COMMON CORE State Standards

DECONSTRUCTED for CLASSROOM IMPACT

SECOND GRADE

MATHEMATICS

The COMMON CORE Institute

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Introduction

The Common Core Institute is pleased to offer this grade-level tool for educators who are teaching with the Common Core State Standards.

The Common Core Standards Deconstructed for Classroom Impact is designed for educators by educators as a two-pronged resource and tool 1) to help educators increase their depth of understanding of the Common Core Standards and 2) to enable teachers to plan College & Career Ready curriculum and classroom instruction that promotes inquiry and higher levels of cognitive demand.

What we have done is not all new. This work is a purposeful and thoughtful compilation of preexisting materials in the public domain, state department of education websites, and original work by the Center for College & Career Readiness. Among the works that have been compiled and/or referenced are the following: Common Core State Standards for Mathematics and the Appendix from the Common Core State Standards Initiative; Learning Progressions from The University of Arizona's Institute for Mathematics and Education, chaired by Dr. William McCallum; the Arizona Academic Content Standards; the North Carolina Instructional Support Tools; and numerous math practitioners currently in the classroom.

We hope you will find the concentrated and consolidated resource of value in your own planning. We also hope you will use this resource to facilitate discussion with your colleagues and, perhaps, as a lever to help assess targeted professional learning opportunities.

Understanding the Organization

The Overview acts as a quick-reference table of contents as it shows you each of the domains and related clusters covered in this specific grade-level booklet. This can help serve as a reminder of what clusters are part of which domains and can reinforce the specific domains for each grade level.

Key Changes identifies what has been moved to and what has been moved from this particular grade level, as appropriate. This section also includes **Critical Areas of Focus**, which is designed to help you begin to approach how to examine your curriculum, resources, and instructional practices. A review of the **Critical Areas of Focus** might enable you to target specific areas of professional learning to refresh, as needed.

Math Fluency Standards	
K	Add/subtract within 5
1	Add/subtract within 10
2	Add/subtract within 20 Add/subtract within 100 (pencil & paper)
3	Multiply/divide within 100 Add/subtract within 1000
4	Add/subtract within 1,000,000
5	Multi-digit multiplication
6	Multi-digit division Multi-digit decimal operations
7	Solve $px + q = r$, $p(x + q) = r$
8	Solve simple 2 x 2 systems by inspection

For each domain is the domain itself and the associated clusters. Within each domain are sections for each of the associated clusters. The cluster-specific content can take you to a deeper level of understanding. Perhaps most importantly, we include here the **Learning Progressions.** The **Learning Progressions** provide context for the current domain and its related standards. For any grade except Kindergarten, you will see the domain-specific standards for the current

grade in the center column. To the left are the domain-specific standards for the preceding grade and to the right are the domain-specific standards for the following grade. Combined with the **Critical Areas of Focus,** these Learning Progressions can assist you in focusing your planning.

For each cluster, we have included four key sections: Description, Big Idea, Academic Vocabulary, and Deconstructed Standard.

The cluster **Description** offers clarifying information, but also points to the **Big Idea** that can help you focus on that which is most important for this cluster within this domain. The **Academic Vocabulary** is derived from the cluster description and serves to remind you of potential challenges or barriers for your students.

Each standard specific to that cluster has been deconstructed. There **Deconstructed Standard** for each standard specific to that cluster and each **Deconstructed Standard** has its own subsections, which can provide you with additional guidance and insight as you plan. Note the deconstruction drills down to the sub-standards when appropriate. These subsections are:

- Standard Statement
- Standard Description
- Essential Question(s)
- Mathematical Practice(s)
- DOK Range Target for Learning and Assessment
- Learning Expectations
- Explanations and Examples

As noted, first are the **Standard Statement** and **Standard Description**, which are followed by the **Essential Question(s)** and the associated **Mathematical Practices**. The **Essential Question(s)** amplify the **Big Idea**, with the intent of taking you to a deeper level of understanding; they may also provide additional context for the **Academic Vocabulary**.

The **DOK Range Target for Learning and Assessment** remind you of the targeted level of cognitive demand. The **Learning Expectations** correlate to the DOK and express the student learning targets for student proficiency for KNOW, THINK, and DO, as appropriate. In some instances, there may be no learning targets for student proficiency for one or more of KNOW, THINK or DO. The learning targets are expressions of the deconstruction of the Standard as well as the alignment of the DOK with appropriate consideration of the Essential Questions.

The last subsection of the **Deconstructed Standard** includes **Explanations and Examples**. This subsection might be quite lengthy as it can include additional context for the standard itself as well as examples of what student work and student learning could look like. **Explanations and Examples** may offers ideas for instructional practice and lesson plans.

Standards for Mathematical Practice in Second Grade

Each of the explanations below articulates some of the knowledge and skills expected of students to demonstrate grade-level mathematical proficiency.

PRACTICE	EXPLANATION
Make sense and persevere in problem solving.	Students begin to develop effective dispositions toward problem solving. In learning situations offering informal and formal possibilities for solving problems, young children develop the ability to focus attention, take reasonable risks, try alternatives, exhibit self-regulation, and persevere (Copley, 2010). Using both verbal and nonverbal means, kindergarten students can begin to explain the meaning of a problem, look for ways to solve it, and determine if their thinking makes sense.
Reason abstractly and quantitatively.	Student makes sense of quantities and relationships while solving tasks, able to decontexualize and contextualize. Students are able to begin to apply the processes of reasoning to other areas of mathematics.
Construct viable arguments and critique the reasoning of others.	Students accurately use definitions and previously established solutions to construct viable arguments about mathematics and, during discussion, students can constructively critique the strategies and reasoning of their classmates.
Model with mathematics.	Students model real-life mathematical situations with a number sentence or an equation, and check to make sure their equation accurately matches the problem context. Students can use concrete manipulatives and pictorial representations to provide further explanation of the equation and can create an appropriate problem situation from an equation.
Use appropriate tools strategically.	Students have access to and use tools appropriately. Students also have experiences with educational technologies, such as calculators and virtual manipulatives. During classroom instruction, students have access to various mathematical tools as well as paper, and determine which tools are the most appropriate to use.
Attend to precision.	Students are increasingly more precise in their communication, calculations, and measurements. In all mathematical tasks, students communicate clearly, using grade-level appropriate vocabulary accurately as well as giving precise explanations and reasoning regarding their process of finding solutions.
Look for and make use of structure.	Students begin to look for patterns and structures in the number system and other areas of mathematics.
Look for and express regularity in repeated reasoning.	Students begin to look for regularity in problem structures when solving mathematical tasks. Students may begin to generalize and apply that strategy independently. Students begin to look for strategies to be more efficient in computations. Lastly, while solving all tasks, students accurately check for the reasonableness of their solutions during and after completing a task.

