Second Grade Florida Standards Math

Revised, 2014

This is an update of the Second Grade Math Curriculum to align with changes in the Florida Standards. It includes emphases for instruction and a required order of instruction pacing guide.

Second Grade Florida Standards Math

The district-adopted text for math is Harcourt GOMATH for Florida Standards. Additional materials are available on the Harcourt ThinkCentral website. Math iXL is available at all elementary schools in the district.

MAFS.2

In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

1. Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).
2. Students use their understanding of addition to develop fluency with addition and subtraction within 100. They solve problems within 1000 by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.
3. Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.
4. Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

Mathematical Practices: The eight Mathematical Practices describe HOW we do math. They must be infused into all math instruction. This is done by having students:

- explain their thinking;
- solve problems in different ways;
- use manipulatives to demonstrate and visualize problem solving;
- work on difficult problems that are accessible but challenging;
- solve fewer problems that require more thinking rather than focusing on working a lot of one-step problems;
- use different tools to make sense of math;
- focus on precision;
- look for patterns in numbers and problems.

In addition, teachers must:

- plan with the practices in mind. This means asking planning questions like: 'What mathematical practice will the students need to use to solve this problem?' or 'What mathematical practice will I be modeling when we are working on this concept?'
- model the practices.
- use the vocabulary of the practices.
- honor student problem solving by giving them time to work on problems without moving quickly to 'the answer', and giving students multiple opportunities to discuss their reasoning in the context of math.
- question and discuss answers.
- make mathematical tools visible by discussing appropriate and available tools for solving problems, and having the tools readily accessible for use.

Explanations of the Mathematical Practices from the Florida Standards for Mathematics:

MAFS.K12.MP.1.1 -- **Make sense of problems and persevere in solving them.**

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

MAFS.K12.MP.2.1 : **Reason abstractly and quantitatively**.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

MAFS.K12.MP.3.1 : **Construct viable arguments and critique the reasoning of others.**

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

MAFS.K12.MP.4.1 : **Model with mathematics.**

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

MAFS.K12.MP.5.1 : **Use appropriate tools strategically.**

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

MAFS.K12.MP.6.1 : **Attend to precision.**

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

MAFS.K12.MP.7.1 : **Look for and make use of structure.**

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7 × 8 equals the well remembered 7 × 5 + 7 × 3, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2 × 7 and the 9 as 2 + 7. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 – 3(x – y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.

MAFS.K12.MP.8.1 : **Look for and express regularity in repeated reasoning.**

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Lead teachers from across the district met to discuss changes that must be implemented in math instruction in order to appropriately prepare students for new requirements in math and assure students ongoing success. The following principles must be reinforced across grade levels.

District Expectations and Considerations for Instruction: (requirements)

1. **Use of and instruction in correct math terminology is critical.**
    a. Use the language of your standards.
    b. Do not substitute 'cute' words for accurate terminology.
    c. Have students use the vocabulary multiple times in a variety of contexts.
    d. Have students practice categorizing words and have them explain their rules for sorting.
    e. Mathematical vocabulary must be evident on Word Walls.
    f. Teach vocabulary to mastery.
2. **Consistently use the High-Yield Routines.**
    These routines allow students to practice concepts with higher-order thinking. They incorporate writing with thinking about math.
3. **Use the mathematical practices. They matter.**
    a. Plan with the practices in mind. Sample questions to think about when planning: 'What mathematical practice(s) will I be using when I model this task?' 'What mathematical practice(s) will my students have to use to solve this problem?'
    b. Read the descriptions of what 'mathematically proficient' students do (see the previous two pages), and consistently check to see if your students are growing toward that goal.
4. **Routinely practice having students justify their answers.** Ex. 'Show us how you arrived at that answer. What math concepts did you use to arrive at that answer?'
5. **Always reinforce number sense.** Ask: 'Is this a reasonable answer? Why or why not?'
6. **Teach and practice the basic facts to automaticity. No exceptions. This is foundational to later math success.**
    a. By the end of second grade students should have developed fluency with the basic addition and subtraction facts. This means that they can quickly (with automaticity) give answers for problems like 2 + 6 or 8 + 5, even when those are embedded in more difficult problems. Turning problems around like 13 – 5 = 8 because 8 + 5 = 13 should make sense to them. In other words they should not be stumbling over the basic math.
    b. In third and fourth grades student must develop automaticity with basic multiplication facts. Third grade builds a strong conceptual foundation and begins moving toward fluency and fourth-grade assures that automaticity is reached.
7. **Practice word problems at all levels in a variety of contexts. This goes well beyond teaching key words for solving word problems. Over teaching key words can hinder later math understanding.**
    a. Teach them to understand the problem.
        i. What does it say?
        ii. What information does it provide?
        iii. What is the question?
        iv. What information do I need to answer the question (relevant vs. irrelevant)?
        v. What math procedure(s) will I need to complete to answer the question?
        vi. What tools are available to help me? (drawing, visualizing, graphing or charting, measuring, numberline, etc.)
8. **Make tools visible.** Talk about and practice using mathematical tools. Make them available in the classroom. Discuss which tools are appropriate in which situations.

