem to determine whether the solution is reasonable and accurate, often checking answers to problems using a different method or approach. ***First grade students make sense of geometry problems by considering what they know and what the question is asking for.*** I can use objects, pictures, or diagrams to make sense of problems. I can persevere in solving problems. I can explain the meaning of the problem to myself. I can choose and apply previously learned concepts and skills.

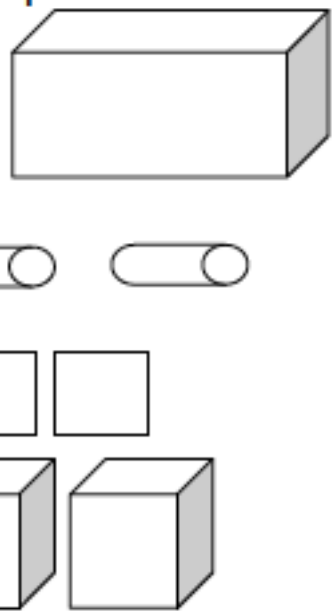
	4. Model with mathematics. (Topic 15) Identify the mathematical elements of a situation and create a mathematical model that shows the relationships among them. Identify important quantities in a contextual situation, use mathematical models to show the relationships of those quantities, analyze the relationships, and draw conclusions. Models may be verbal, contextual, visual, symbolic, or physical. ***First grade students apply what they know about composing and partitioning shapes to solve geometry problems in real-world contexts.*** I can recognize mathematics in everyday situations. I can use varied representations (e.g., pictures and objects) to solve problems. I can apply previously learned concepts and procedures to solve problems. I can use numbers, symbols, and words to solve problems.

Focus	Standards	Curriculum Supports – enVision 2.0	Vocabulary
1.G.1 **1.G.2** **1.G.3** **(1.G.A)**	**Strand: Geometry** First grade students will reason with shapes and their attributes. **Standard 1.G.1** Distinguish between defining attributes (*for example triangles are closed and three-sided*) versus non-defining attributes (*for example, color, orientation, overall size*); build and draw shapes that posses defining attributes. **Standard 1.G.2** Compose shapes. a. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) to create a composite shape, and compose new shapes from the composite shape. b. Compose three-dimensional 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. First grade students do not need to learn formal names such as "right rectangular prism."	**Topic 14: Reason with Shapes and Their Attributes** *(pp. 741I-741K)* **14-1** Use Attributes to Define Two-Dimensional (2-D) Shapes *(pp. 747-752)* **14-2** Defining and Non-Defining Attributes of 2-D Shapes *(pp. 753-758)* **14-3** Build and Draw 2-D Shapes by Attributes *(pp. 759-764)* **14-4** Compose 2-D Shapes *(pp. 765-770)* **14-5** Compose New 2-D Shapes from 2-D Shapes *(pp. 771-776)* **14-6** Use Attributes to Define Three-Dimensional (3-D) Shapes *(pp. 777-782)* **14-7** Defining and Non-Defining Attributes for 3-D Shapes *(pp. 783-788)* **14-8** Compose with 3-D Shapes *(pp. 789-794)* **14-9 Math Practices and Problem Solving: Make Sense and Persevere** *(pp. 795-800)*	**Topic 14:** • 2-D shapes • sides • vertices • edges • faces • flat surface • rectangular prism • three-dimensional (3-D) shapes

	Standard 1.G.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 that, for these examples, decomposing into more equal shares creates smaller shares. -	**Topic 15: Equal Shares of Circles and Rectangles** *(pp. 813A-813B)* **15-1** Make Equal Shares *(pp. 817-822)* **15-2** Make Halves and Fourths of Rectangles and Circles *(pp. 823-828)* **15-3** Understand Halves and Fourths *(pp. 829-834)* **15-4 Math Practices and Problem Solving: Model with Math** *(pp. 835-840)*	**Topic 15:** • equal shares • halves • fourths • quarters
	Assessment Options: **Topic 14 Assessment –** Reason with Shapes and Their Attributes *(print or online) (pp. 807-810)* **Topic 14 Performance Assessment –** Reason with Shapes and their Attributes *(pp. 811-812)*	**Topic 15 Assessment –** Equal Shares of Circles and Rectangles *(print or online) (pp. 845-846)* **Topic 15 Performance Assessment –** Equal Shares of Circles and Rectangles *(pp. 847-848)*	

District Wide Standards-based Benchmark #4 due by June 6

	Assessment Tasks – Topics 14 and 15	
	Procedural Check	**Application Task**
1.G.1	**Skill-Based Task:**  Name this shape:_____ Circle all of the defining attributes. red 3 angles large 3 sides open 4 sides small 5 angles closed (DOK 1)	Draw a group of shapes with the same defining attributes. Justify your choices. (DOK 3)
1.G.2		Create and record a composite shape using two or more shapes. Create and record a different composite shape using those same shapes. (DOK 2)

	Which two shapes could you use to create this composite shape?  (DOK 1)	
1.G.3	Partition the rectangle into halves. (DOK 1) Partition the circle into fourths. (DOK 1)	Sam is having a pizza party. Show how Sam can share the pizza equally. (DOK 2) Mr. Williams made peanut butter sandwiches for his two children. He used the same bread for both sandwiches. He cut Jana's sandwich into 2 pieces. He cut Brooklyn's sandwich into 4 pieces. Who had bigger pieces? Draw a picture to justify your answer. (DOK 3)

1st Grade Money Lesson Plan

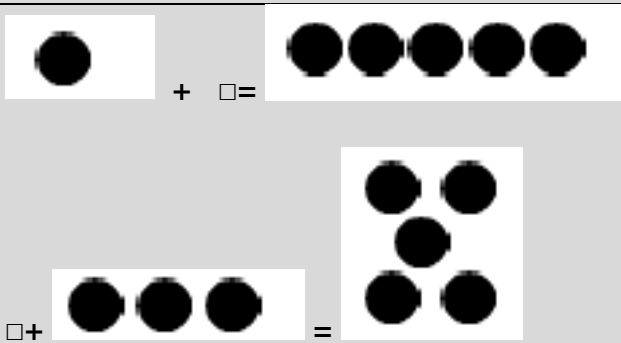
Part I:		
1. Teacher Name: Sally Wayne	**Date:** May 16, 2016	**Plan Duration:** 90 minutes
2. Course/Content/Grade: 1st Grade		
3. Unit/Topic/Module: Identifying Coins		
4. Core Standard(s): **Standard 1.MD.5** Identify the values of pennies, nickels, dimes and quarters and know their comparative values. *(For example, a dime is of greater value than a nickel.)* Use appropriate notation to designate a coin's value. *(For example, 5¢.)* **Standard 1.MP.4 Model with Mathematics.** Identify the mathematical elements of a situation and create a mathematical model that shows the relationships among them. Identify important quantities in a contextual situation, use mathematical models to show the relationships of those quantities, analyze the relationships, and draw conclusions. Models may be verbal, contextual, visual, symbolic, or physical.		
5. Lesson Objective: I can identify the value of pennies, nickels, dimes, and quarters and know which one is worth more or less.		
6. Vocabulary Essential to student understanding: penny, nickel, dime, and quarter		
7. Interdisciplinary Connections: SL1.1 speaking and listening throughout whole group and skill-based instruction using math practice standards		
8. Materials and Technology needed to enhance learning: computer, video link, money (pennies, nickels, dimes, quarters), index card with money values, place value blocks.		
9. Assessment(s) for student learning that guide instructive decisions (formative): Teacher calls out a coin and students hold it up and then calls out a value and student again holds up the appropriate coin.		

Part II:					
10. Pacing (mins.)	***WHAT THE TEACHER DOES:*** **11. Lesson Sequence-** • What will I do and when will I do it? **Include Explicit Instruction:** **I do / We do / You all do / You do**	***WHAT THE STUDENT DOES:*** **12. Student Skill or Knowledge for each part of the lesson sequence** • **What** will my students be doing to acquire skills or knowledge during this part of the lesson? **AND** **Opportunities to Respond (OTRs) <u>that provide immediate checks for understanding</u>** • **How** will my students show me their level of understanding in this part of the lesson sequence?	**13. DOK Level (1, 2, 3, or 4)**	***HOW THE TEACHER ADJUSTS THE LESSON FOR ALL LEARNERS:*** **14. Scaffolding for the needs of ALL learners (include interventions)** • **What** will I do for students who are struggling to meet the target? **What** will I do for students who have already met the target? **AND** • **Grouping Structures I need for effective scaffolding**	**15. Notes/ Resources for each part (optional)**
Review 10 min.	Review skills as needed				
Objectives 2 min.	I can identify the value of pennies, nickels, dimes, and quarters and know which one is worth more or less.	Students will chorally repeat the objective.	1	Hold up money or have pictures of coins as you work through the objective to support students	
Vocabulary 5 min.	Each student will have a bag of money that includes pennies, nickels, dimes and quarters. Have each student pull the appropriate coin out as you teach the coin name and value.	Students engage in the explicit vocabulary routine	1	Teacher writes on the board the different ways to identify/write the amount. For example, 5 cents, 5¢, and 0.05 dollars. Use a picture to match/represent the written amount.	

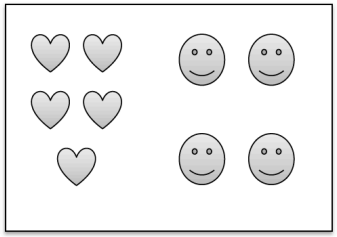
Concept and Skill Development (30 minutes)	Use the link below, Learning Coins: • Click on the Learn button • Have the student pull the coins out of their bags as you click through the presentation. • Discuss the value of each coin • Complete the coin sorting activity at the end as a class Learning Coins http://www.abcya.com/learning_coins.htm <u>Additional supporting links:</u> https://www.youtube.com/watch?v=A1xUdKuPh_A https://www.youtube.com/watch?v=aajLkveG750&list=PL5krdpiMlyua5g_IGHvAWaGiWVzp7JXqh https://www.youtube.com/watch?v=RVpcZ5obmsM&index=2&list=PL5krdpiMlyua5g_IGHvAWaGiWVzp7JXqh	Have the students find the coins they are talking about in the presentation from their bag of coins Students check with a neighbor to see if they have the same coins and tell them why they know they are holding up the right coin Choral Response Paired Discussion	1 3	Observe students to be sure they are pulling out the appropriate coin and giving the right justification	Connect money to base ten blocks and skip counting

Skill-based instruction (45 min.)	**Reteach at the back table**: Have students bring their bags of money back to the table and begin with pennies to identify and count then pennies. Teacher connects coin values to base ten blocks. Move to nickels, dimes and quarters when students are ready. Have the students sort the money and tell a partner what each pile is and how much each coin is worth.	Students will identify, sort and count coins.	2	Observe and listen to students for understanding	
	Possible Center Activities:Sorting Money- students sort handfuls of money and identify each pile of coins	Student discuss and justify as they work to identify and compare coins			
	Extension station- a student picks a card out of a pile that says an amount. The student uses coin to make that amount. (e.g. 7 cents….. 7 pennies equal 7 cents and 1 nickel and 2 pennies equal 7 cents.)	Student will be expected to use the vocabulary as they communicate with their partner during centers.	2 3	Model and write sentence stems to support partner discourse.	Be sure students have partners to work through each center.
	Skip Counting- Student use skip counting to identify the value of bags of coins.				
	Value Match- student turns over an index card with a 1¢, 5¢, 10¢ or 25¢ written on it. The student will find all the coins that match the card. The student must tell their partner why they chose each coin.				
	Closure: Review the objective with the students and provide ongoing support at transition				