SECOND GRADE

LEXILE GRADE LEVEL BANDS: 420L TO 650L

OVERVIEW

Operations and Algebraic Thinking (OA)

- Represent and solve problems involving addition and subtraction.
- Add and subtract within 20.
- Work with equal groups of objects to gain foundations for multiplication.

Number and Operations in Base Ten (NBT)

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

Measurement and Data (MD)

- Measure and estimate lengths in standard units.
- Relate addition and subtraction to lenght
- Work with time and money
- Represent and interpret data

Geometry (G)

- Reason with shapes and their attributes.

Mathematical Practices (MP)

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

MB 2. Reason abstractly and quantitatively.

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

MB 4. Model with mathematics.

MB 5. Use appropriate tools strategically.

MB 6. Attend to precision.

MB 7. Look for and make use of structure.

MB 8. Look for and express regularity in repeated reasoning.

KEY CHANGES

NEW TO SECOND GRADE	▪ Addition with rectangular array (2.OA.4) ▪ Count within 1,000 by 5s, 10s, 100s (2.NBT.2) ▪ Mentally add and subtract by 10 & 100 (2.NBT.8) ▪ Measurement concepts (2.MD.2, 2.MD.4, 2.MD.5, 2.MD.6,) ▪ Money (2.MD.8) ▪ Line Plots, picture graphs, bar graphs (2.MD.9, 2.MD.10)
MOVED FROM SECOND GRADE	▪ Estimation while computing (1.01e, 1.04b) ▪ Temperature (2.01b) ▪ Cut and rearrange 2-D and 3-D figures (3.02) ▪ Symmetric and congruent figures (3.03a, 3.03b) ▪ Venn diagrams and pictographs (4.01) ▪ Probability (4.02) ▪ Repeating and growing patterns (5.01)

SECOND GRADE

LEXILE GRADE LEVEL BANDS: 420L TO 650L

KEY CHANGES

CRITICAL AREAS OF FOCUS

1. Extending understanding of base-ten notation

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. Building fluency with addition and subtraction.

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. Using standard units of measure.

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. Describing and analyzing shapes.

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.

DOMAIN:

OPERATIONS AND ALGEBRAIC THINKING (OA)

SECOND GRADE

MATHEMATICS

DOMAIN	**Operations and Algebraic Thinking (OA)**
CLUSTERS	**1. Represent and solve problems involving addition and subtraction.** **2. Add and subtract within 20.** **3. Work with equal groups of objects to gain foundations for multiplication.**

OPERATIONS AND ALGEBRAIC THINKING (OA)		
FIRST	**SECOND**	**THIRD**
EARLY EQUATIONS AND EXPRESSIONS		
EXPLORING ARITHMETIC AND GEOMETRIC PATTERNS/SEQUENCES	**EXPLORING ARITHMETIC AND GEOMETRIC PATTERNS/SEQUENCES**	**EXPLORING ARITHMETIC AND GEOMETRIC PATTERNS/SEQUENCES**
		3.OA.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.
Exploring Equations	**Exploring Equations**	**Exploring Equations**
		3.OA.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers.
1.OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false.		3.OA.8 Solve two-step word problems using the four operations (restricted to whole numbers) and apply rules for order of operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5×7.
MULTIPLICATION AND DIVISION		
UNDERSTANDING AND RELATING MULTIPLICATION AND DIVISION OPERATIONS	**UNDERSTANDING AND RELATING MULTIPLICATION AND DIVISION OPERATIONS**	**UNDERSTANDING AND RELATING MULTIPLICATION AND DIVISION OPERATIONS**
	2.OA.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.	3.OA.2 Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.
	2.MD.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.	3.OA.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
		3.OA.6 Understand division as an unknown-factor problem.

SECOND GRADE

LEXILE GRADE LEVEL BANDS: 420L TO 650L

OPERATIONS AND ALGEBRAIC THINKING (OA)

FIRST	SECOND	THIRD
MULTIPLICATION AND DIVISION		
MULTIPLICATION AND DIVISION PROPERTIES AND FACTS	**MULTIPLICATION AND DIVISION PROPERTIES AND FACTS**	**MULTIPLICATION AND DIVISION PROPERTIES AND FACTS**
		3.OA.5 Apply properties of operations as strategies to multiply and divide. Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56 (Distributive property.)
		3.OA.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
ADDITION AND SUBTRACTION		
ADDITION AND SUBTRACTION WITHIN 100	**ADDITION AND SUBTRACTION WITHIN 100**	**ADDITION AND SUBTRACTION WITHIN 100**
1.OA.4 Understand subtraction as an unknown-addend problem.		
1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).		
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.		

OPERATIONS AND ALGEBRAIC THINKING (OA)		
FIRST	**SECOND**	**THIRD**
ADDITION AND SUBTRACTION		
ADDITION AND SUBTRACTION WITHIN 100	**ADDITION AND SUBTRACTION WITHIN 100**	**ADDITION AND SUBTRACTION WITHIN 100**
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.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.		
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).		
1.OA.3 Apply properties of operations as strategies to add and subtract.		

SECOND GRADE

LEXILE GRADE LEVEL BANDS: 420L TO 650L

OPERATIONS AND ALGEBRAIC THINKING (OA)		
FIRST	**SECOND**	**THIRD**
ADDITION AND SUBTRACTION		
ADDITION AND SUBTRACTION WITHIN 1000	**ADDITION AND SUBTRACTION WITHIN 1000**	**ADDITION AND SUBTRACTION WITHIN 1000**
	2.NBT.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.	3.NBT.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
	2.OA.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.	
	2.OA.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.	
	2.OA.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.	
	2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	
	2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations.	
	2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations. Source: turnonccmath.net, NC State University College of Education	

CLUSTER :	**1. Represent and solve problems involving addition and subtraction. (OA)**
BIG IDEA:	**Addition, Subtraction, Multiplication, and Division can be used with models, strategies, and their relationships with one another to solve real-world problems.**
ACADEMIC VOCABULARY:	**Add, subtract, more, less, equal, equation, putting together, taking from, taking apart, addend.**

STANDARD AND DECONSTRUCTION

2.OA.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.**
DESCRIPTION	Second Grade students extend their work with addition and subtraction word problems in two major ways. First, they represent and solve word problems within 100, building upon their previous work to 20. In addition, they represent and solve one and two-step word problems of all three types (Result Unknown, Change Unknown, Start Unknown).