9. **Have students respond in a variety of ways to questions. Questions should challenge student thinking.** (See question types in the Test Item Specifications.)
10. **Important Concepts Across Grade Levels:**
    a. Equivalence – students need to understand that the answer does not always follow the = sign (ex. □+3 = 2+4, □ = 4+3)
    b. Fractions – students must experience and understand equal parts of a whole leading into formal fraction instruction in third grade.
    c. Use of the number (a ruler is an example of a numberline) – facility with the numberline is critical for later work with fractions.
    d. Solving problems by drawing the concepts – Students who learn to use fraction bars and to draw fractions and fractional combinations can better visualize the m ore difficult operations with fractions.
11. **Math will be taught for 90 minutes every day.** This does not have to be uninterrupted.
12. **Attention must be paid to the *Cognitive Complexity* of items to help determine the rigor of the instruction and expectation.**

Math Progress Monitoring

Progress monitoring must be ongoing in classrooms throughout the year. This includes, but is not limited to, the following:

1. Ongoing checks for development of fluency with basic math facts;
2. Formative assessments on math concepts like equivalency, number, parts of a whole, etc., as appropriate to the grade level standards;
3. Formative assessment through interaction with students as they explain problem solving. It is critical to catch and correct misconceptions early.
4. Review of responses to the High-Yield Routines.

Grading should accurately reflect the students' accomplishment of the grade level standards. If a student is making an 'A', that means that the student is able to, after instruction, independently perform at an above-average level. Be careful of overweighting grades with work habits and citizenship considerations. Grades should reflect a variety of assessments that allow the students to demonstrate proficiency.

Formal Progress Monitoring will occur quarterly.
All students will participate in formal progress monitoring quarterly using Discovery Education Assessments.
Data will be reviewed at the district, school, and classroom level.
Follow-up instruction on for students who are not performing on level is required.

Resources:

- CPALMS – lesson resources and formative assessments are linked to the standards in CPALMS.
- www.FSAssessments.org - This is the link to the online portal with information on the new Florida assessments. Teachers are expected to review and use the test item specifications for their respective grade levels. You will have to cut and paste this address into your browser address bar.
- Math iXL – for ongoing reinforcement and for targeted practice of skills. Please note that this practice does not preclude the necessity for ongoing instruction and problem solving with answer justification in the classroom.

Second Grade Florida Standards for Math

BODY OF KNOWLEDGE: OPERATIONS AND ALGEBRAIC THINKING

Cluster 1: Represent and solve problems involving addition and subtraction.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.2.OA.1.1	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Some problems require multiple steps when solving. • Vocabulary words can be helpful in determining the operation necessary to solve addition and subtraction problems. • Symbols can be used to represent something unknown. • Multiple strategies can be used to arrive at a common solution. • Number sentences, models, and drawings can be used to represent word problems. • Word problems represent real-life situations where math skills are applied. **The student is able to:** • Distinguish word problem types. [See table 1 at the end of this document.] • Determine relevant information in a word problem. • Use a variety of strategies to solve one- and two-step addition and subtraction word problems. • Represent understanding with objects, drawings, equations, and words. • Describe more than one way to solve a problem.	• I can find an unknown in an equation. • I can represent the unknown with a symbol. • I can solve two-step word problems. • I can describe the strategies I use to solve a word problem.
Key Vocabulary: position, addition, subtraction, represent, unknown, one and two-step problems			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.2.OA.1.a	Determine the unknown whole number in an equation relating four or more whole numbers. For example, determine the unknown number that makes the equation true in the equations 37 + 10 + 10 = _____ + 18, ? + 6 = 13 – 4, and 15-9 = 7+☐.	• More than two numbers can be added in an equation. • The = sign indicates that both sides have the same value. • Equations are not always written in the same order. • If a number is missing from an equation, one can use math operations to determine what the missing number is. **The student is able to:** • Use addition and subtraction to determine the unknown whole number in an equation. • Complete equations so that both sides have the same value.	• I can add and subtract to find the missing number in an equation. • I can make the numbers on both sides of an = symbol equal the same value.
Key Vocabulary: whole number, unknown, equation, true			
Resources:			