1st Grade Additional Assessment Tasks

	Assessment Tasks	
	Procedural Check	**Application Task**
1.OA.1	 (DOK 1)	Anthony has 3 more French fries that Brianna. Brianna has 5 French fries. How many French fries does Anthony have? Draw a picture to show your answer. (DOK 3) Dora found 5 leaves that blew in through the window. Then she found 2 more leaves that blew in. Draw a picture and use numbers to show how many leaves Dora found in all. (DOK 3)
1.OA.1	Mike made 6 snowballs. Some of them melted. Mike now has 3. How many snowballs melted? 10 ducks are in the pond. 4 ducks are yellow. The rest are white. How many ducks are white? (DOK 2)	Bo bought 12 tickets to play games at Family Fun Night at his school. He wants to play each game at least once. He needs to use all of his tickets. How many times might he play each game? Find at least two ways he can do it and justify your answers with pictures, words or numbers. Game | Number of Tickets Needed Ring Toss | 1 Mini Golf | 2 Pie Toss | 3 Moonwalk | 4 (DOK 3) Mrs. Cooper wrote the following number sentence on the board. $3 + 6 = 12 - 3$ Is the number sentence true or false? Use pictures and words to prove your answer. (DOK 3)

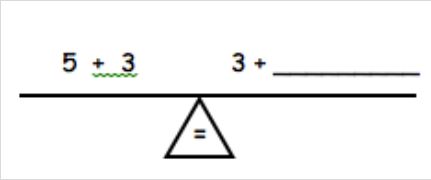
1.OA.1	Taking from: Example 1: There were 18 students on a bus. 7 students got off at the first stop. How many students stayed on the bus? 18 – 7= □ Comparing: Example 1: There are 6 red books on a shelf. There are 4 blue books on the shelf. How many more red books are there than blue books? ●●●●●● 🗎 🗎 🗎 🗎 6 – 4 = □ (DOK 1)	Nine bunnies were sitting on the grass. Some more bunnies hopped there. Now there are 13 bunnies on the grass. How many bunnies hopped over there? 8 red apples and 6 green apples are on the tree. How many more red apples are on the tree? 13 apples are on the table. 6 of them are red and the rest are green. How many apples are on the table? Have students draw or write to explain their thinking and justify their answers. (DOK 3)
1.OA.1	◀◀ ✸ ▶ ● □ 7 + □ =11 □ + 4 = 11 (DOK 2)	Char had 10 markers. She gave 3 to a friend. How many did she have left? Char had 10 markers. She gave some to a friend. Now she has 7 left. How many markers did she give to her friend? Char had some markers. She gave 3 to a friend. Then she had 7 left. How many markers did she have to start with? Draw a picture or use words to justify your thinking. (DOK 3)

1.OA.3	Draw a picture and write the number sentences to show the parts in a different order.  ____ + ____ = ____ ____ = ____ + ____ ____ + ____ = ____ ____ = ____ + ____ (DOK 1)	Dylan has 4 cats and 2 dogs at home. Sammy has 1 mama bunny and 6 baby bunnies at home. Use pictures, words, and numbers to Tell if the two households have an equal number of pets. (DOK 3) Jill has 7 grapes and 3 strawberries. Don has 6 orange slices and 4 apple slices. Use pictures words and numbers to show who has more fruit. (DOK 3)
1.OA.3	Commutative Property 5 + 2 = □ + 5 □ + 11 = □ + 2 3 + 4 = 3 + □ 2 + 2 + 4 = □ + 4 + □ Associative Property 4 + 5 + 5 = 4 + □ 2 + □ = 1 + 1 + 8 There are 9 red jelly beans, 7 green jelly beans and 3 black jelly beans. How many jelly beans in all? (DOK 2)	Find three ways to solve this problem: Jenny has 4 toy cars, 5 teddy bears, and 5 dolls. How many toys does Jenny have? (DOK 2)
1.OA.4	Write a number that is 1 less than 5 _____ 3 _____ 10 _____ (DOK 1)	8 ducks are swimming in the pond. 4 ducks fly away. How many ducks are still swimming in the pond? Draw a picture to justify your answer. (DOK 3)

		Fill in the missing numbers. _____ + 5 = 9 9 - _____ = 4 Look at the number sentences. How could you use the number sentences to figure out this missing number? 9 - _____ = 5 Use words and pictures to show your thinking. (DOK 2)
1.OA.4	Think- Addition Strategy: 9 - 5= □ 5 and what makes 9. "I know that 5 and 4 makes 9 so 9 – 5 = 4." 1. 7 – 3 = □ 3 and __ make 7; so 7 – 3 = □ 2. 10 – 2 = □ 2 and __ make 10; so 10 – 2 = □ 3. 8 – 4 = □ 4 and __ make 8; so 8 – 4 = □ (DOK 2)	Write your own unknown-addend problem. Make sure you give the answer and tell how it should be solved. (DOK 2) Bruce read for 4 minutes last night. His goal is to read 10 minutes each night. He wants to know how many more minutes he needs to read to make his goal. Bruce doesn't know the answer to 10 – 4. Erica said that Bruce use the addition sentence, __ + 4 = 10 to find the answer to 10 - 4. Is Erica correct? Use pictures, words, and numbers to prove your answer. (DOK 3)
1.OA.4	Example: 15 + □ = 18; therefore, 18 – 15 = 3 (NOTE: Students are given an equation where the addend is unknown. Then they take the given part, and count on to reach the whole. This is the same as subtracting the whole from the given part.) (DOK 2)	I have 11 grasshoppers in my collection. I need 18 grasshoppers. How many more grasshoppers do I have to collect? Represent the problem two ways—as an unknown addend and as subtraction. Write the equations. Then solve the equation. Use a picture to prove that your equation is true. (DOK 3) Max doesn't know 15 – 7. Circle the addition equation he can think of to find the difference. 15 + 7 = ? 15 + ? = 7 7 + ? = 15 Use words and pictures to justify your choice. (DOK 3)

1.OA.6	If I know 7 + 3 = 10 5 + 5 = 10 9 + _____ = 11 ____ + 10 = 12 Then I know 10 – 3 = _____ 10 - _____ = 5 11 – 2 = 9 12 – 10 = 2 (DOK 2)	Solve the problems below. 1. Kate has 6 beads and her friend gave her 5 more. How many beads does Kate have now? 2. There were 11 ducks at the pond. 5 flew away. How many ducks are still at the pond? 3. How could someone use the first problem to help them solve the second problem? Justify your answer using pictures, equations or words. (DOK 3)
1.OA.6	Make each number sentence true. 4 + _____= 10 5 + _____= 10 10 = 2 + _____ 10 = _____ + 3 (DOK 2)	There are 10 children in the cooking club. How many boys and how many girls might be in the class? Draw a picture and write a number sentence to explain you thinking. Extension: How many other combinations of boys and girls could be made? (DOK 3) The pet store has 10 new pets. Some are dogs and some are cats. Make a table to show how many dogs and cats they might have. (DOK 2)
1.OA.6	Circle the two numbers in each box that have a sum 10. 8 7 3 1 5 5 2 9 9 6 5 4 6 3 2 8 (DOK 1)	Two frogs were sitting on a log. 6 more frogs hopped there. How many frogs are sitting on the log now? Sam has 8 red marbles and 7 green marbles. How many marbles does Sam have in all? There were 14 birds in the tree. 6 flew away. How many birds are in the tree now. Show with pictures or words the strategy used to justify your answers. (DOK 3)

1.OA.6	Counting on: (17 + 3 = 20) 12 + 5 = □ 9 + 7 = □ Making Ten: (9 + 7 = 9 + 1 + 6 = 10 + 6 = 16) 9 + 7= 9 + □ + 6= □ + 6 = 16 Decomposing a number leading to a ten: (14 – 5 = 14 – 4 – 1 = 10 – 1 = 9) 14-5 = □ - 4 – 1 = 10 - □ = 9 Commutative Property: (5 + 7 = 12 and 7 + 5= 12) 5 + □= 12 and 7 + □= 12 Doubles plus one: (7 + 8 = 7 + 7 + 1 = 14 + 1 = 15) 7 + 8 = 7 + □ + 1 4 + 5 = 4 + 4 + □ Create problems that include the multiple strategies. (DOK 1)	19 grapes were on the plate. My brother ate some. Now there are 10 left on the plate. How many did my brother eat? Write a number sentence that matches this story using a symbol of the unknown number. Use a picture to prove that your answer is correct. (DOK 3) There are 18 students in Miss Joy's class. 3 students were absent on Monday. How many students were in Miss Joy's class on Monday? Write an equation to find the answer. Then use a picture to show that your equation is correct. (DOK 3)
1.OA.7	Make each number sentence true. 1. 6 = ____ 2. 7 = 8 - ____ 3. 5 + 2 = ____ + 5 4. 4 + 1 = ____ + 2. Answers: 6 = 6, 7 = 8 - 1, 5 + 2 = 2 + 5, 4 + 1 = 3 + 2 (DOK 1)	Laura had 5 fish. Her mother gave her 1 more. Laura's brother Frank had 1 fish. Their mother gave Frank 5 more. Laura cried, "That's not fair! He has more fish than I do!" Use number sentences and pictures to show Laura the truth so she will calm down! You may also need to use words to justify your thinking. (DOK 3) Does 5 + 2 = 9 - 2? Use pictures, words, and numbers to justify your answer. (DOK 3)

1.OA.7	Example 1: $5 + 2 = 3 + 4$ $7 = 7$ True Example 2: $11 + 5 = 12 + 3$ $16 \neq 15$ False (DOK 2)	Ramon says that 9 apples plus 4 apples is the same thing as 5 apples plus 8 apples. Is what Ramon said true? Write the equation then solve both sides and explain you thinking with words or pictures (DOK 3)  What number will balance the scale? Use pictures and words to justify your answer. (DOK 3)
1.OA.7	Circle the true number sentences and rewrite the false sentences to make them true. 4 = 4 _____ 5 + 1 = 6 + 1 _____ 3 + 2 = 5 + 0 _____ 6 + 2 = 4 + 4 _____ 3 + 3 = 6 + 2 _____ 9 + 0 = 7 + 2 _____ (DOK 2)	Use the numbers 1, 2, 3, 4, 5, 6, 7, 8, 9 to fill in the blanks. _____ – _____ = _____ Draw a picture to prove that your number sentence is true. (DOK 3)
1.OA.8	Five cookies were on the table. I ate come cookies. Then there were 3 cookies. How many cookies did I eat? Determine the unknown number that makes the equation true. $5 - 2 = \square$ (DOK 1)	This is a skill-based task. There is no problem task associated with it.