One-step word problems use one operation. Two-step word problems use two operations which may include the same operation or opposite operations.

One Step Word Problem One Operation	**Two Step Word Problem** Two Operations, Same	**Two Step Word Problem** Two Operations, Opposite
There are 15 stickers on the page. Brittany put some more stickers on the page. There are now 22 stickers on the page. How many stickers did Brittany put on the page? 15 + ☐ = 22 22 - 15 = ☐	There are 9 blue marbles and 6 red marbles in the bag. Maria put in 8 more marbles. How many marbles are in the bag now? 9 + 6 + 8 = ☐	There are 9 peas on the plate. Carlos ate 5 peas. Mother put 7 more peas on the plate. How many peas are on the plate now? 9 - 5 + 7 = ☐

Two-Step Problems: Because Second Graders are still developing proficiency with the most difficult subtypes (shaded in white in Table 1 at end of the glossary): *Add To/Start Unknown; Take From/Start Unknown; Compare/Bigger Unknown; and Compare/Smaller Unknown,* two-step problems do not involve these sub-types (Common Core Standards Writing Team, May 2011). Furthermore, most two-step problems should focus on single-digit addends since the primary focus of the standard is this problem-type.

DESCRIPTION (continued)

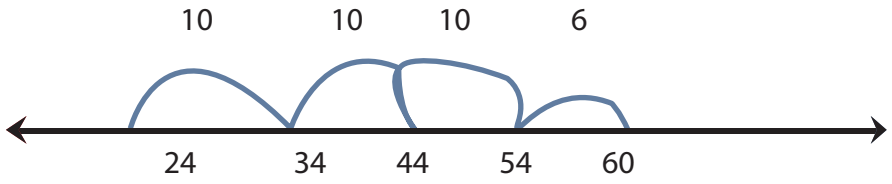
As second grade students solve one-and two-step problems, they use manipulatives such as snap cubes, place value materials (groupable and pre-grouped), ten frames, etc.; create drawings of manipulatives to show their thinking; or use number lines to solve and describe their strategies. They then relate their drawings and materials to equations. By solving a variety of addition and subtraction word problems, second grade students determine the unknown in all positions (Result Unknown, Change Unknown, and Start Unknown). Rather than a letter ("n"), boxes or pictures are used to represent the unknown number. For example:

Problem Type: Add To		
There are 29 students on the playground. Then 18 more students showed up. *How many students are there now?* 29 + 18 = ☐	There are 29 students on the playground. Some more students show up. There are now 47 students. *How many students came?* 29 + ☐ = 47	There are some students on the playground. Then 18 more students came. There are now 47 students. *How many students were on the playground at the beginning?* ☐ + 18 = 47

Second Graders use a range of methods, often mastering more complex strategies such as making tens, doubles, and near-doubles for problems involving addition and subtraction within 20. Moving beyond counting and counting-on, second grade students apply their understanding of place value to solve problems.

One Step Example: Some students are in the cafeteria 24 more students came in. Now there are 60 students in the cafeteria. How many were in the cafeteria to start with? Use drawings and equations to show your thinking.

Student A: I read the equation and thought about how to write it with numbers. I thought, "What and 24 makes 60?" So, my equation for the problem is ☐ + 24 = 60. I Used a number line to solve it.

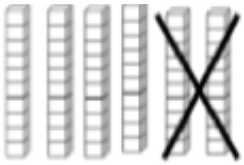


DESCRIPTION
(continued)

Student B: I read the equation and thought about how to write it with numbers. I thought, "There are 60 total. I know the 24. So, what is 60 - 24? " So, my equation for the problem is 60 - 24 = □.

I used place value blocks to solve it.

I started with 60 and took 2 tens away



I needed to take 4 more away. So, I broke up a ten into ten ones. Then, I took 4 away.

That left me with 36. So, 36 students were in the cafeteria at the beginning.

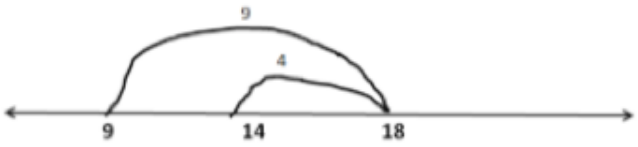
60 - 24 = 36

Two-Step Example: There are 9 students in the cafeteria. 9 more students come in. After a few minutes, some students leave. There are now 14 students in the cafeteria. How many students left the cafeteria? Use drawings and equations to show your thinking.

Student A: I read the equation and though about how to write it with numbers: 9 +9 -□= 14.

I used a number line to solve it. I started at 9 and took a jump of 9. I landed on 18.
Then, I jumped back 4 to get to 14. So, overall, I took 4 jumps. 4 students left the cafeteria.

Student B: I read the equation and though about how to write it with numbers:
9 + 9 - =14. I used doubles to solve it. I thought about double 9s. 9 + 9 is 18.
I knew that I only needed 14. So, I took 4 away, since 4 and 4 is eight. So, 4 students left the cafeteria.

DESCRIPTION (continued)	**Student A:** I read the equation and though about how to write it with numbers: 9 +9 -□= 14. I used a number line to solve it. I started at 9 and took a jump of 9. I landed on 18. Then, I jumped back 4 to get to 14. So, overall, I took 4 jumps. 4 students left the cafeteria.  **Student B:** I read the equation and though about how to write it with numbers: 9 + 9 -□=14. I used doubles to solve it. I thought about double 9s. 9 + 9 is 18. I knew that I only needed 14. So, I took 4 away, since 4 and 4 is eight. So, 4 students left the cafeteria.
ESSENTIAL QUESTION(S)	How do I know a problem is addition or subtraction? How can I represent an addition or subtract problem using numbers? How do the known numbers in a problem help me to solve the unknown number?
MATHEMATICAL PRACTICE(S)	2.MP.2. Reason abstractly and quantitatively. 2.MP.1. Make sense of problems and persevere in solving them. 2.MP.3. Construct viable arguments and critique the reasoning of others. 2.MP.4. Model with mathematics. 2.MP.5. Use appropriate tools strategically. 2.MP.8. Look for and express regularity in repeated reasoning.
DOK Range Target for Instruction & Assessment	☒ 1 ☒ 2 ☐ 3 ☐ 4

Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills and procedures	Tasks assessing expressing mathematical reasoning	Tasks assessing modeling applications
Students should be able to:	Identify the unknown in an addition or subtraction word problem.	Determine operation needed to solve addition and subtraction problems in situations including add to, take from, put together, take apart, and compare	Use drawings or equations to represent one- and two-step word problems. Add and subtract within 100 to solve one-step word problems with unknowns in all positions. Write an addition and subtraction equation with a symbol for the unknown.