Cluster 2: Add and subtract within 20.			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.2.OA.2.2	Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers. *Cognitive Complexity:* Level 1: Recall	• Adding/combining two (positive) numbers will result in a greater number. • Subtracting/taking away (positive whole numbers will result in a smaller number. • Multiple strategies can be used to solve the same problem mentally. **The student is able to:** • Find the sum of adding two numbers between 0-9. • Memorize the sums for two one-digit numbers. • Apply different strategies to add and subtract with 2	• I can add numbers to 20 in my head. • I can subtract numbers under 20 in my head. • I know the sums of one-digit addition problems.
Key Vocabulary: mental strategies, one-digit, sums			
Resources:			

Cluster 3: Work with equal groups of objects to gain foundations for multiplication.			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.2.OA.3.3	Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Partnering objects can help us see if a number is even or odd. • All whole numbers are either even or odd. • An even number can be described as having none left over when all objects are partnered. • An odd number can be described as having one left over when all objects are partnered. **The student is able to:** • Count by two's. • Pair objects. • Write an equation with two equal addends. • Explain why the sum of two equal addends will always be even. • Prove that numbers are even or odd.	• I can tell if a number is odd or even by counting by two's. • I can tell if a number is odd or even by pairing objects. • I can use doubles facts to find an even number. • I can write an equation to show an even sum of two equal addends.
Key Vocabulary: odd, even, equal, addends			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.2.OA.3.4	Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends. *Cognitive Complexity:* Level 1: Recall	• Objects can be arranged in rows and columns to form an array. • An array can be represented by an equation as the sum of equal addends. • Repeated addition is the foundation of multiplication. **The student is able to:** • Show (using manipulatives or pictures) or explain how an array can be used to show repeated addition. • Show (using manipulatives or pictures) or explain a reverse process to form an array from the equation. • Write a repeated addition equation to represent an array.	• I can create an array. • I can use an array to write an equation.
Key Vocabulary: total, rectangular array, row, column			
Resources:			

BODY OF KNOWLEDGE: NUMBER AND OPERATIONS IN BASE 10

Cluster 1: Understand place value.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.NBT.1.1	Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens — called a "hundred. b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• The value of a digit in our number system is determined by its place value position. • Our number system is based on groups of ten. • The highest digit that any place can hold is nine. **The student is able to:** • Label a three-digit number with ones, tens, and hundreds. • Identify the value of each digit in a three-digit number. • Represent a three-digit number using blocks or a picture. • Regroup quantities into groups of ten to be able to write the number in digit form. (e.g. 53 tens is regrouped as 5 hundreds and 3 tens and written as "530", 24 ones is regrouped as 2 tens and 4 ones and written as "24")	• I can identify the ones digit, tens digit, and hundreds digit in a three-digit number. • I can identify the value of each digit. • I can use manipulatives or a picture to show the ones, tens, and hundreds in a three-digit number.

Key Vocabulary: Digit Ones Tens Hundreds Place Place Value

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.NBT.1.2	Count within 1000; skip-count by 5s, 10s, and 100s.	• Skip-counting is an efficient way to count. • Skip-counting creates a continuing pattern. **The student is able to:** • Apply a variety of models to represent groups of 5's, 10's and 100's. • Count by 1's starting from any number less than 1,000. • Use skip-counting to efficiently count by 5's starting from any number less than 1,000. • Use skip-counting to efficiently count by 10's to 100 starting from any number less than 1,000. • Use skip counting to efficiently count by 100's starting from any number less than 1,000. • Describe the patterns created by skip-counting.	• I can count by 1's, 5's, 10's, or 100's. • I can create a continuing pattern by skip-counting. • I can use manipulatives or a picture to help me skip-count by 5's, 10's, or 100's. • I can use manipulatives or a picture to show how I skip-count by 5's, 10's, or 100's.