1.OA.8	Solve: 2 + 3 + 5 = 5 + _____ 4 + 9 = 2 + ___ + 9 2 + 4 + 4 = ___ + 8 (DOK 1)	This is a skill-based task. There is no problem task associated with it.
1.OA.8	Solve: _____ - 6 = 2 7 - _____ = 4 9 = _____ + 1 12 = 5 + _____ 5 = _____ - 6 (DOK 2)	This is a skill-based task. There is no problem task associated with it.
1.OA.8	Write the missing number. 6 + ____ = 7 _____ + 3 = 5 1 + 8 = _____ (DOK 1)	This is a skill-based task. There is no problem task associated with it.
1.OA.8	Addition: Example 1: 7 + 3 = □ Example 2: 7 + □ = 10 Example 3: □ + 3 = 10 Subtraction: Example 1: 10 – 3 = □ Example 2: 10 – □ = 7 Example 3: □ – 7 = 3 (DOK 1)	This is a skill-based task. There is no problem task associated with it.

1.NBT.1	Use number cards or tiles and have students put them in count up or count down sequence (DOK 1) Give students number cards from 0-20, or another sequence, and time them while they line up in the correct order. (DOK 1)	Cover up or remove numbers from the hundreds chart. Students identify missing numbers and explain how they know which number was missing. (DOK 2) Bella was counting on to find the answer to a math question. After counting up 7 on her hundreds chart, she was at 39. What was Bella's starting number? Write the number sentence that shows Bella's math problem and draw the row of the number line that she used to prove her answer. (DOK 3)
1.NBT.2	• Students draw a picture of a two-digit number showing tens and ones. • Students will be able to look at a two-digit number and identify which number is in the tens place and which number is in the ones place. (DOK 1)	Give students a paper with many pictures of the same small object. Ask the students to circle sets of ten (these are not organized on the paper), find how many objects there are and represent the number in expanded form. (DOK 2)
1.NBT.2	• Students will be able to show teen numbers with objects in tens and ones. • Students will explain that teens are made of a ten and some ones and identify the patterns in the words. (DOK 1)	Give students a set of beans and ask them how many there are. Ask students how they figured this out. Listen to many different strategies. (DOK 3) Lila had 26 flowers. She wanted to give a bundle of 10 to her teacher and a bundle of 10 to her mom. Did Lila have any flowers left? If so, how many? Draw a picture to prove your answer. (DOK 3)
1.NBT.5	Write the number that it 10 more than 30.____ (DOK 1)	There are 20 birds in the park. 10 more birds came. How many birds are in the park now? Explain the reasoning used. (DOK 3)

1.NBT.5	Write the number that it 10 more than 50.____ Write the number that is 10 less than 30. ____ (DOK 1)	Think of something you would like to buy. How many dollars would you need? Record the price. _____ The cost of the item changes $10. What is the new price? _____ Explain what happened to your price. _____ (DOK 3)

North Carolina Department of Public Instruction
INSTRUCTIONAL SUPPORT TOOLS
FOR ACHIEVING NEW STANDARDS

1st Grade Mathematics ● Unpacked Content

For the new Common Core State Standards that will be effective in all North Carolina schools in the 2012-13.

This document is designed to help North Carolina educators teach the Common Core State Standards (Standard Course of Study). NCDPI staff are continually updating and improving these tools to better serve teachers.

What is the purpose of this document?
To increase student achievement by ensuring educators understand specifically what the new standards mean a student must know, understand and be able to do. This document may also be used to facilitate discussion among teachers and curriculum staff and to encourage coherence in the sequence, pacing, and units of study for grade-level curricula. This document, along with on-going professional development, is one of many resources used to understand and teach the CCSS.

What is in the document?
Descriptions of what each standard means a student will know, understand and be able to do. The "unpacking" of the standards done in this document is an effort to answer a simple question "What does this standard mean that a student must know and be able to do?" and to ensure the description is helpful, specific and comprehensive for educators.

How do I send Feedback?
We intend the explanations and examples in this document to be helpful and specific. That said, we believe that as this document is used, teachers and educators will find ways in which the unpacking can be improved and made ever more useful. Please send feedback to us at feedback@dpi.state.nc.us and we will use your input to refine our unpacking of the standards. Thank You!

Just want the standards alone?
You can find the standards alone at http://corestandards.org/the-standards

Updated: August 2012

Standards for Mathematical Practice in First Grade

The Common Core State Standards for Mathematical Practice are practices expected to be integrated into every mathematics lesson for all students Grades K-12. Below are a few examples of how these Practices may be integrated into tasks that students complete.

1) Make Sense and Persevere in Solving Problems.	Mathematically proficient students in First Grade continue to develop the ability to focus attention, test hypotheses, take reasonable risks, remain flexible, try alternatives, exhibit self-regulation, and persevere (Copley, 2010). As the teacher uses thoughtful questioning and provides opportunities for students to share thinking, First Grade students become conscious of what they know and how they solve problems. They make sense of task-type problems, find an entry point or a way to begin the task, and are willing to try other approaches when solving the task. They ask themselves, "Does this make sense?" First Grade students' conceptual understanding builds from their experiences in Kindergarten as they continue to rely on concrete manipulatives and pictorial representations to solve a problem, eventually becoming fluent and flexible with mental math as a result of these experiences.
2) Reason abstractly and quantitatively.	Mathematically proficient students in First Grade recognize that a number represents a specific quantity. They use numbers and symbols to represent a problem, explain thinking, and justify a response. For example, when solving the problem: "*There are 60 children on the playground. Some children line up. There are 20 children still on the playground. How many children lined up?"* first grade students may write 20 + 40 = 60 to indicate a Think-Addition strategy. Other students may illustrate a counting-on by tens strategy by writing 20 + 10 + 10 + 10 + 10 = 60. The numbers and equations written illustrate the students' thinking and the strategies used, rather than how to simply compute, and how the story is decontextualized as it is represented abstractly with symbols.
3) Construct viable arguments and critique the reasoning of others.	Mathematically proficient students in First Grade continue to develop their ability to clearly express, explain, organize and consolidate their math thinking using both verbal and written representations. Their understanding of grade appropriate vocabulary helps them to construct viable arguments about mathematics. For example, when justifying why a particular shape isn't a square, a first grade student may hold up a picture of a rectangle, pointing to the various parts, and reason, "It can't be a square because, even though it has 4 sides and 4 angles, the sides aren't all the same size." In a classroom where risk-taking and varying perspectives are encouraged, mathematically proficient students are willing and eager to share their ideas with others, consider other ideas proposed by classmates, and question ideas that don't seem to make sense.
4) Model with mathematics.	Mathematically proficient students in First Grade model real-life mathematical situations with a number sentence or an equation, and check to make sure that their equation accurately matches the problem context. They also use tools, such as tables, to help collect information, analyze results, make conclusions, and review their conclusions to see if the results make sense and revising as needed.
5) Use appropriate tools strategically.	Mathematically proficient students in First Grade have access to a variety of concrete (e.g. 3-dimensional solids, ten frames, number balances, number lines) and technological tools (e.g., virtual manipulatives, calculators, interactive websites) and use them to investigate mathematical concepts. They select tools that help them solve and/or illustrate solutions to a problem. They recognize that multiple tools can be used for the same problem- depending on the strategy used. For example, a child who is in the counting stage may choose connecting cubes to solve a problem. While, a student who understands parts of number, may solve the same problem using ten-frames to decompose numbers rather than using individual connecting cubes. As the teacher provides numerous opportunities for students to use educational materials, first grade students' conceptual understanding and higher-order thinking skills are developed.

6) Attend to precision.	Mathematically proficient students in First Grade attend to precision in their communication, calculations, and measurements. They are able to describe their actions and strategies clearly, using grade-level appropriate vocabulary accurately. Their explanations and reasoning regarding their process of finding a solution becomes more precise. In varying types of mathematical tasks, first grade students pay attention to details as they work. For example, as students' ability to attend to position and direction develops, they begin to notice reversals of numerals and self-correct when appropriate. When measuring an object, students check to make sure that there are not any gaps or overlaps as they carefully place each unit end to end to measure the object (iterating length units). Mathematically proficient first grade students understand the symbols they use (=, >,<) and use clear explanations in discussions with others. For example, for the sentence 4 > 3, a proficient student who is able to attend to precision states, "Four is more than 3" rather than "The alligator eats the four. It's bigger."
7) Look for and make use of structure.	Mathematically proficient students in First Grade carefully look for patterns and structures in the number system and other areas of mathematics. For example, while solving addition problems using a number balance, students recognize that regardless whether you put the 7 on a peg first and then the 4, or the 4 on first and then the 7, they both equal 11 (commutative property). When decomposing two-digit numbers, students realize that the number of tens they have constructed 'happens' to coincide with the digit in the tens place. When exploring geometric properties, first graders recognize that certain attributes are critical (number of sides, angles), while other properties are not (size, color, orientation).
8) Look for and express regularity in repeated reasoning.	Mathematically proficient students in First Grade begin to look for regularity in problem structures when solving mathematical tasks. For example, when adding three one-digit numbers and by making tens or using doubles, students engage in future tasks looking for opportunities to employ those same strategies. Thus, when solving 8+7+2, a student may say, "I know that 8 and 2 equal 10 and then I add 7 more. That makes 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?" First Grade students 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 repeatedly find numbers that add up to 12.

Grade 1 Critical Areas

The Critical Areas are designed to bring focus to the standards at each grade by describing the big ideas that educators can use to build their curriculum and to guide instruction. The Critical Areas for First Grade can be found on page 13 in the *Common Core State Standards for Mathematics*.

1. **Developing understanding of addition, subtraction, and strategies for addition and subtraction within 20.**
   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. **Developing understanding of whole number relationships and place value, including grouping in tens and ones.**
   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 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. **Developing understanding of linear measurement and measuring lengths as iterating length units.**
   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.

4. **Reasoning about attributes of, and composing and decomposing geometric shapes.**
   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.

Operations and Algebraic Thinking 1.0A

Common Core Cluster

Represent and solve problems involving addition and subtraction.
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.
An important component of solving problems involving addition and subtraction is the ability to recognize that any given group of objects (up to 10) can be separated into sub groups in multiple ways and remain equivalent in amount to the original group (Ex: A set of 6 cubes can be separated into a set of 2 cubes and a set of 4 cubes and remain 6 total cubes).

Mathematically proficient students communicate precisely by engaging in discussion about their reasoning using appropriate mathematical language. The terms students should learn to use with increasing precision with this cluster are: **adding to, taking from, putting together, taking apart, comparing, unknown, sum, less than, equal to, minus, subtract, the same amount as, and** (to describe (+) symbol)
***NOTE:** *Subtraction names a missing part. Therefore, the minus sign should be read as "minus" or "subtract" but not as "take away". Although "take away" has been a typical way to define subtraction, it is a narrow and incorrect definition.* (*Fosnot & Dolk, 2001; Van de Walle & Lovin, 2006)

Common Core Standard	Unpacking What do these standards mean a child will know and be able to do?
1.OA.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.[1] [1] See Glossary, Table 1	First grade students extend their experiences in Kindergarten by working with numbers to 20 to solve a new type of problem situation: Compare (See **Table 1** at end of document for examples of all problem types). In a Compare situation, two amounts are compared to find "How many more" or "How many less".