EXPLANATIONS AND EXAMPLES

Word problems that are connected to students' lives can be used to develop fluency with addition and subtraction. Table 1 describes the four different addition and subtraction situations and their relationship to the position of the unknown.

TABLE 1

Examples:

• Take From example: David had 63 stickers. He gave 37 to Susan. How many stickers does David have now?

63 – 37 = ☐

• Add To example: David had $37. His grandpa gave him some money for his birthday. Now he has $63. How much money did David's grandpa give him? $37 + ☐ = $63

• Compare example: David has 63 stickers. Susan has 37 stickers. How many more stickers does David have than Susan? 63 – 37 = ☐

• Even though the modeling of the two problems above is different, the equation, 63 - 37 = ?, can represent both situations (How many more do I need to make 63?)

• Take From (Start Unknown) David had some stickers. He gave 37 to Susan. Now he has 26 stickers. How many stickers did David have before? ☐ - 37 = 26

It is important to attend to the difficulty level of the problem situations in relation to the position of the unknown.

• Result Unknown, Total Unknown, and Both Addends Unknown problems are the least complex for students.

• The next level of difficulty includes Change Unknown, Addend Unknown, and Difference Unknown

• The most difficult are Start Unknown and versions of Bigger and Smaller Unknown (compare problems).

Second graders should work on ALL problem types regardless of the level of difficulty. Mastery is expected in second grade. Students can use interactive whiteboard or document camera to demonstrate and justify their thinking.

This standard focuses on developing an algebraic representation of a word problem through addition and subtraction -the intent is not to introduce traditional algorithms or rules.

SECOND GRADE

LEXILE GRADE LEVEL BANDS: 420L TO 650L

CLUSTER :	**2. Add and subtract within 20. (OA)**
BIG IDEA:	**Understanding of basic facts and algorithms for all operations allow for the fluency needed to solve real-world problems efficiently and with precision.**
ACADEMIC VOCABULARY:	**odd, even, row, column, rectangular array, equal, addend.**

STANDARD AND DECONSTRUCTION

2.0A.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.**
DESCRIPTION	Building upon their work in First Grade, Second Graders use various addition and subtraction strategies in order to fluently add and subtract within 20.
ESSENTIAL QUESTION(S)	Why is it important to add and subtract facts in my head? How can math facts help me solve problems?
MATHEMATICAL PRACTICE(S)	2.MP.2. Reason abstractly and quantitatively. 2.MP.7. Look for and make use of structure. 2.MP.8. Look for and express regularity in repeated reasoning.
DOK Range Target for Instruction & Assessment	☒ 1 ☐ 2 ☐ 3 ☐ 4

Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	-Know mental strategies for addition and subtraction. -Know from memory all sums of two one-digit numbers	-Apply mental strategies to add and subtract fluently within 20 -Fluently add and subtract within 20.	

EXPLANATIONS AND EXAMPLES

This standard is strongly connected to all the standards in this domain. It focuses on students being able to fluently add and subtract numbers to 20. Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently. Mental strategies help students make sense of number relationships as they are adding and subtracting within 20. The ability to calculate mentally with efficiency is very important for all students. Mental strategies may include the following:

- Counting on
- Making tens (9 + 7 = 10 + 6)
- Decomposing a number leading to a ten (14 – 6 = 14 – 4 – 2 = 10 – 2 = 8)
- Fact families (8 + 5 = 13 is the same as 13 - 8 = 5)
- Doubles
- Doubles plus one (7 + 8 = 7 + 7 + 1)

However, the use of objects, diagrams, or interactive whiteboards, and various strategies will help students develop fluency

DOMAIN:	**3. Operations and Algebraic Thinking**
CLUSTER:	**Work with equal groups of objects to gain foundations for multiplication. (OA)**
BIG IDEA:	**Addition, Subtraction, Multiplication, and Division can be used with models, strategies, and their relationships with one another to solve real-world problems.**
ACADEMIC VOCABULARY:	**odd, even, row, column, rectangular array, equal, addend.**

STANDARD AND DECONSTRUCTION

2.0A.3	**write an equation to express an even number as a sum of two equal addends.**
DESCRIPTION (continued)	Second graders apply their work with doubles to the concept of odd and even numbers. Students should have ample experiences exploring the concept that if a number can be decomposed (broken apart) into two equal addends or doubles addition facts (e.g., 10 = 5 +5), then that number (10 in this case) is an even number. Students should explore this concept with concrete objects (e.g., counters, cubes, etc.) before moving towards pictorial representations such as circles or arrays.
ESSENTIAL QUESTION(S)	Why is a group of objects odd or even? How can I represent an equal group of objects using numbers and symbols?
MATHEMATICAL PRACTICE(S)	2.MP.2. Reason abstractly and quantitatively. 2.MP.3, Construct viable arguments and critique the reasoning of others. 2.MP.7. Look for and make use of structure. 2.MP.8. Look for and express regularity in repeated reasoning.
DOK Range Target for Instruction & Assessment	☒ 1 ☐ 2 ☐ 3 ☐ 4

Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Recognize that in groups of even numbers objects will pair up evenly.	Determine whether a group of objects is odd or even, using a variety of strategies. Generalize the fact that all even numbers can be formed from the addition of 2 equal addends.	Count a group of objects up to 20 by 2s. Write an equation to express a given even number as a sum of two equal addends.

EXPLANATIONS AND EXAMPLES

Students explore odd and even numbers in a variety of ways including the following: students may investigate if a number is odd or even by determining if the number of objects can be divided into two equal sets, arranged into pairs or counted by twos. After the above experiences, students may derive that they only need to look at the digit in the ones place to determine if a number is odd or even since any number of tens will always split into two even groups.

Example:

Students need opportunities writing equations representing sums of two equal addends, such as:

$2 + 2 = 4$, $3 + 3 = 6$, $5 + 5 = 10$, $6 + 6 = 12$, or $8 + 8 = 16$. This understanding will lay the foundation for multiplication and is closely connected to 2.OA.4.

The use of objects and/or interactive whiteboards will help students develop and demonstrate various strategies to determine even and odd numbers.