Key Vocabulary: skip count repeated pattern growing pattern

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.NBT.1.3	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	• That numbers are sequential and composed of ones, tens, hundreds, and thousands **The student is able to:** • Read numerals to 1000. • Write numerals to 1000. • Write the expanded form of numbers to 1000. • Write number names.	• I can read and write numerals to 1000. • I can write number names. • I can write the expanded form of numbers to 1000.
Key Vocabulary: base-ten numerals, expanded form			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.NBT.1.4	Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.	• Place value determines the value of the number. • When comparing two numbers, one must first compare the digits in the highest place. **The student is able to:** • Compare two three-digit numbers to determine greater than, less than, or equal to. • Record comparisons using >, <, and =. • Explain why one three-digit number is greater than, less than, or equal to another three-digit number.	• I can use symbols (<, >, and =) to compare two 3-digit numbers. • I can use words, such as greater than, less than, and equal to, to compare two 3-digit numbers.
Key Vocabulary: compare place value digit hundreds tens ones less than greater than equal to			
Resources:			

Cluster 2: Use place value understanding and properties of operations to add and subtract.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.NBT.2.5	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	• The value of a number is defined by its place value position. • There is a relationship between addition and subtraction (fact families). • A variety of strategies or properties can be used to solve addition and subtraction problems. **The student is able to:** • Add and subtract within 100 using a variety of strategies. • Apply and explain properties of operations to add numbers within 100.	• I can add and subtract numbers to 100 quickly and accurately. • I can show how the properties are related.
Key Vocabulary: fact families properties of operations fluently place value strategies expanded form			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that	Student Friendly Language Learning Targets
MAFS.2.NBT.2.6	Add up to four two-digit numbers using strategies based on place value and properties of operations.	• New numbers can be composed based on place value (13 + 7 tens is the same as 8 tens and 3 ones). • Base ten blocks represent place value and place value is how much a number is worth. • Vertically-arranged number sentences need to be aligned by place value. **The student is able to:** • Calculate addition problems with up to 4 two-digit numbers. • Apply a variety of strategies, including properties of addition, to solve addition problems. • Apply place value to solve mental math problems (e.g. making groups of 10). • Prove/explain solutions using manipulatives.	• I can add up to 4 two-digit numbers using many strategies.
Key Vocabulary: add strategies place value properties of operations two-digit number			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.NBT.2.7	Add and subtract within 1000, 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. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.	• The value of a digit in our number system is determined by its place value position. • Numbers in the 10s and 100s place values can be composed and decomposed to solve addition and subtraction problems within 1000. • There is a relationship between addition and subtraction. (Fact families). • A variety of strategies of properties can be used to solve addition and subtraction problems. **The student is able to:** • Construct fact families to show relationships between adding and subtracting. • Decompose and compose 10s and 100s when necessary. • Add and subtract using a variety of strategies and models. • Recognize and explain the properties of different operations.	• I can add and subtract numbers to 999 in many ways using a strategy, model or drawing that makes sense to me. • I can use place value understanding to regroup when adding or subtracting if I need to. • I can record my thinking.
Key Vocabulary: strategies place value properties decompose numbers compose numbers concrete regrouping hundreds tens ones			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.NBT.2.8	Mentally add 10 or 100 to a given number 100 – 900, and mentally subtract 10 or 100 from a given number 100 – 900.	• Each digit in a three-digit number has a specific place value. • Adding and subtracting by 10s and 100s has a predictable pattern that can be found by skip counting. • The ability to add and subtract by 10 and 100 mentally is essential to efficient problem solving. **The student is able to:** • Use mental math and place value concepts to add or subtract 10 or 100 to/from any number 0 to 900. • Apply place value to solve mental math problems. • Apply skip counting strategy to subtract 10 or 100 from any number from 100 - 900.	• I can add 10 or 100 to any number from 100-900 in my head without counting. • I can subtract 10 or 100 from any number from 100-900 in my head without counting.
Key Vocabulary: add subtract mental math number 100 – 900 place value skip count digit hundred chart base 10 blocks			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.NBT.2.9	Explain why addition and subtraction strategies work, using place value and the properties of operations.	• Strategies help us solve problems efficiently. • The value of a digit in our number system is determined by its place value position. • Knowledge of fact families will help solve related addition and subtraction problems. • Knowledge of addition properties will help solve addition problems. **The student is able to:** • Apply strategies to solve problems. • Show or draw the strategy used to solve an addition or subtraction problem. • Apply place value and the properties of operations to solve addition and subtraction problems.	• I can show, draw, or explain the strategies I use to solve addition and subtraction problems.
Key Vocabulary: addition and subtraction strategies, place value, properties of operations			
Resources:			

BODY OF KNOWLEDGE: MEASUREMENT AND DATA

Cluster 1: Measure and estimate lengths in standard units.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.1.1	Measure the length of an object to the nearest inch, foot, centimeter, or meter by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. Cognitive Complexity: Level 2: Basic Applications Of Skills & Concepts	• Tools are used to measure length. • Some tools are more useful than others depending on what is being measured. • Accuracy is essential when measuring. **The student is able to:** • Measure accurately the length of objects using a variety of measuring tools. • Choose appropriate tools to measure length efficiently. • Record measurements with accuracy.	• I can use the correct measuring tool to measure lines and/or objects in both standard and metric units (inches, feet, centimeters, meters). • I can explain which measuring tool would be a good choice, depending on what I want to measure (rulers, yardsticks, meter sticks, measuring tapes).