Problem Type: Compare		
Difference Unknown: *"How many more?" version.* Lucy has 7 apples. Julie as 9 apples. How many more apples does Julie have than Lucy?	*Bigger* Unknown: *"More" version suggests operation.* Julie has 2 more apples than Lucy. Lucy has 7 apples. How many apples does Julie have?	Smaller Unknown: *Version with "more"* Mastery expected in Second Grade
"How many fewer?" version Lucy as 7 apples. Julie has 9 apples. How many fewer apples does Lucy have than Julie? 7 + ☐ = 9 9 – 7 = ☐	Bigger Unknown: *Version with "fewer"* Mastery expected in Second Grade	*Smaller* Unknown: *"Fewer" version suggests operation.* Lucy has 2 fewer apples than Julie. Julie has 9 apples. How many apples does Lucy have?

Compare problems are more complex than those introduced in Kindergarten. In order to solve compare problem types, First Graders must think about a quantity that is not physically present and must conceptualize that amount. In addition, the language of "how many more" often becomes lost or not heard with the language of 'who has more'. With rich experiences that encourage students to match problems with objects and drawings can help students master these challenges.

NOTE: Although First Grade students should have experiences solving and discussing all 12 problem types located in Table 1, they are not expected to master all types by the end of First Grade due to the high language and conceptual demands of some of the problem types. **Please see Table 1 at the end of this document** for problem types that First Grade Students are expected to master by the end of First Grade. (*Note: this Table is different than the Table 1 in the original glossary found on the CCSS website.)*

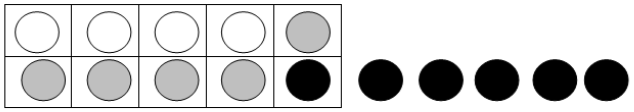
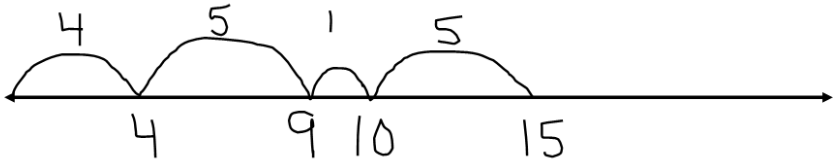
First Graders also extend the sophistication of the methods they used in Kindergarten (counting) to add and subtract within this larger range. Now, First Grade students use the methods of counting on, making ten, and doubles +/- 1 or +/- 2 to solve problems.

Example: **Nine bunnies were sitting on the grass. Some more bunnies hopped there. Now, there are 13 bunnies on the grass. How many bunnies hopped over there?**	
Counting On Method	**Student**: Niiinnneee…. *holding a finger for each next number counted* 10, 11, 12, 13. *Holding up her four fingers*, 4! 4 bunnies hopped over there."

Example**: 8 red apples and 6 green apples are on the tree. How many apples are on the tree?**	
Making Tens Method	**Student**: I broke up 6 into 2 and 4. Then, I took the 2 and added it to the 8. That's 10. Then I add the 4 to the 10. That's 14. So there are 14 apples on the tree.

Example: **13 apples are on the table. 6 of them are red and the rest are green. How many apples are green?**	
Doubles +/- 1 or 2	**Student**: I know that 6 and 6 is 12. So, 6 and 7 is 13. There are 7 green apples.

In order for students to read and use equations to represent their thinking, they need extensive experiences with addition and subtraction situations in order to connect the experiences with symbols (+, -, =) and equations (5 = 3 + 2). In Kindergarten, students demonstrated the understanding of how objects can be joined (addition) and separated (subtraction) by representing addition and subtraction situations using objects, pictures and words. In First Grade, students extend this understanding of addition and subtraction situations to 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.

1.OA.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.	First Grade students solve multi-step word problems by adding (joining) three numbers whose sum is less than or equal to 20, using a variety of mathematical representations. Example: **Mrs. Smith has 4 oatmeal raisin cookies, 5 chocolate chip cookies, and 6 gingerbread cookies. How many cookies does Mrs. Smith have?** Student A: I put 4 counters on the Ten Frame for the oatmeal raisin cookies. Then, I put 5 different color counters on the ten frame for the chocolate chip cookies. Then, I put another 6 color counters out for the gingerbread cookies. Only one of the gingerbread cookies fit, so I had 5 leftover. Ten and five more makes 15 cookies. Mrs. Smith has 15 cookies. 4 + 5 + 6 = ☼  Student B: I used a number line. First I jumped to 4, and then I jumped 5 more. That's 9. I broke up 6 into 1 and 5 so I could jump 1 to make 10. Then, I jumped 5 more and got 15. Mrs. Smith has 15 cookies.  4 + 5 + 6 = ☼ Student C: I wrote: 4 + 5 + 6 = □. I know that 4 and 6 equals 10, so the oatmeal raisin and gingerbread equals 10 cookies. Then I added the 5 chocolate chip cookies. 10 and 5 is 15. So, Mrs. Smith has 15 cookies.

Common Core Cluster

Understand and apply properties of operations and the relationship between addition and subtraction.

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.

Mathematically proficient students communicate precisely by engaging in discussion about their reasoning using appropriate mathematical language. The terms students should learn to use with increasing precision with this cluster are: **order, first, second**

Common Core Standard	Unpacking What do these standards mean a child will know and be able to do?
1.OA.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.)* [2] Students need not use formal terms for these properties.	Elementary students often believe that there are hundreds of isolated addition and subtraction facts to be mastered. However, when students understand the commutative and associative properties, they are able to use relationships between and among numbers to solve problems. First Grade students apply properties of operations as strategies to add and subtract. Students do not use the formal terms "commutative" and "associative". Rather, they use the understandings of the commutative and associative property to solve problems.

Commutative Property of Addition	Associative Property of Addition
The order of the addends does not change the sum. For example, if 8 + 2 = 10 is known, then 2 + 8 = 10 is also known.	The grouping of the 3 or more addends does not affect the sum. For example, when adding 2 + 6 + 4, the sum from adding the first two numbers first (2 + 6) and then the third number (4) is the same as if the second and third numbers are added first (6 + 4) and then the first number (2). The student may note that 6+4 equals 10 and add those two numbers first before adding 2. Regardless of the order, the sum remains 12.

Students use mathematical tools and representations (e.g., cubes, counters, number balance, number line, 100 chart) to model these ideas.

<u>Commutative Property Examples:</u>

<u>Cubes</u>

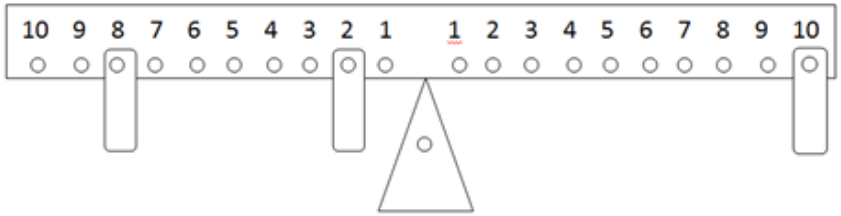
A student uses 2 colors of cubes to make as many different combinations of 8 as possible. When recording the combinations, the student records that 3 green cubes and 5 blue cubes equals 8 cubes in all. In addition, the student notices that 5 green cubes and 3 blue cubes also equals 8 cubes.

3 + 5 = 8

5 + 3 = 8

Number Balance

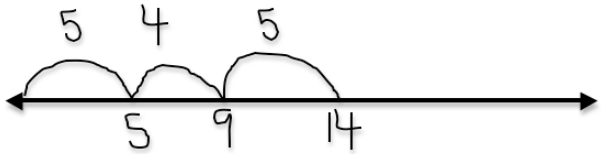
A student uses a number balance to investigate the commutative property. "If 8 and 2 equals 10, then I think that if I put a weight on 2 first this time and then on 8, it'll also be 10."



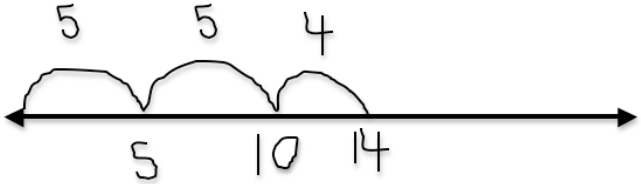
Associative Property Examples:

Number Line: ☐ **= 5 + 4 + 5**

Student A: First I jumped to 5. Then, I jumped 4 more, so I landed on 9. Then I jumped 5 more and landed on 14.



Student B: I got 14, too, but I did it a different way. First I jumped to 5. Then, I jumped 5 again. That's 10. Then, I jumped 4 more. See, 14!

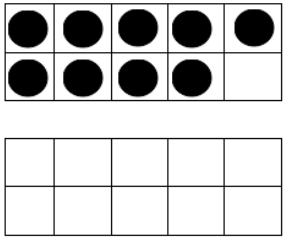


Mental Math: **There are 9 red jelly beans, 7 green jelly beans, and 3 black jelly beans. How many jelly beans are there in all?**

Student: "I know that 7 + 3 is 10. And 10 and 9 is 19. There are 19 jelly beans."

1.OA.4 Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8. Add and subtract within 20.*	First Graders often find subtraction facts more difficult to learn than addition facts. By understanding the relationship between addition and subtraction, First Graders are able to use various strategies described below to solve subtraction problems. **<u>For Sums to 10</u>** <u>*Think-Addition:</u> Think-Addition uses known addition facts to solve for the unknown part or quantity within a problem. When students use this strategy, they think, "What goes with this part to make the total?" The think-addition strategy is particularly helpful for subtraction facts with sums of 10 or less and can be used for sixty-four of the 100 subtraction facts. Therefore, in order for think-addition to be an effective strategy, students must have mastered addition facts first. For example, when working with the problem 9 - 5 = ☐, First Graders think "Five and what makes nine?", rather than relying on a counting approach in which the student counts 9, counts off 5, and then counts what's left. When subtraction is presented in a way that encourages students to think using addition, they use known addition facts to solve a problem. <u>Example:</u> 10 – 2 = ☐ **Student**: "2 and what make 10? I know that 8 and 2 make 10. So, 10 – 2 = 8." **<u>For Sums Greater than 10</u>** The 36 facts that have sums greater than 10 are often considered the most difficult for students to master. Many students will solve these particular facts with Think-Addition (described above), while other students may use other strategies described below, depending on the fact. Regardless of the strategy used, all strategies focus on the relationship between addition and subtraction and often use 10 as a benchmark number. <u>*Build Up Through 10:</u> This strategy is particularly helpful when one of the numbers to be subtracted is 8 or 9. Using 10 as a bridge, either 1 or 2 are added to make 10, and then the remaining amount is added for the final sum. <u>Example:</u> 15 – 9 = ☐ **Student A**: "I'll start with 9. I need one more to make 10. Then, I need 5 more to make 15. That's 1 and 5- so it's 6. 15 – 9 = 6."