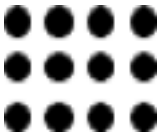
STANDARD AND DECONSTRUCTION

2.0A.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.
DESCRIPTION	Second graders use rectangular arrays to work with repeated addition, a building block for multiplication in third grade. A rectangular array is any arrangement of things in rows and columns, such as a rectangle of square tiles. Students explore this concept with concrete objects (e.g., counters, bears, square tiles, etc.) as well as pictorial representations on grid paper or other drawings. Due to the commutative property of multiplication, students can add either the rows or the columns and still arrive at the same solution.
ESSENTIAL QUESTION(S)	Why do arrays of objects help me find the total number? How can I represent an array of objects using numbers and symbols?
MATHEMATICAL PRACTICE(S)	2.MP.2. Reason abstractly and quantitatively. 2.MP.3, Construct viable arguments and critique the reasoning of others. 2.MP.7. Look for and make use of structure. 2.MP.8. Look for and express regularity in repeated reasoning.
DOK Range Target for Instruction & Assessment	☒ 1 ☒ 2 ☐ 3 ☐ 4

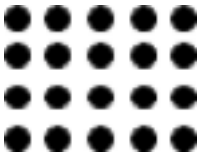
Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Write an equation with repeated equal addends from an array.	Generalize the fact that arrays can be written as repeated addition problems. Solve repeated addition problems to find the number of objects using rectangular arrays .	

EXPLANATIONS AND EXAMPLES

Students may arrange any set of objects into a rectangular array. Objects can be cubes, buttons, counters, etc. Objects do not have to be square to make an array. Geoboards can also be used to demonstrate rectangular arrays. Students then write equations that represent the total as the sum of equal addends as shown below.



$4 + 4 + 4 = 12$



$5 + 5 + 5 + 5 = 20$

Interactive whiteboards and document cameras may be used to help students visualize and create arrays.

DOMAIN:

NUMBER & OPERATION IN BASE TEN (NBT)

SECOND GRADE

MATHEMATICS

DOMAIN:	**Number & Operations in Base Ten (NBT)**
CLUSTERS:	**1. Understand place value.** **2. Use place value understanding and properties of operations to add and subtract.**

NUMBER AND OPERATIONS IN BASE TEN		
FIRST	**SECOND**	**THIRD**
COUNTING		
Counting to 100 and Beyond	**Counting to 100 and Beyond**	**Counting to 100 and Beyond**
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.	2.NBT.2 Count within 1000; skip-count by 5s, 10s, and 100s.	
	2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number-names, and expanded form.	
PLACE VALUE AND DECIMALS		
Two-digit Whole Numbers	**Two-digit Whole Numbers**	**Two-digit Whole Numbers**
1.NBT.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.		
1.NBT.2.a 10 can be thought of as a bundle of ten ones, called a "ten."		
1.NBT.2.b The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.		
1.NBT.2.c The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).		
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 <.		
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.		

SECOND GRADE

LEXILE GRADE LEVEL BANDS: 420L TO 650L

NUMBER AND OPERATIONS IN BASE TEN		
FIRST	**SECOND**	**THIRD**
PLACE VALUE AND DECIMALS		
Two-digit Whole Numbers	**Two-digit Whole Numbers**	**Two-digit Whole Numbers**
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.		
Three-digit Whole Numbers	**Three-digit Whole Numbers**	**Three-digit Whole Numbers**
	2.NBT.1.a 100 can be thought of as a bundle of ten tens, called a "hundred."	3.NBT.1 Use place value understanding to round whole numbers to the nearest 10 or 100.
	2.NBT.1.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).	3.NBT.3 Multiply one-digit whole numbers by multiples of 10 in the range 10 - 90 (e.g., 9 x 80, 5 x 60) using strategies based on place value and properties of operations.
	2.NBT.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	
	2.NBT.8 Mentally add 10 or 100 to a given number 100 - 900, and mentally subtract 10 or 100 from a given number 100 - 900.	
ADDITION AND SUBTRACTION		
Addition and Subtraction Within 100	**Addition and Subtraction Within 100**	**Addition and Subtraction Within 100**
1.OA.4 Understand subtraction as an unknown-addend problem.		
1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).		

NUMBER AND OPERATIONS IN BASE TEN		
FIRST	**SECOND**	**THIRD**
ADDITION AND SUBTRACTION		
Addition and Subtraction Within 100	**Addition and Subtraction Within 100**	**Addition and Subtraction Within 100**
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.		
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.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.		
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).		
1.OA.3 Apply properties of operations as strategies to add and subtract.		

SECOND GRADE

LEXILE GRADE LEVEL BANDS: 420L TO 650L

NUMBER AND OPERATIONS IN BASE TEN		
FIRST	**SECOND**	**THIRD**
ADDITION AND SUBTRACTION		
Addition and Subtraction Within 1000	**Addition and Subtraction Within 1000**	**Addition and Subtraction Within 1000**
	2.NBT.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.	3.NBT.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
	2.OA.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.	
	2.OA.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.	
	2.OA.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.	
	2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	
	2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations.	
	2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.	
1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).		

NUMBER AND OPERATIONS IN BASE TEN		
FIRST	**SECOND**	**THIRD**
MULTIPLICATION AND DIVISION		
Understanding and Relating Multiplication and Division Operations	**Understanding and Relating Multiplication and Division Operations**	**Understanding and Relating Multiplication and Division Operations**
	2.OA.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.	3.OA.1 Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5×7.
		3.OA.2 Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.
		3.OA.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
		3.OA.6 Understand division as an unknown-factor problem.
Multiplication and Division Properties and Facts	**Multiplication and Division Properties and Facts**	**Multiplication and Division Properties and Facts**
		3.OA.5 Apply properties of operations as strategies to multiply and divide. Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$ (Distributive property.)
		3.OA.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

SECOND GRADE

LEXILE GRADE LEVEL BANDS: 420L TO 650L

NUMBER AND OPERATIONS IN BASE TEN		
FIRST	**SECOND**	**THIRD**
EQUAPARTITIONING		
Equipartitioning Wholes	**Equipartitioning Wholes**	**Equipartitioning Wholes**
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 for these examples that decomposing into more equal shares creates smaller shares.		3.G.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.
	2.G.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	3.NF.1 Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.

NUMBERS AND OPERATIONS – FRACTIONS		
MULTIPLICATION AND DIVISION		
NUMBERS AND OPERATIONS FRACTIONS	**NUMBERS AND OPERATIONS FRACTIONS**	**NUMBERS AND OPERATIONS FRACTIONS**
	2.OA.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.	Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5×7.
		3.OA.2 Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.
		3.OA.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
		3.OA.6 Understand division as an unknown-factor problem.