Key Vocabulary: inch, centimeter, foot ,yard, meter, measure, unit, length, ruler, yardstick, meter stick, and measuring tape

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.1.2	Describe the inverse relationship between the size of a unit and number of units needed to measure a given object. Example: Suppose the perimeter of a room is lined with one-foot rulers. Now, suppose we want to line it with yardsticks instead of rulers. Will we need more or fewer yardsticks than rulers to do the job? Explain your answer. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Shorter units of measure will give a greater number of units than a longer unit of measure when used to measure the same object. • Even though there are several units of measure to choose from, some units are more efficient than others. **The student is able to:** • Measure length using standard and non-standard units (inches, feet, yards, cm, m, paper clips, etc.; see standard MD.2.1 for more details). • Choose appropriate units of measure (see MD.2.1). • Compare two measurements of an object's length, each done with a different appropriate unit. (e.g. 3 paper clips = 4 unifix cubes) • Describe how the size of the unit affects the measurement. (Smaller unit means greater number in measurement.)	• I can measure the length of an object using different units. • I can compare different units used to measure the length of a single object.

Key Vocabulary: length, comparison, measure length units ,standard unit ,foot, inch, yard, meter, and centimeter

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.1.3	Estimate lengths using units of inches, feet, yards, centimeters, and meters. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Estimating means using what we know to make an educated guess of something. • We can use measurements we know as a reference point for making an estimate. **The student is able to:** • Estimate lengths in inches, feet, meters, or centimeters. • Measure the true length using units of inch, foot, meter and centimeter to check estimates. • Use what we know/points of reference to make an estimation of length. • Identify points of reference by comparing common objects with specific lengths (e.g. feet in a football field, how many centimeters wide your hand is).	• I can estimate the length of an object in inches. • I can estimate the length of an object in feet. • I can estimate the length of an object in centimeters. • I can estimate the length of an object in meters.
Key Vocabulary: estimation, foot, inch, centimeter, meter, unit, length, measurement			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.1.4	Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Measuring lengths to compare objects must be done using the same units. • It is important to use the same units when comparing the length of two objects. **The student is able to:** • Measure the length of two objects using the same standard unit. • Calculate the difference in length between two objects using the same units.	• I can find the difference between the lengths of two objects by measuring them using the same units.
Key Vocabulary: measure, length difference, standard units, compare			
Resources:			

Cluster 2: Relate addition and subtraction to length.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.2.5	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Unknown lengths can be found by using a variety of mathematical tools/strategies such as number lines, drawings, rulers, or equations. • A symbol can be used in an equation to represent an unknown length. • An unknown length can be found using either addition or subtraction instead of measuring. • How to select and use important information from a story problem to develop a strategy for finding an unknown length. **The student is able to:** • Demonstrate while explaining how to find an unknown length using mathematical tools/strategies such as number lines, drawings, equations, or rulers. • Choose an appropriate tool/strategy e.g. a number line, drawing, equation, or ruler to find an unknown length. • Solve an equation to find an unknown length using either addition or subtraction. • Identify important information from a story problem before developing a strategy to figure out an unknown length. • Use drawings to help solve problems involving length.	• I can use addition and subtraction to find unknown lengths in word problems. • I can use a symbol to represent an unknown length in an equation. • I can use mathematical tools/strategies such as number lines, drawings, rulers, and equations to find an unknown length.

Key Vocabulary: lengths addition subtraction same units equation symbol unknown word problems represent

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.2.6	Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Whole numbers on a number line are equally spaced. • Addition and subtraction sentences can be solved using a number line. • Whole numbers, sums and differences can be represented as lengths on a number line. • Any standard measuring tool for length (e.g., rulers, yardsticks, etc.) could represent a number line. **The student is able to:** • Show and explain how to use a number line to solve an addition or subtraction problem. • Create a number line with equally-spaced sections to solve an addition or subtraction problem. • Represent whole numbers as lengths on a number line. • Explain the importance of equally spacing numbers on a number line.	• I can show equally spaced whole numbers on a number line. • I can show how to add numbers between 0 and 100 on a number line. • I can show how to subtract numbers between 0 and 100 on a number line.