Student B: "I put 9 counters on the 10 frame. Just looking at it I can tell that I need 1 more to get to 10. Then I need 5 more to get to 15. So, I need 6 counters."



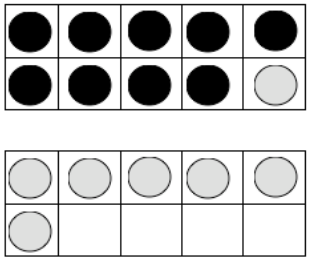
*Back Down Through 10

This strategy uses take-away and 10 as a bridge. Students take away an amount to make 10, and then take away the rest. It is helpful for facts where the ones digit of the two-digit number is close to the number being subtracted.

Example: 16 – 7 = ☐

Student A: "I'll start with 16 and take off 6. That makes 10. I'll take one more off and that makes 9. 16 – 7 = 9."

Student B: "I used 16 counters to fill one ten frame completely and most of the other one. Then, I can take these 6 off from the 2nd ten frame. Then, I'll take one more from the first ten frame. That leaves 9 on the ten frame."



*Van de Walle & Lovin, 2006

Common Core Cluster

Add and subtract within 20.

Mathematically proficient students communicate precisely by engaging in discussion about their reasoning using appropriate mathematical language. The terms students should learn to use with increasing precision with this cluster are: **addition, subtraction, counting all, counting on, counting back**

Common Core Standard	Unpacking What do these standards mean a child will know and be able to do?
1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	When solving addition and subtraction problems to 20, First Graders often use counting strategies, such as counting all, counting on, and counting back, before fully developing the essential strategy of using 10 as a benchmark number. Once students have developed counting strategies to solve addition and subtraction problems, it is very important to move students toward strategies that focus on composing and decomposing number using ten as a benchmark number, as discussed in 1.OA.6, particularly since counting becomes a hindrance when working with larger numbers. By the end of First Grade, students are expected to use the strategy of 10 to solve problems. Counting All: Students count all objects to determine the total amount. Counting On & Counting Back: Students hold a "start number" in their head and count on/back from that number. Example: **15 + 2 = ☐** Counting All The student counts out fifteen counters. The student adds two more counters. The student then counts all of the counters starting at 1 (1, 2, 3, 4,…14, 15, 16, 17) to find the total amount. Counting On Holding 15 in her head, the student holds up one finger and says 16, then holds up another finger and says 17. The student knows that 15 + 2 is 17, since she counted on 2 using her fingers. Example: **12 – 3 = ☐** Counting All The student counts out twelve counters. The student then removes 3 of them. To determine the final amount, the student counts each one (1, 2, 3, 4, 5, 6, 7, 8, 9) to find out the final amount. Counting Back Keeping 12 in his head, the student counts backwards, "11" as he holds up one finger; says "10" as he holds up a second finger; says "9" as he holds up a third finger. Seeing that he has counted back 3 since he is holding up 3 fingers, the student states that 12 – 3 = 9.

1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use 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).

In First Grade, students learn about and use various strategies to solve addition and subtraction problems. When students repeatedly use strategies that make sense to them, they internalize facts and develop fluency for addition and subtraction within 10. When students are able to demonstrate fluency within 10, they are accurate, efficient, and flexible. First Graders then apply similar strategies for solving problems within 20, building the foundation for fluency to 20 in Second Grade.

Developing Fluency for Addition & Subtraction within 10

Example: **Two frogs were sitting on a log. 6 more frogs hopped there. How many frogs are sitting on the log now?**

Counting- On	Internalized Fact
I started with 6 frogs and then counted up, Sixxxx…. 7, 8. So there are 8 frogs on the log. 6 + 2 = 8	There are 8 frogs on the log. I know this because 6 plus 2 equals 8. 6 + 2 = 8

Add and Subtract within 20

Example: **Sam has 8 red marbles and 7 green marbles. How many marbles does Sam have in all?**

Making 10 and Decomposing a Number	Creating an Easier Problem with Known Sums
I know that 8 plus 2 is 10, so I broke up (decomposed) the 7 up into a 2 and a 5. First I added 8 and 2 to get 10, and then added the 5 to get 15. 7 = 2 + 5 8 + 2 = 10 10 + 5 = 15	I broke up (decomposed) 8 into 7 and 1. I know that 7 and 7 is 14. I added 1 more to get 15. 8 = 7 + 1 7 + 7 = 14 14 + 1 = 15

Example: **There were 14 birds in the tree. 6 flew away. How many birds are in the tree now**?

Back Down Through Ten	Relationship between Addition & Subtraction
I know that 14 minus 4 is 10. So, I broke the 6 up into a 4 and a 2. 14 minus 4 is 10. Then I took away 2 more to get 8. 6 = 4 + 2 14 – 4 = 10 10 – 2 = 8	I thought, '6 and what makes 14?'. I know that 6 plus 6 is 12 and two more is 14. That's 8 altogether. So, that means that 14 minus 6 is 8. 6 + 8 = 14 14 – 6 = 8

Common Core Standard and Cluster	
Work with addition and subtraction equations.	
Mathematically proficient students communicate precisely by engaging in discussion about their reasoning using appropriate mathematical language. The terms students should learn to use with increasing precision with this cluster are: **equations, equal, the same amount/quantity as, true, false**	
Common Core Standard	**Unpacking** What do these standards mean a child will know and be able to do?
1.OA.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.	In order to determine whether an equation is true or false, First Grade students must first understand the meaning of the equal sign. This is developed as students in Kindergarten and First Grade solve numerous joining and separating situations with mathematical tools, rather than symbols. Once the concepts of joining, separating, and "the same amount/quantity as" are developed concretely, First Graders are ready to connect these experiences to the corresponding symbols (+, -, =). Thus, students learn that the equal sign does not mean "the answer comes next", but that the symbol signifies an equivalent relationship that the left side 'has the same value as' the right side of the equation. When students understand that an equation needs to "balance", with equal quantities on both sides of the equal sign, they understand various representations of equations, such as: • an operation on the left side of the equal sign and the answer on the right side (5 + 8 = 13) • an operation on the right side of the equal sign and the answer on the left side (13 = 5 + 8) • numbers on both sides of the equal sign (6 = 6) • operations on both sides of the equal sign (5 + 2 = 4 + 3). Once students understand the meaning of the equal sign, they are able to determine if an equation is true (9 = 9) or false (9 = 8).
1.OA.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 = _.*	First Graders use their understanding of and strategies related to addition and subtraction as described in 1.OA.4 and 1.OA.6 to solve equations with an unknown. Rather than symbols, the unknown symbols are boxes or pictures. <u>Example:</u> **Five cookies were on the table. I ate some cookies. Then there were 3 cookies. How many cookies did I eat?** **Student A:** What goes with 3 to make 5? 3 and 2 is 5. So, 2 cookies were eaten. **Student B**: Fiiivee, four, three (*holding up 1 finger for each count*). 2 cookies were eaten (*showing 2 fingers*). **Student C**: We ended with 3 cookies. Threeeee, four, five (*holding up 1 finger for each count*). 2 cookies were eaten (*showing 2 fingers*). <u>Example</u>: **Determine the unknown number that makes the equation true. 5 - □ = 2** **Student**: 5 minus something is the same amount as 2. Hmmm. 2 and what makes 5? 3! So, 5 minus 3 equals 2. Now it's true!

Number and Operations in Base Ten 1.NBT

Common Core Cluster

Extend the counting sequence.

Mathematically proficient students communicate precisely by engaging in discussion about their reasoning using appropriate mathematical language. The terms students should learn to use with increasing precision with this cluster are: *number words* **0-120**

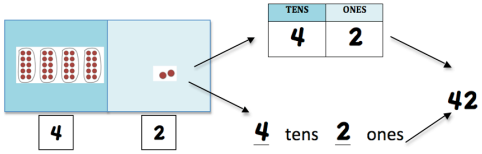
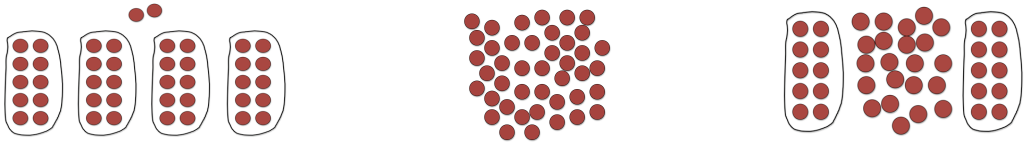
Common Core Standard	Unpacking What do these standards mean a child will know and be able to do?
1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.	First Grade students rote count forward to 120 by counting on from any number less than 120. First graders develop accurate counting strategies that build on the understanding of how the numbers in the counting sequence are related—each number is one more (or one less) than the number before (or after). In addition, first grade students read and write numerals to represent a given amount. As first graders learn to understand that the position of each digit in a number impacts the quantity of the number, they become more aware of the order of the digits when they write numbers. For example, a student may write "17" and mean "71". Through teacher demonstration, opportunities to "find mistakes", and questioning by the teacher ("I am reading this and it says seventeen. Did you mean seventeen or seventy-one? How can you change the number so that it reads seventy-one?"), students become precise as they write numbers to 120.

Common Core Cluster

Understand place value.

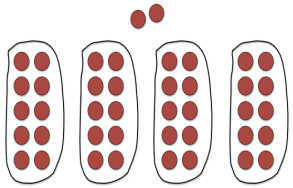
Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 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.

Mathematically proficient students communicate precisely by engaging in discussion about their reasoning using appropriate mathematical language. The terms students should learn to use with increasing precision with this cluster are: **tens, ones, bundle, left-overs, singles, groups, greater/less than, equal to**

Common Core Standard	Unpacking What do these standards mean a child will know and be able to do?
1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones — called a "ten."	First Grade students are introduced to the idea that a bundle of ten ones is called "a ten". This is known as unitizing. When First Grade students unitize a group of ten ones as a whole unit ("a ten"), they are able to count groups as though they were individual objects. For example, 4 trains of ten cubes each have a value of 10 and would be counted as 40 rather than as 4. This is a monumental shift in thinking, and can often be challenging for young children to consider a group of something as "one" when all previous experiences have been counting single objects. This is the foundation of the place value system and requires time and rich experiences with concrete manipulatives to develop.  A student's ability to conserve number is an important aspect of this standard. It is not obvious to young children that 42 cubes is the same amount as 4 tens and 2 left-overs. It is also not obvious that 42 could also be composed of 2 groups of 10 and 22 leftovers. Therefore, first graders require ample time grouping proportional objects (e.g., cubes, beans, beads, ten-frames) to make groups of ten, rather than using pre-grouped materials (e.g., base ten blocks, pre-made bean sticks) that have to be "traded" or are non-proportional (e.g., money). <u>Example</u>: 42 cubes can be grouped many different ways and still remain a total of 42 cubes.  *"We want children to construct the idea that all of these are the same and that the sameness is clearly evident by virtue of the groupings of ten. Groupings by tens is not just a rule that is followed but that any grouping by tens, including all or some of the singles, can help tell how many."* (Van de Walle & Lovin, p. 124)

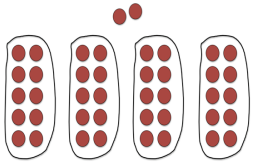
As children build this understanding of grouping, they move through several stages:
Counting By Ones; Counting by Groups & Singles; and **Counting by Tens and Ones**.