NUMBER AND OPERATIONS IN FRACTIONS		
FIRST	**SECOND**	**THIRD**
MULTIPLICATION AND DIVISION		
Multiplication and Division Properties and Facts	**Multiplication and Division Properties and Facts**	**Multiplication and Division Properties and Facts**
		3.OA.5 Apply properties of operations as strategies to multiply and divide. Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56 (Distributive property.)
		3.OA.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
FRACTIONS		
Working with Unit Fractions	**Working with Unit Fractions**	**Working with Unit Fractions**
		3.NF.2.a Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line.
	Source: turnonccmath.net, NC State University College of Education	3.NF.2.b Represent a fraction a/b on a number line diagram by marking off a lengths of 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.

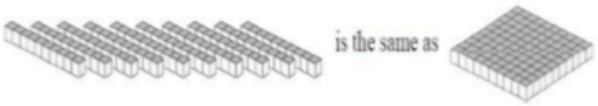
SECOND GRADE

LEXILE GRADE LEVEL BANDS: 420L TO 650L

CLUSTER:	1. Understand place value. (NBT)
DESCRIPTION:	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).
BIG IDEA:	The base-ten system provides a structure for expressing numbers using the numbers 0-9 that extends to operations, fractions, and decimals. Numeric patterns and relationships can be described by mathematical rules and extending them can solve real-world problems.Numbers, measures and expressions can be compared directly by their relative values.
ACADEMIC VOCABULARY:	hundreds, tens, ones, skip count, base-ten, number names to 1,000 (e.g., one, two, thirty, etc.), expanded form, greater than (>), less than (<), equal to (=), digit, compare.

STANDARD AND DECONSTRUCTION

2.NBT.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.**
DESCRIPTION (continued)	Second Grade students extend their base-ten understanding to hundreds as they view 10 tens as a unit called a "hundred". They use manipulative materials and pictorial representations to help make a connection between the written three-digit numbers and hundreds, tens and ones.



As in First Grade, Second Graders' understanding about hundreds also moves through several stages:

Counting By Ones; Counting by Groups & Singles; and Counting by Hundreds, Tens and Ones.

Counting By Ones: At first, even though Second Graders will have grouped objects into hundreds, 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.

Counting By Groups and Singles: While students are able to group objects into collections of hundreds, tens and ones and now tell how many groups of hundreds, 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.

Teacher: How many blocks do you have?

Student: I have 3 hundreds, 4 tens and 2 left-overs.

Teacher: Does that help you know how many? How many do you have?

Student: Let me see. 100,200,300… ten, twenty, thirty, forty. So that's 340 so far. Then 2 more 342.

DESCRIPTION
(continued)

Counting by Hundreds,Tens & Ones: Students are able to group objects into hundreds, tens and ones, tell how many groups and left-overs there are, and now use the information to tell how many. Occasionally, as this stage becomes fully developled, second graders rely on counting to "really" know the amount, even though they may have just counted the total by groups and left-overs.

Teacher: How many blocks do you have?
Student: I have 3 hundreds, 4 tens and 2 left- overs.
Teacher: Does that help you know how many? How many do you have?
Student: Yes, that means that I have 342.
Teacher: Are you sure?
Student: Um, Let me count just to make sure. 100,200,300,.....340,341,342. Yes. I was right. There are 342 blocks.

Understanding the value of the digits is more than telling the numbers of tens and hundreds. Second Grade students who truly understand the position and place value of the digits are also able to confidently model the number with some tyoe of visual representation. Others who seem like they know, because they can state which number is in the tens place, maynot truly know what each digit represents.

Example: Student Mastered
Teacher: What is this number? 726
Student: Seven hundred sixteen.
Teacher: Make this amount using your place value cards.
Student: Uses 7 hundred card, 2 ten cards and 6 singles.
Teacher: Pointing to the 6, Can you show me where you have this?
Student: Points to the 6 singles.
Teacher: Pointing to the 2, Can you show me where you have this?
Student: Points to the two tens.
Teacher: Pointing to the 7, Can you show me where you have this?
Student: Points to the 7 hundreds.

Example: Student Not Yet Mastered
Teacher: What is this number? 726
Student: Seven hundred sixteen.
Teacher: Make this amount using your place value cards.
Student: Uses 7 hundred card, 2 ten cards and 6 singles.
Teacher: Pointing to the 6, Can you show me where you have this?
Student: Points to the 6 singles.
Teacher: Pointing to the 2, Can you show me where you have this?
Student: Points to the two of the 6 singles (rather than two tens).

SECOND GRADE

LEXILE GRADE LEVEL BANDS: 420L TO 650L

ESSENTIAL QUESTION(S)	What does a digit's position in a number tell about its value?
MATHEMATICAL PRACTICE(S)	2.MP.2. Reason abstractly and quantitatively. 2.MP.7. Look for and make use of structure. 2.MP.8. Look for and express regularity in repeated reasoning.

SUBSTANDARD DECONSTRUCTED:	**2.NBT.1a : 100 can be thought of as a bundle of ten tens — called a "hundred.**		
DOK Range Target for Instruction & Assessment	☒ 1 ☐ 2 ☐ 3 ☐ 4		
Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Explain the value of each digit in a 3-digit number. Identify a bundle of 10 tens as a "hundred ".	Represent a three-digit number with hundreds, tens, and ones.	

SUBSTANDARD DECONSTRUCTED:	**2.NBT.1b: 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).**		
DOK Range Target for Instruction & Assessment	☒ 1 ☐ 2 ☐ 3 ☐ 4		
Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Represent 200, 300, 400, 500, 600, 700, 800, 900 with one, two, three, four, five, six, seven, eight, or nine hundreds and 0 tens and 0 ones.		

EXPLANATIONS AND EXAMPLES

- Understanding that 10 ones make one ten and that 10 tens make one hundred is fundamental to students' mathematical development. Students need multiple opportunities counting and "bundling" groups of tens in first grade. In second grade, students build on their understanding by making bundles of 100s with or without leftovers using base-ten blocks, cubes in towers of 10, ten frames, etc. This emphasis on bundling hundreds will support students' discovery of place value patterns.
- As students are representing the various amounts, it is important that emphasis is placed on the language associated with the quantity. For example, 243 can be expressed in multiple ways such as 2 groups of hundred, 4 groups of ten, and 3 ones, as well as 24 tens and 3 ones. When students read numbers, they should read in standard form as well as using place value concepts. For example, 243 should be read as "two hundred forty-three" as well as two hundreds, 4 tens, 3 ones.
- A document camera or interactive whiteboard can also be used to demonstrate "bundling" of objects. This gives students the opportunity to communicate their thinking.