Key Vocabulary: number line diagram equally-spaced whole numbers addition sum subtraction difference length measurement number sentence

Resources:

Cluster 3: Work with time and money.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.3.7	Tell and write time from analog and digital clocks to the nearest five minutes. *Cognitive Complexity:* Level 1: Recall	• Time can be stated in five minute intervals. **The student is able to:** • Tell and write time to the nearest five minutes on digital and analog clocks.	• I can tell and write time to the nearest five minutes on different styles of clocks. • I can use a.m. and p.m. when telling and writing time.
Key Vocabulary: analog clock digital clock a.m. and p.m. minute hour parts of the clock (hour and minute hand)			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.3.8	Solve one-and two steps word problems involving dollar bills(single, fives, tens, twenties, and hundreds) or coins(quarters, dimes nickels, and pennies) using $ and ¢ symbols appropriately. Word problems may involve addition, subtraction, and equal groups situations[1]. Example: The cash register shows that the total for your purchase is 59¢. You gave the cashier three quarters. How much change should you receive form the cashier? a. Identify the value of coins and paper currency. b. Compute the value of any combination of coins within one dollar. c. Compute the value of any combinations of dollars(e.g., If you have three ten-dollars bills, one five-dollars bill, and tow one-dollar bills, how much money do you have?). d. Relate the value of pennies, nickels, dimes, and quarters to other coins and to the dollar (e.g., There are five nickels in one quarter. There are two and a half dimes in one quarter. There are twenty nickels in one dollar). ([1]See Table1 at the end of this document) *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• They can use a variety of coins and bills to solve word problems. • Bills and coins have standard values. • Symbols and decimals display monetary value. • The same amount of money can usually be shown with different combinations of coins and/or bills. **The student is able to:** • Count an assortment of like or unlike coins and/or bills • Find the appropriate coins to represent a given amount. • Recognize what operation is required to solve the word problem involving money. • Write the corresponding symbols ($ and ¢) to show the appropriate amount.	• I can solve story problems by using dollar bills, quarters, dimes, nickels, and pennies. • I can use the $ and ¢ symbols when solving money problems. • I can count different combinations of coins and bills. • I can show many different ways to make the same value.
Key Vocabulary: word problems, dollar bills, quarters, dimes, nickels, pennies, symbol, dollar sign, cent sign, value, amount, decimal, money, currency, adding, subtracting, counting on			
Resources:			

Cluster 4: Represent and interpret data.

MAJOR CLUSTER

Don't…Sort clusters from Major to Supporting, and then teach them in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.4.9	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Objects can be measured by any equal unit. • Line plots are one standard way to represent accurate lengths (rulers are accurate measurements, where hands vary in size). **The student is able to:** • Measure an object with standard units. • Represent data on a line plot (ruler). • Measure the same object with various units (ex. measure a pencil with paperclips then unifix cubes, measure with inches and centimeters).	• I can measure lengths of objects. • I can use many items to measure the same object. • I can measure to the closest number on a line plot. (ex. ruler, yardstick, measuring tape. etc.)

Key Vocabulary: measurement, length, whole, unit, line plot, horizontal

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.4.10	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Graphs represent information gathered from a group. • Graphs can be used to organize information. • Graphs represent data which can be used to help solve various problems. **The student is able to:** • Collect data from a group. • Draw bar/picture graph template (lines, title, numbers). • Record data as a bar/picture graph with a single-unit scale. • Interpret data from a graph to solve simple problems (take-apart, compare, put-together).	• I can create a picture graph with four different choices. • I can create a bar graph with four different choices. • I can solve problems by using information from a simple bar graph.

Key Vocabulary: picture graph, bar graph, data, single-unit scale

Resources:

BODY OF KNOWLEDGE: GEOMETRY

Cluster 1: Reason with shapes and their attributes.