Counting By Ones: At first, even though First Graders will have grouped objects into tens and left-overs, they rely on counting all of the individual cubes by ones to determine the final amount. It is seen as the only way to determine how many.
Example:



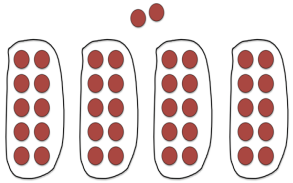
Teacher: How many counters do you have?
Student: 1, 2, 3, 4, …. 41, 42. I have 42 counters.

Counting By Groups and Singles: While students are able to group objects into collections of ten and now tell how many groups of tens and left-overs there are, they still rely on counting by ones to determine the final amount. They are unable to use the groups and left-overs to determine how many.
Example:

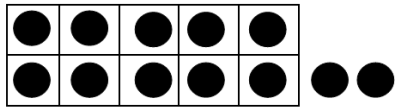
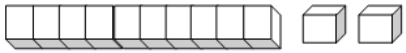


Teacher: How many counters do you have?
Student: I have 4 groups of ten and 2 left-overs.
Teacher: Does that help you know how many? How many do you have?
Student: Let me see. 1, 2, 3, 4, 5, …. 41, 42. I have 42 counters.

Counting by Tens & Ones: Students are able to group objects into ten and ones, tell how many groups and left-overs there are, and now use that information to tell how many. Ex: "I have 3 groups of ten and 4 left-overs. That means that there are 34 cubes in all." Occasionally, as this stage is becoming fully developed, first graders rely on counting by ones to "really" know that there are 34, even though they may have just counted the total by groups and left-overs.
Example:



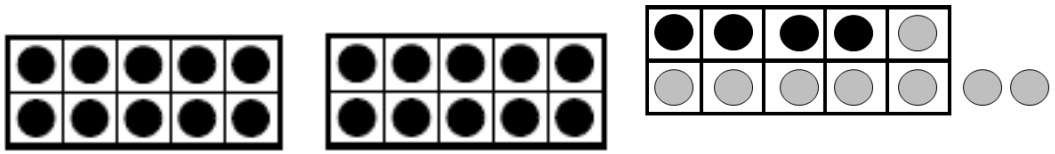
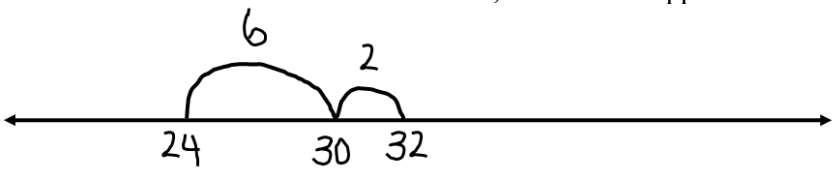
Teacher: How many counters do you have?
Student: I have 4 groups of ten and 2 left-overs.
Teacher: Does that help you know how many? How many do you have?
Student: Yes. That means that I have 42 counters.
Teacher: Are you sure?
Student: Um. Let me count just to make sure… 1, 2, 3, … 41, 42. Yes. I was right. There are 42 counters.

	<u>Base Ten Materials:</u> Groupable and Pre-Grouped Ample experiences with a variety of groupable materials that are proportional (e.g., cubes, links, beans, beads) and ten frames allow students opportunities to create tens and break apart tens, rather than "trade" one for another. Since students first learning about place value concepts primarily rely on counting, the physical opportunity to build tens helps them to "see" that a "ten stick" has "ten items" within it. Pre-grouped materials (e.g., base ten blocks, bean sticks) are not introduced or used until a student has a firm understanding of composing and decomposing tens. (Van de Walle & Lovin, 2006)
b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.	First Grade students extend their work from Kindergarten when they composed and decomposed numbers from 11 to 19 into ten ones and some further ones. In Kindergarten, everything was thought of as individual units: "ones". In First Grade, students are asked to unitize those ten individual ones as a whole unit: "*one* ten". Students in first grade explore the idea that the teen numbers (11 to 19) can be expressed as *one* ten and some leftover ones. Ample experiences with a variety of groupable materials that are proportional (e.g., cubes, links, beans, beads) and ten frames help students develop this concept. <u>Example:</u> **Here is a pile of 12 cubes. Do you have enough to make a ten? Would you have any leftover? If so, how many leftovers would you have?** **Student A** I filled a ten frame to make one ten and had two counters left over. I had enough to make a ten with some leftover. The number 12 has 1 ten and 2 ones.  **Student B** I counted out 12 cubes. I had enough to make 10. I now have 1 ten and 2 cubes left over. So the number 12 has 1 ten and 2 ones.  In addition, when learning about forming groups of 10, First Grade students learn that a numeral can stand for many different amounts, depending on its position or place in a number. This is an important realization as young children begin to work through reversals of digits, particularly in the teen numbers. <u>Example</u>: **Comparing 19 to 91** **19** **91** **Teacher**: Are these numbers the same or different? **Students**: Different! **Teacher**: Why do you think so? **Students**: Even though they both have a one and a nine, the top one is nineteen. The bottom one is ninety-one. **Teacher**: Is that true some of the time, or all of the time? How do you know? Teacher continues discussion.

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).	First Grade students apply their understanding of groups of ten as stated in 1.NBT.2b to decade numbers (e.g. 10, 20, 30, 40). As they work with groupable objects, first grade students understand that 10, 20, 30…80, 90 are comprised of a certain amount of groups of tens with none left-over.
1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.	First Grade students use their understanding of groups and order of digits to compare two numbers by examining the amount of tens and ones in each number. After numerous experiences verbally comparing two sets of objects using comparison vocabulary (e.g., 42 is more than 31. 23 is less than 52, 61 is the same amount as 61.), first grade students connect the vocabulary to the symbols: greater than (>), less than (<), equal to (=). Example: **Compare these two numbers. 42 __ 45** **Student A** 42 has 4 tens and 2 ones. 45 has 4 tens and 5 ones. They have the same number of tens, but 45 has more ones than 42. So, 42 is less than 45. 42 < 45 **Student B** 42 is less than 45. I know this because when I count up I say 42 before I say 45. 42 < 45 This says 42 is less than 45.

Common Core Cluster

Use place value understanding and properties of operations to add and subtract.

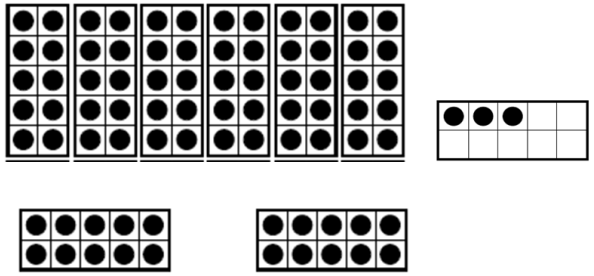
Common Core Standard	Unpacking What do these standards mean a child will know and be able to do?
1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, 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.	First Grade students use concrete materials, models, drawings and place value strategies to add within 100. They do so by being flexible with numbers as they use the base-ten system to solve problems. The standard algorithm of carrying or borrowing is neither an expectation nor a focus in First Grade. Students use strategies for addition and subtraction in Grades K-3. By the end of Third Grade students use a range of algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction to fluently add and subtract within 1000. Students are expected to fluently add and subtract multi-digit whole numbers using the standard algorithm by the end of Grade 4. <u>Example</u>: **24 red apples and 8 green apples are on the table. How many apples are on the table?** **Student A:** I used ten frames. I put 24 chips on 3 ten frames. Then, I counted out 8 more chips. 6 of them filled up the third ten frame. That meant I had 2 left over. 3 tens and 2 left over. That's 32. So, there are 32 apples on the table. **24 + 6 = 30** **30 + 2 = 32**  **Student B:** I used an open number line. I started at 24. I knew that I needed 6 more jumps to get to 30. So, I broke apart 8 into 6 and 2. I took 6 jumps to land on 30 and then 2 more. I landed on 32. So, there are 32 apples on the table. **24 + 6 = 30** **30 + 2 = 32**  **Student C:** I turned 8 into 10 by adding 2 because it's easier to add. So, 24 and ten more is 34. But, since I added 2 extra, I had to take them off again. 34 minus 2 is 32. There are 32 apples on the table. **8 + 2 = 10** **24 + 10 = 34** **34 – 2 = 32**

Example: **63 apples are in the basket. Mary put 20 more apples in the basket. How many apples are in the basket?**

Student A:
I used ten frames. I picked out 6 filled ten frames. That's 60. I got the ten frame with 3 on it. That's 63. Then, I picked one more filled ten frame for part of the 20 that Mary put in. That made 73. Then, I got one more filled ten frame to make the rest of the 20 apples from Mary. That's 83. So, there are 83 apples in the basket.

63 + 10 = 73

73 + 10 = 83



Student B:
I used a hundreds chart. I started at 63 and jumped down one row to 73. That means I moved 10 spaces. Then, I jumped down one more row (that's another 10 spaces) and landed on 83. So, there are 83 apples in the basket.

63 + 10 = 73

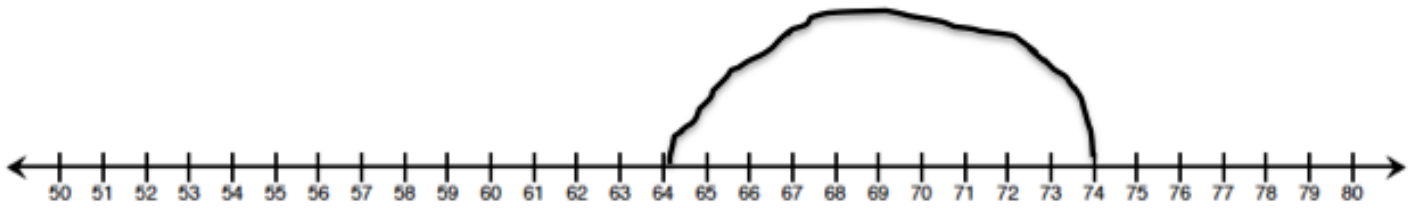
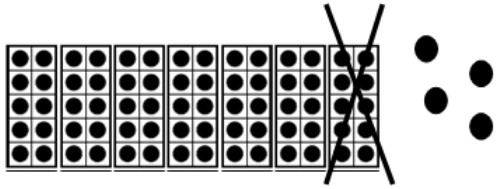
73 + 10 = 83

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Student C:
I knew that 10 more than 63 is 73. And 10 more than 73 is 83. So, there are 83 apples in the basket.