STANDARD AND DECONSTRUCTION

2.NBT.2	Count within 1000; skip-count by 5s, 10s, and 100s.

DESCRIPTION

Second Grade students count within 1,000. Thus, students "count on" from any number and say the next few numbers that come afterwards. Example: What are the next 3 numbers after 498? 499, 500, 501. When you count back from 201, what are the first 3 numbers that you say? 200, 199, 198. Second grade students also begin to work towards multiplication concepts as they skip count by 5s, by 10s, and by 100s. Although skip counting is not yet true multiplication because students don't keep track of the number of groups they have counted, they can explain that when they count by 2s, 5s, and 10s they are counting groups of items with that amount in each group. As teachers build on students' work with skip counting by 10s in Kindergarten, they explore and discuss with students the patterns of numbers when they skip count. For example, while using a 100s board or number line, students learn that the ones digit alternates between 5 and 0 when skip counting by 5s. When students skip count by 100s, they learn that the hundreds digit is the only digit that changes and that it increases by one number.

ESSENTIAL QUESTION(S)

How does place value help me skip-count?

DOK Range Target for Instruction & Assessment

☒ 1 ☐ 2 ☐ 3 ☐ 4

Instructional Targets	Know: Concepts/Skills	Think	Do
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Count within 1000. Skip-count by 5s to 1000. Skip-count by 10s to 1000. Skip-count by 100s to 1000.		

EXPLANATIONS AND EXAMPLES

Students need many opportunities counting, up to 1000, from different starting points. They should also have many experiences skip counting by 5s, 10s, and 100s to develop the concept of place value.

Examples:

- The use of the 100s chart may be helpful for students to identify the counting patterns.
- The use of money (nickels, dimes, dollars) or base ten blocks may be helpful visual cues.
- The use of an interactive whiteboard may also be used to develop counting skills.

The ultimate goal for second graders is to be able to count in multiple ways with no visual support.

STANDARD AND DECONSTRUCTION

2.NBT.3	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.		
DESCRIPTION	Second graders read, write and represent a number of objects with a written numeral (number form or standard form). These representations can include snap cubes, place value (base 10) blocks, pictorial representations or other concrete materials. Please be cognizant that when reading and writing whole numbers, the word "and" should not be used (e.g., 235 is stated and written as "two hundred thirty-five). Expanded form (125 can be written as 100 + 20 + 5) is a valuable skill when students use place value strategies to add and subtract large numbers in 2.NBT.7.		
ESSENTIAL QUESTION(S)	How else can I represent a number using place value? How can place value help me solve problems?		
MATHEMATICAL PRACTICE(S)	2.MP.2. Reason abstractly and quantitatively. 2.MP.7 Look for and make use of structure. 2.MP.8 Look for and express regularity in repeated reasoning.		
DOK Range Target for Instruction & Assessment	☒ 1 ☐ 2 ☐ 3 ☐ 4		
Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	TTasks assessing modeling applications.
Students should be able to:	Know what expanded form means. Recognize that the digits in each place represent amounts of thousands, hundreds, tens, or ones. Read numbers to 1000 using base ten numerals. Read numbers to 1000 using number names. Read numbers to 1000 using expanded form. Write numbers to 1000 using base ten numerals. Write numbers to 1000 using number names. Write numbers to 1000 using expanded form.	Decompose numbers less than or equal to 10 into pairs in more than one way. Record decomposition of a number within 10 by a drawing or written equation.	

EXPLANATIONS AND EXAMPLES

Students need many opportunities reading and writing numerals in multiple ways.

Examples:

• Base-ten numerals	637	(standard form)
• Number names	six hundred thirty seven	(written form)
• Expanded form	600 + 30 + 7	(expanded notation)

When students say the expanded form, it may sound like this: "6 hundreds plus 3 tens plus 7 ones" OR 600 plus 30 plus 7."

DECONSTRUCTED STANDARD

2.NBT.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.

DESCRIPTION

Second Grade students will build on the work of 2.NBT.1 and 2.NBT.3 by examining the amount of hundreds, tens and ones in each number. When comparing numbers, students draw on the understanding that 1 hundred (the smallest three-digit number) is actually greater than any amount of tens and ones represented by a two-digit number. When students truly understand this concept, it makes sense that one would compare three-digit numbers by looking at the hundreds place first.

Students should have ample experiences communicating their comparisons in words before using symbols. Students were introduced to the symbols greater than (>), less than (<) and equal to (=) in First Grade and continue to use them in Second Grade with numbers within 1,000.

Example: Compare these two numbers. 452 __ 455

Student A
Place Value
452 has 4 hundreds 5 tens and 2 ones. 455 has 4 hundreds 5 tens and 5 ones. They have the same number of hundreds and the same number of thens, but 455 has 5 ones and 452 only has 2 ones. 452 is less than 455.

Student B
Counting
452 is less than 455. I know this because when I count up I say 452 before I say 455.
452<455
452 is less than 455

While students may have the skills to order more than 2 numbers, this Standard focuses on comparing two numbers and using reasoning about place value to support the use of the various symbols.

ESSENTIAL QUESTION(S)	Why is a number greater than, less than, or equal to another number? How does the place value in numbers help me compare?		
MATHEMATICAL PRACTICE(S)	2.MP.2. Reason abstractly and quantitatively. 2.MP.6. Attend to precision. 2.MP.7. Look for and make use of structure. 2.MP.8. Look for and express regularity in repeated reasoning.		
DOK Range Target for Instruction & Assessment	☒ 1 ☒ 2 ☐ 3 ☐ 4		
Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Know the value of each digit represented in a three-digit number. Know what >, <, and = symbols each represent .	Compare two three-digit numbers based on place value of each digit Use >, =, and < symbols to record the results of comparisons.	

EXPLANATIONS AND EXAMPLES

Students may use models, number lines, base ten blocks, interactive whiteboards, document cameras, written words, and/or spoken words that represent two three-digit numbers. To compare, students apply their understanding of place value. They first attend to the numeral in the hundreds place, then the numeral in tens place, then, if necessary, to the numeral in the ones place.

Comparative language includes but is not limited to: more than, less than, greater than, most, greatest, least, same as, equal to and not equal to. Students use the appropriate symbols to record the comparisons.