SUPPORTING CLUSTER

Don't…Sort clusters from Major to Supporting, and then teach them in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Standard Identifier	Standard and Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.G.1.1	Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. *Cognitive Complexity:* Level 1: Recall	• The name of a shape is determined by its specific attributes. • Triangles, quadrilaterals, pentagons, hexagons and cubes each have a defining number of angles and faces/sides. **The student is able to:** • Recognize and draw shapes when given the attributes such as angles and faces. • Identify and name triangles, quadrilaterals, pentagons, hexagons and cubes.	• I can name and draw shapes for the given number of angles and faces. • I can recognize and name triangles, quadrilaterals, pentagons, hexagons, and cubes.
Key Vocabulary: faces, angle, attribute, triangle, quadrilateral, pentagon, hexagon, cube			
Resources:			

Standard Identifier	Standard and Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.G.1.2	Partition a rectangle into rows and columns of same-size squares and count to find the total number of them. *Cognitive Complexity:* Level 1: Recall	• Rectangles can be partitioned into equal parts. • Rows and columns is a quick and effective way to partition/divide a shape. **The student is able to:** • Partition a rectangle into equal squares. • Count the number of equal squares needed to cover a rectangle. • Using a given rectangle that has been partitioned into equal squares, count the number of squares in each row/column to find the total number.	• I can partition/divide a rectangle into equal squares. • I can count the number of squares needed to fill a rectangle.
Key Vocabulary: rectangle, square, partition, divide, equal, row, column			
Resources:			

Standard Identifier	Standard and Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.G.1.3	Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves, thirds, half of, a third of,* etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape. *Cognitive Complexity:* Level 1: Recall	• Shapes can be divided into equal shares in various ways. • Equal shares can be called halves, thirds, fourths, etc. **The student is able to:** • Identify if a circle or rectangle has been divided into equal or unequal shares. • Partition/divide a circle or rectangle into two, three, or four equal shares. • Describe the whole as two halves, three thirds, or four fourths. • Divide a circle or rectangle into equal-sized parts in different ways.	• I can figure out if a shape has been divided into equal or unequal parts. • I can partition/divide circles and rectangles into two, three, or four equal parts. • I can describe the whole as two halves, three thirds, or four fourths. • I can partition/divide a square or rectangle into equal parts in different ways.
Key Vocabulary: partition, circle, rectangle, equal shares, unequal, whole, half, third, fourth			
Resources:			

Math Vocabulary			
Comparing	Equation	Symbol	Unknown
Sum	Digit	Addition	Subtraction
Odd	Even	Addend	Total
Array	Expanded form	Base-ten	Place value
Strategy	Compose	Decompose	Measure
Length	Names of measurement tools	Estimate	Inches
Unit	meters	centimeters	feet
Point	Difference	Analog	Digital
Data	Line plot	Horizontal scale	Picture graph
Bar graph	Attribute	Angle	Face
Triangle	Quadrilateral	Pentagon	Hexagon
Cube	Square	Row	Column
Rectangle	Partition	Circle	Equal shares
Halves	Thirds	Half of	A third of
Fourths	whole		

Sample Vocabulary Categories:

Geometry	Shares	Measurement	Money
Triangle	Thirds	Inches	Dollar
Cube	Fourths	Fee	Quarter
Rectangle	Halves	Measure	Dime
Square	Equal shares	unit	Cent
Hexagon	A third of		penny

Second Grade MATH Pacing Guide

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Overarching Concepts	Operations and Algebraic thinking; Number and operations in base 10; *ongoing development of automaticity of recall for basic addition and subtraction facts*	Practice 2 and 3 digit numbers and concepts. *ongoing development of automaticity of recall for basic addition and subtraction facts*	Practice of 3-digit concepts, measurements, data and geometry; *ongoing development of automaticity of recall for basic addition and subtraction facts*	Measurement and Data; *mastery of automaticity of recall for basic addition and subtraction facts*
Standards/ Learning Targets with Aligned Resources	MACC.2.OA.3.3 MACC.2.NBT.1.2 MACC.2.NBT.1.3 **Resource:** *Chapter 1* MACC.2.OA.1.a MACC.2.OA.1.1 MACC.2.OA.2.2 MASS.2.OA.3.4 **Resource:** *Chapter 3* MACC.2.NBT.2.5 MACC.2.NBT.2.6 MACC.2.NBT.2.9 **Resource:** *Chapter 4*	MAFS.2.NBT.1.1 MAFS.2.NBT.1.3 MAFS.2.NBT.1.4 MAFS.2.NBT.1.4 MAFS.2.NBT.2.8 **Resource:** *Chapter 2* MAFS.2.OA.1.1 MAFS.2.OA.1.a MAFS.2.NBT.2.5 MAFS.2.NBT.2.9 **Resource:** *Chapter 5*	MAFS.2.NBT.2.7 **Resource:** *Chapter 6* MAFS.2.6.1.1 **Resource:** *Chapter 10* MAFS.2.6.1.1 MAFS.2.6.1.2 MAFS.2.6.1.3 **Resource:** *Chapter 11*	MAFS.2.MD.3.7 MAFS.2.MD.3.8 **Resource:** *Chapter 7* MAFS.2.MD.1.1 2.MD.1.2 2.MD.1.3 2.MD.1.4 2.MD.2.5 2.MD.2.6 2.MD.2.9 **Resource:** *Chapter 8* MAFS.MD.1.1 MD.1.2 MD.1.3 MD.1.4 MD.2.5 MD.2.6 **Resource:** *Chapter 9*
High-Yield Routine(s) (Refer to Book)	**Today's Numbers**- Start with first 10 minutes of the 90 minute block. Teachers will choose one out of the 10 options each day.	**Number Lines**- Have students use to show addition, subtraction, skip counting, even, odd	**How do you know?-** Even, odd, shape attributes, equivalency	**Alike and Different-** Venn-diagram, fractions, shapes, numbers, digits, data, clocks, graphs(2)
Target Vocabulary	• Place Value • Subtraction • Base Tens • Fluently • Even • Odd • Digits	• Fact Families • Hundred • Represented • Concrete • Pictorial • Model • Thousand	• Strategies • Place Value • Decompose Numbers • Compose Numbers • Concrete • Regrouping • Hundreds	• Analog Clock • Digital Clock • A.M/ P.M • Minute/ Hour hands on the clock • Word Problems • Dollar Bills • Quarters