63 + 10 = 73

73 + 10 = 83

1.NBT.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.	First Graders build on their county by tens work in Kindergarten by mentally adding ten more and ten less than any number less than 100. First graders are not expected to compute differences of two-digit numbers other than multiples of ten. Ample experiences with ten frames and the number line provide students with opportunities to think about groups of ten, moving them beyond simply rote counting by tens on and off the decade. Such representations lead to solving such problems mentally. <u>Example</u>: **There are 74 birds in the park. 10 birds fly away. How many birds are in the park now?** **Student A** I thought about a number line. I started at 74. Then, because 10 birds flew away, I took a leap of 10. I landed on 64. So, there are 64 birds left in the park.  **Student B** I pictured 7 ten frames and 4 left over in my head. Since 10 birds flew away, I took one of the ten frames away. That left 6 ten frames and 4 left over. So, there are 64 birds left in the park.  **Student C** I know that 10 less than 74 is 64. So there are 64 birds in the park.

1.NBT.6 Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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.

First Grade students use concrete models, drawings and place value strategies to subtract multiples of 10 from decade numbers (e.g., 30, 40, 50). They often use similar strategies as discussed in 1.OA.4.

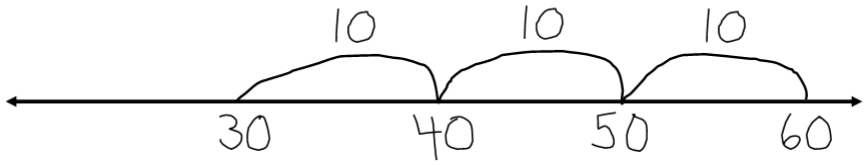
Example: **There are 60 students in the gym. 30 students leave. How many students are still in the gym?**

Student A
I used a number line. I started at 60 and moved back 3 jumps of 10 and landed on 30. There are 30 students left.

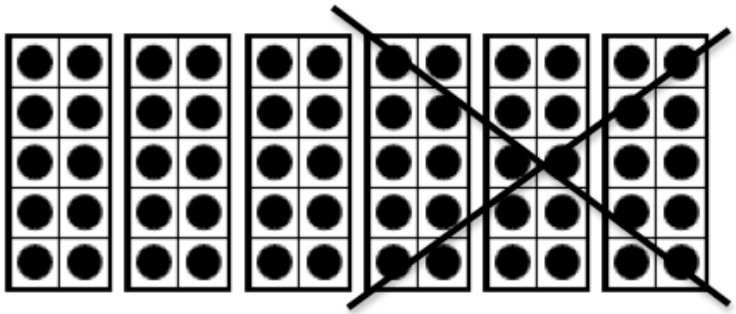
60 – 10 = 50

50 – 10 = 40

40 – 10 = 30



Student B
I used ten frames. I had 6 ten frames- that's 60. I removed three ten frames because 30 students left the gym. There are 30 students left in the gym.



60 – 30 = 30

Student C
I thought, "30 and what makes 60?". I know 3 and 3 is 6. So, I thought that 30 and 30 makes 60. There are 30 students still in the gym.

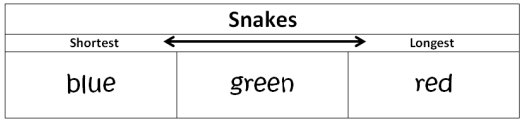
30 + 30 = 60

Measurement and Data 1.MD

Common Core Cluster

Measure lengths indirectly and by iterating length units.
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]
[1]Students should apply the principle of transitivity of measurement to make indirect comparisons, but they need not use this technical term.

Mathematically proficient students communicate precisely by engaging in discussion about their reasoning using appropriate mathematical language. The terms students should learn to use with increasing precision with this cluster are: **measure, order, length, height, more, less, longer than, shorter than, first, second, third, gap, overlap, about, a little less than, a little more than**

Common Core Standard	Unpacking What do these standards mean a child will know and be able to do?
1.MD.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.	First Grade students continue to use direct comparison to compare lengths. *Direct* comparison means that students compare the amount of an attribute in two objects without measurement. <u>Example</u>: **Who is taller?** **Student**: Let's stand back to back and compare our heights. Look! I'm taller! <u>Example</u>: **Find at least 3 objects in the classroom that are the same length as, longer than, and shorter than your forearm.** Sometimes, a third object can be used as an intermediary, allowing *indirect* comparison. For example, if we know that Aleisha is taller than Barbara and that Barbara is taller than Callie, then we know (due to the transitivity of "taller than') that Aleisha is taller than Callie, even if Aleisha and Callie never stand back to back. This concept is referred to as the transitivity principle for indirect measurement. <u>Example</u>: **The snake handler is trying to put the snakes in order- from shortest to longest. She knows that the red snake is longer than the green snake. She also knows that the green snake is longer than the blue snake. What order should she put the snakes?** **Student**: Ok. I know that the red snake is longer than the green snake and the blue snake because, since it's longer than the green, that means that it's also longer than the blue snake. So the longest snake is the red snake. I also know that the green snake and red snake are both longer than the blue snake. So, the blue snake is the shortest snake. That means that the green snake is the medium sized snake. 

	NOTE: The Transitivity Principle ("transitivity")[1]: If the length of object A is greater than the length of object B, and the length of object B is greater than the length of object C, then the length of object A is greater than the length of object C. This principle applies to measurement of other quantities as well. Example: **Which is longer: the height of the bookshelf or the height of a desk?** **Student A:** I used a pencil to measure the height of the bookshelf and it was 6 pencils long. I used the same pencil to measure the height of the desk and the desk was 4 pencils long. Therefore, the bookshelf is taller than the desk. **Student B:** I used a book to measure the bookshelf and it was 3 books long. I used the same book to measure the height of the desk and it was a little less than 2 books long. Therefore, the bookshelf is taller than the desk. Another important set of skills and understandings is ordering a set of objects by length. Such sequencing requires multiple comparisons (no more than 6 objects). Students need to understand that each object in a seriation is larger than those that come before it, and shorter than those that come after. Example: **The snake handler is trying to put the snakes in order- from shortest to longest. Here are the three snakes (3 strings of different length and color). What order should she put the snakes?** **Student**: Ok. I will lay the snakes next to each other. I need to make sure to be careful and line them up so they all start at the same place. So, the blue snake is the shortest. The green snake is the longest. And the red snake is medium-sized. So, I'll put them in order from shortest to longest: blue, red, green. (*Progressions for CCSSM: Geometric Measurement,* The CCSS Writing Team, June 2012.)
1.MD.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.*	First Graders use objects to measure items to help students focus on the attribute being measured. Objects also lends itself to future discussions regarding the need for a standard unit. First Grade students use multiple copies of one object to measure the length larger object. They learn to lay physical units such as centimeter or inch manipulatives end-to-end and count them to measure a length. Through numerous experiences and careful questioning by the teacher, students will recognize the importance of careful measuring so that there are not any gaps or overlaps in order to get an accurate measurement. This concept is a foundational building block for the concept of area in 3rd Grade. Example: **How long is the pencil, using paper clips to measure**?  **Student**: I carefully placed paper clips end to end. The pencil is 5 paper clips long. I thought it would take about 6 paperclips.

When students use different sized units to measure the same object, they learn that the sizes of the units must be considered, rather than relying solely on the amount of objects counted.

Example: **Which row is longer?**

Student Incorrect Response: The row with 6 sticks is longer. Row B is longer.

Student Correct Response: They are both the same length. See, they match up end to end.

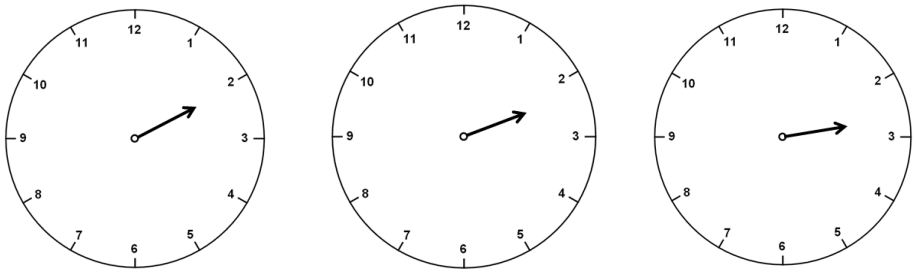
In addition, understanding that the results of measurement and direct comparison have the same results encourages children to use measurement strategies.

Example: **Which string is longer? Justify your reasoning.**

Student: I placed the two strings side by side. The red string is longer than the blue string. But, to make sure, I used color tiles to measure both strings. The red string measured 8 color tiles. The blue string measure 6 color tiles. So, I was right. The red string is longer.

NOTE: The instructional progression for teaching measurement begins by ensuring that students can perform direct comparisons. Then, children should engage in experiences that allow them to connect number to length, using manipulative units that have a standard unit of length, such as centimeter cubes. These can be labeled "length-units" with the students. Students learn to lay such physical units end-to-end and count them to measure a length. They compare the results of measuring to direct and indirect comparisons.

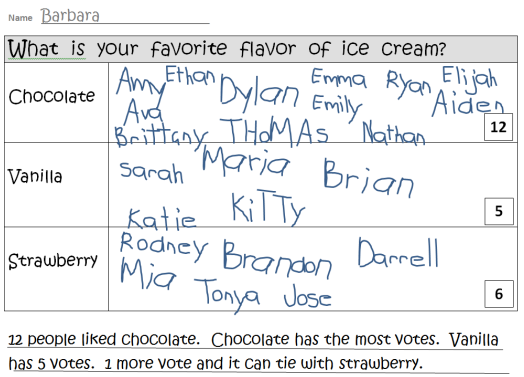
(*Progressions for CCSSM: Geometric Measurement,* The CCSS Writing Team, June 2012.)

Common Core Cluster	
Tell and write time.	
Mathematically proficient students communicate precisely by engaging in discussion about their reasoning using appropriate mathematical language. The terms students should learn to use with increasing precision with this cluster are: **time, hour, half-hour, about, o'clock, past, "six"-thirty**	
Common Core Standard	**Unpacking** What do these standards mean a child will know and be able to do?
1.MD.3 Tell and write time in hours and half-hours using analog and digital clocks.	For young children, reading a clock can be a difficult skill to learn. In particular, they must understand the differences between the two hands on the clock and the functions of these hands. By carefully watching and talking about a clock with only the hour hand, First Graders notice when the hour hand is directly pointing at a number, or when it is slightly ahead/behind a number. In addition, using language, such as "about 5 o'clock" and "a little bit past 6 o'clock", and "almost 8 o'clock" helps children begin to read an hour clock with some accuracy. Through rich experiences, First Grade students read both analog (numbers and hands) and digital clocks, orally tell the time, and write the time to the hour and half-hour.  All of these clocks indicte the hour of "two", although they look slightly different. This is an important idea for students as they learn to tell time.

Common Core Cluster

Represent and interpret data.