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
	• Addition • Pattern • Equation • Equivalent • Expanded • Form • Sums • Skip Counting • Addends • Unknown • Doubles • Differences • Arrays • Row • Tens • Ones • Regroup	• Expanded • Form • Make a Model • Less Than • Greater Than • Equal To • Break Apart • Difference • A Logarithm • Digit • Horizontal • Vertical • Diagram • Symbol • Multi-step	• Tens • Ones • Survey • Data • Tally Chart • Tally Mark • Picture Graph • Key • Bar Graph • Single Unit Scale • Faces • Angle • Attribute • Triangle, Quadrilateral, Pentagon, Hexagon, Cube, Rectangle, Square • Partition, Divide • Equal • Row, Column • Rectangular Prism, Sphere, Cylinder • Face • Edge • Vertex • Vertices • Side • Halves, Thirds, Fourths, parts, whole • Equal	• Dimes • Nickels • Pennies • Symbols • Dollar sign • Cent sign • Value • Amount • Decimal • Money • Currency • Adding • Subtracting • Measurement • Length • Whole Unit • Line Plot • Horizontal • Comparison • Standard Units • Foot, Inch, Yard • Meter, Centimeter • Estimation • Difference • Addition • Unknown • Represent
Essentials to Remember	*Be sure to supplement MAFS.2.OA.1.a in chapter 3. Provide extra materials for students to use as manipulatives. Have students explain their answers. *Students are expected to have complete automaticity of recall of basic addition/subtraction facts by the end of the year.*	Make sure to relate concepts of the number line and equal iterations to a ruler. *Students are expected to have complete automaticity of recall of basic addition/subtraction facts by the end of the year.*	Relate fractions to the clock and to money. *Use MAFS.2.OA.1.a in this chapter as well. *Students are expected to have complete automaticity of recall of basic addition/subtraction facts by the end of the year.*	*MAFS.2.MD.1.4- found in both chapters. Be sure to supplement in chapter 8 and 9. *May want to practice elapsed time in Ch.7.

Table 1. Common addition and subtraction situations.[6]

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

	total Unknown	addend Unknown	Both addends Unknown[1]
Put together/ take apart[2]	Three red apples and two green apples are on the table. How many apples are on the table? 3 + 2 = ?	Five apples are on the table. Three are red and the rest are green. How many apples are green? 3 + ? = 5, 5 – 3 = ?	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 5 = 0 + 5, 5 = 5 + 0 5 = 1 + 4, 5 = 4 + 1 5 = 2 + 3, 5 = 3 + 2

	difference Unknown	Bigger Unknown	Smaller Unknown
Compare[3]	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? 2 + ? = 5, 5 – 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? 2 + 3 = ?, 3 + 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? 5 – 3 = ?, ? + 3 = 5

[1]These take apart situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean makes or results in but always does mean is the same number as.

[2]Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation, especially for small numbers less than or equal to 10.

[3]For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using more for the bigger unknown and using less for the smaller unknown). The other versions are more difficult.

[6]Adapted from Box 2-4 of National Research Council (2009, op. cit., pp. 32, 33).