Mathematically proficient students communicate precisely by engaging in discussion about their reasoning using appropriate mathematical language. The terms students should learn to use with increasing precision with this cluster are: **data, more, most, less, least, same, different, category, question, collect**

Common Core Standard	Unpacking What do these standards mean a child will know and be able to do?
1.MD.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.	First Grade students collect and use categorical data (e.g., eye color, shoe size, age) to answer a question. The data collected are often organized in a chart or table. Once the data are collected, First Graders interpret the data to determine the answer to the question posed. They also describe the data noting particular aspects such as the total number of answers, which category had the most/least responses, and interesting differences/similarities between the categories. As the teacher provides numerous opportunities for students to create questions, determine up to 3 categories of possible responses, collect data, organize data, and interpret the results, First Graders build a solid foundation for future data representations (picture and bar graphs) in Second Grade. <u>Example</u>: **Survey Station** During Literacy Block, a group of students work at the Survey Station. Each student writes a question, creates up to 3 possible answers, and walks around the room collecting data from classmates. Each student then interprets the data and writes 2-4 sentences describing the results. When all of the students in the Survey Station have completed their own data collection, they each share with one another what they discovered. They ask clarifying questions of one another regarding the data, and make revisions as needed. They later share their results with the whole class.  Name Barbara What is your favorite flavor of ice cream? Chocolate: Amy, Ethan, Dylan, Emma, Ryan, Elijah, Ava, Emily, Aiden, Brittany, THoMAs, Nathan — 12 Vanilla: Sarah, Maria, Brian, Katie, KiTTy — 5 Strawberry: Rodney, Brandon, Darrell, Mia, Tonya, Jose — 6 12 people liked chocolate. Chocolate has the most votes. Vanilla has 5 votes. 1 more vote and it can tie with strawberry. **Student:** The question, "What is your favorite flavor of ice cream?" is posed and recorded. The categories chocolate, vanilla and strawberry are determined as anticipated responses and written down on the recording sheet. When asking each classmate about their favorite flavor, the student's name is written in the appropriate category. Once the data are collected, the student counts up the amounts for each category and records the amount. The student then analyzes the data by carefully looking at the data and writes 4 sentences about the data.

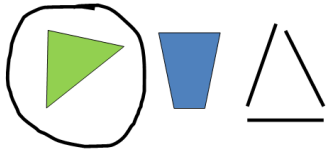
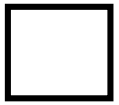
Geometry 1.G

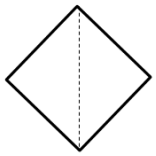
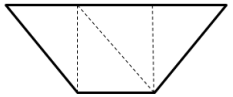
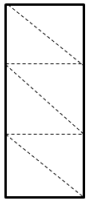
Common Core Cluster

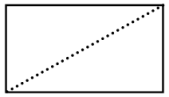
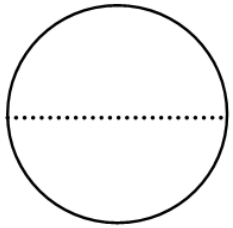
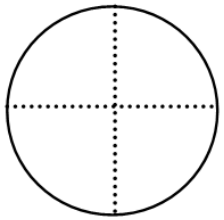
Reason with shapes and their attributes.
Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize 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.

Mathematically proficient students communicate precisely by engaging in discussion about their reasoning using appropriate mathematical language. The terms students should learn to use with increasing precision with this cluster are: **shape, closed, open, side, attribute[1], feature[1], two-dimensional, rectangle, square, trapezoid, triangle, half-circle, and quarter-circle**, **three-dimensional, cube, cone, prism, cylinder, equal shares, halves, fourths, quarters, half of, fourth of, quarter of**
From previous grades: **circle, rectangle, hexagon, sphere**

[1] "**Attributes**" and "**features**" are used interchangeably to indicate any characteristic of a shape, including properties, and other defining characteristics (e.g., straight sides) and non-defining characteristics (e.g., "right-side up"). *(Progressions for the CCSSM: Geometry*, CCSS Writing Team, August 2011, page 3 footnote)

Common Core Standards	Unpacking What do these standards mean a child will know and be able to do?
1.G.1 Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size) ; build and draw shapes to possess defining attributes.	First Grade students use their beginning knowledge of defining and non-defining attributes of shapes to identify, name, build and draw shapes (including triangles, squares, rectangles, and trapezoids). They understand that defining attributes are always-present features that classify a particular object (e.g., number of sides, angles, etc.). They also understand that non-defining attributes are features that may be present, but do not identify what the shape is called (e.g., color, size, orientation, etc.). <u>Example:</u> All triangles must be closed figures and have 3 sides. These are defining attributes. Triangles can be different colors, sizes and be turned in different directions. These are non-defining attributes. **Student** I know that this shape is a triangle because it has 3 sides. It's also closed, not open.  **Student** I used toothpicks to build a square. I know it's a square because it has 4 sides. And, all 4 sides are the same size.  <u>TEACHER NOTE:</u> In the U.S., the term "trapezoid" may have two different meanings. Research identifies these as inclusive and exclusive definitions. The inclusive definition states: A trapezoid is a quadrilateral with *at least* one pair of parallel sides. The exclusive definition states: **A trapezoid is a quadrilateral with *exactly* one pair of parallel sides**. With this definition, a parallelogram is not a trapezoid. North Carolina has adopted the exclusive definition. (*Progressions for the CCSSM: Geometry*, The Common Core Standards Writing Team, June 2012.)

1.G.2 Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional 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.[1] [1] Students do not need to learn formal names such as "right rectangular prism."	As first graders create composite shapes, a figure made up of two or more geometric shapes, they begin to see how shapes fit together to create different shapes. They also begin to notice shapes within an already existing shape. They may use such tools as pattern blocks, tangrams, attribute blocks, or virtual shapes to compose different shapes. <u>Example</u>: **What shapes can you create with triangles?** **Student A:** I made a square. I used 2 triangles.  **Student B:** I made a trapezoid. I used 4 triangles.  **Student C:** I made a tall skinny rectangle. I used 6 triangles.  First graders learn to perceive a combination of shapes as a single new shape (e.g., recognizing that two isosceles triangles can be combined to make a rhombus, and simultaneously seeing the rhombus and the two triangles). Thus, they develop competencies that include: • Solving shape puzzles • Constructing designs with shapes • Creating and maintaining a shape as a unit As students combine shapes, they continue to develop their sophistication in describing geometric attributes and properties and determining how shapes are alike and different, building foundations for measurement and initial understandings of properties such as congruence and symmetry. (*Progressions for the CCSS in Mathematics: Geometry*, The Common Core Standards Writing Team, June 2012)
1.G.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	First Graders begin to partition regions into equal shares using a context (e.g., cookies, pies, pizza). This is a foundational building block of fractions, which will be extended in future grades. Through ample experiences with multiple representations, students use the words, *halves, fourths,* and *quarters*, and the phrases *half of, fourth of,* and *quarter of* to describe their thinking and solutions. Working with the "the whole", students understand that "the whole" is composed of two halves, or four fourths or four quarters.

the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.	Example: **How can you and a friend share equally (partition) this piece of paper so that you both have the same amount of paper to paint a picture?**  **Student 1** I would split the paper right down the middle. That gives us 2 halves. I have half of the paper and my friend has the other half of the paper.  **Student 2** I would split it from corner to corner (diagonally). She gets half of the paper and I get half of the paper. See, if we cut on the line, the parts are the same size.  Example: **Let's take a look at this pizza.** **Teacher**: There is pizza for dinner. What do you notice about the slices on the pizza?  **Student**: There are two slices on the pizza. Each slice is the same size. Those are big slices! **Teacher**: If we cut the same pizza into four slices (fourths), do you think the slices would be the same size, larger, or smaller as the slices on this pizza?  **Student**: When you cut the pizza into fourths, the slices are smaller than the other pizza. More slices mean that the slices get smaller and smaller. I want a slice from that first pizza!

Glossary

Table 1 Common addition and subtraction situations[1]

	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 = ? **(K)**	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 **(1st)**	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 **One-Step Problem** **(2nd)**
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? 5 – 2 = ? **(K)**	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? 5 – ? = 3 **(1st)**	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 **One-Step Problem** **(2nd)**

	Total Unknown	Addend Unknown	Both Addends Unknown[2]
Put Together/ Take Apart[3]	Three red apples and two green apples are on the table. How many apples are on the table? 3 + 2 = ? **(K)**	Five apples are on the table. Three are red and the rest are green. How many apples are green? 3 + ? = 5, 5 – 3 = ? **(K)**	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 **(1st)**

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare[4]	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? **(1st)**	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? **One-Step Problem** **(1st)**	(Version with "more"): Julie has 3 more apples than Lucy. Julie has five apples. How many apples does Lucy have? 5 – 3 = ? ? + 3 = 5 **One-Step Problem** **(2nd)**
	("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? 2 + ? = 5, 5 – 2 = ? **(1st)**	(Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? 2 + 3 = ?, 3 + 2 = ? **One-Step Problem** **(2nd)**	(Version with "fewer"): Lucy has three fewer apples than Julie. Julie has five apples. How many apples does Lucy have? **One-Step Problem** **(1st)**

K: Problem types to be mastered by the end of the Kindergarten year.

1st: Problem types to be mastered by the end of the First Grade year, including problem types from the previous year(s). However, First Grade students should have experiences with all 12 problem types.

2nd: Problem types to be mastered by the end of the Second Grade year, including problem types from the previous year(s).

1Adapted from Box 2-4 of Mathematics Learning in Early Childhood, National Research Council (2009, pp. 32, 33).

2These 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.

3Either 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.

4For 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.

REFERENCES

Copley, J. (2010). *The young child and mathematics*. Washington DC: NAEYC.

Common Core Standards Writing Team (Bill McCullum, lead author). *Progressions for the common core state standards in mathematics: Geometry* (draft). June 23, 2012. Retrieved from: www.commoncoretools.wordpress.com.

Common Core Standards Writing Team (Bill McCullum, lead author). *Progressions for the common core state standards in mathematics: Geometric measurement* (draft). June 23, 2012. Retrieved from: www.commoncoretools.wordpress.com.

Common Core Standards Writing Team (Bill McCullum, lead author). *Progressions for the common core state standards in mathematics: K-3, Categorical data; Grades 2-5, Measurement Data* (draft). June 20, 2011. Retrieved from: www.commoncoretools.wordpress.com.

Common Core Standards Writing Team (Bill McCullum, lead author). *Progressions for the common core state standards in mathematics: K, Counting and cardinality; K-5, operations and algebraic thinking* (draft). May 29, 2011. Retrieved from: www.commoncoretools.wordpress.com.

Common Core Standards Writing Team (Bill McCullum, lead author). *Progressions for the common core state standards in mathematics: K-5, Number and operations in base ten* (draft). April 7, 2011. Retrieved from: www.commoncoretools.wordpress.com.

Fosnot, C. & Dolk, M. (2001). *Young mathematicians at work: Constructing number sense, addition, and subtraction*. Portsmouth: Heinemann.

Van de Walle, J., Lovin, L. (2006). *Teaching student-centered mathematics K-3*. Boston: Pearson.