CLUSTER:	**2. Use place value understanding and properties of operations to add and subtract.**
DESCRIPTION:	**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.**
BIG IDEA:	**Addition, Subtraction, Multiplication, and Division can be used with models, strategies, and their relationships with one another to solve real-world problems.** **The base-ten system provides a structure for expressing numbers using the numbers 0-9 that extends to operations, fractions, and decimals.**
ACADEMIC VOCABULARY:	**fluent, compose, decompose, place value, digit, ten more, ten less, one hundred more, one hundred less, add, subtract, sum, equal, addition, subtraction.**

DECONSTRUCTED STANDARD VS. STANDARD AND DECONSTRUCTION

2.NBT.5	**Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the rela-tionship between addition and subtraction.**
DESCRIPTION	There are various strategies that Second Grade students understand when adding and subtracting within 100 (such as those listed in the standard). The standard algorithm of carrying or borrowing is neither an expectation nor a focus in Second Grade. Students use multiple 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 be-tween 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. Example: 67 + 25 = __

Place Value Strategy
I broke both 67 and 25 into tens and ones. 6 tens plus 2 ten equals 8 tens Then I added the ones. 7 ones plus 5 ones equals 12 ones. I then combined my tens and ones. 8 plus 12 ones equal 92.

Decomposiong into Tens:
I decided to start with 67 and break 25 apart. I knew I needed 3 more to get to 70, so I broke off a 3 from the 25. I then added my 20 from the 22 left and got to 90. I had 2 left. 90 plus 2 is 92. So, 67+25=92.

Commutative Property:
I broke 67 and 25 into tens and ones so I had to add 60+7+20+5. I added 60 and 20 first to get 80. Then I added 7 to get 87. Then I added 5 more. My answer is 92.

Decomposing into Tens:
I broke both 63 and 32 into tens and ones. I Know that 3 minus 2 is 1, so I have 1 left in the ones place. I know that 6 tens minus 3 tens is 3 tens, so I have 3 in my tens place. My answer has a 1 in the ones place and 3 in the tens place, so my answer is 31. 63-32=31

Think Addition:
I thought, '32 and what makes 63?' I know that I needed 30, since 30 and 30 is 60. So that got me to 62. I needed one more to get to 63. So, 30 and 1 is 31. 32+21=63

ESSENTIAL QUESTION(S)	Why is place value important when I add and subtract? Which strategy will help me solve this problem the best?
MATHEMATICAL PRACTICE(S)	2.MP.2. Reason abstractly and quantitatively. 2.MP.7. Look for and make use of structure. 2.MP.8. Look for and express regularity in repeated reasoning.
DOK Range Target for Instruction & Assessment	☒ 1 ☐ 2 ☐ 3 ☐ 4

Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Know strategies for adding and subtracting based on place value Know strategies for adding and subtracting based on properties of operations. Know strategies for adding and subtracting based on the relationship between addition and subtraction. Fluently add and subtract within 100.	Choose a strategy (place value, properties of operations, and /or the relationship between addition and subtraction) to fluently add and subtract within 100.	

EXPLANATIONS AND EXAMPLES

Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appro-priately, and skill in performing them flexibly, accurately, and efficiently. Students should have experiences solving problems written both horizontally and vertically. They need to communicate their thinking and be able to justify their strategies both verbally and with paper and pencil.

Addition strategies based on place value for 48 + 37 may include:

- Adding by place value: 40 + 30 = 70 and 8 + 7 = 15 and 70 + 15 = 85.
- Incremental adding (breaking one number into tens and ones):

  48 + 10 = 58, 58 + 10 = 68, 68 + 10 = 78, 78 + 7 = 85

- Compensation (making a friendly number): 48 + 2 = 50, 37 – 2 = 35, 50 + 35 = 85

Subtraction strategies based on place value for 81 - 37 may include:

- Adding up (from smaller number to larger number): 37 + 3 = 40, 40 + 40 = 80, 80 + 1 = 81, and 3 + 40 + 1 = 44.
- Incremental subtracting: 81 -10 = 71, 71 – 10 = 61, 61 – 10 = 51, 51 – 7 = 44
- Subtracting by place value: 81 – 30 = 51, 51 – 7 = 44

EXPLANATIONS AND EXAMPLES

Properties that students should know and use are:

• Commutative property of addition. (Example: 3 + 5 = 5 + 3)

• Associative property of addition. (Example: (2 + 7) + 3 = 2 + (7+3))

• Identity property of 0. (Example: 8 + 0 = 8)

Students in second grade need to communicate their understanding of why some properties work for some operations and not for others.

• Commutative Property: In first grade, students investigated whether the commutative property works with subtrac-tion. The intent was for students to recognize that taking 5 from 8 is not the same as taking 8 from 5. Students should also understand that they will be working with numbers in later grades that will allow them to subtract larger numbers from smaller numbers. This exploration of the commutative property continues in second grade.

• Associative Property: Recognizing that the associative property does not work for subtraction is difficult for students to consider at this grade level as it is challenging to determine all the possibilities.

DECONSTRUCTED STANDARD VS. STANDARD AND DECONSTRUCTION

2.NBT.6	Add up to four two-digit numbers using strategies based on place value and properties of operations.

DESCRIPTION

Second Grade students add a string of two-digit numbers (up to four numbers) by applying place value strategies and properties of operations.

Student A
Associative Property
I saw the 43 and 57 and added them first, I know 3 plus 7 equals 10, so when I added them 100 was my answer. Then I added 34 and had 134. Then I added 24 and had 158. 43+57+34+24=158

Student B
Place Value Strategies
I Broke up all of the numbers into tens and ones. First I added the tens. 40 +30+50+20=140

Then I added the ones. 3+4+7+4=18. That meant I had 1 ten and 8 ones. So, 140+10 is 150. 150 and 8 more is 158, So, 43+ 34+57+24=158

Student C
Place Value Strategies and Associative Property
I broke up all of the numbers into tens and ones. First I added the tens. 40+30+50+20. I changed the order of the numbers to make adding easier. I know that 30 plus 20 equals 50 and 50 more equals 100. Then I added the 40 and got 140. Then I added up the ones 3+4+7+4. I changed the order of the numbers to make adding easier. I know that 3 plus 7 equals 10 and 4 plus 4 equals 8. 10 plus 8 equals 18. I then combined my tens and ones. 140 plus 18(1 ten and 8 ones) equals 158.

ESSENTIAL QUESTION(S)

Why is place value important when I add and subtract?

Which strategy will help me solve this problem the best?v

MATHEMATICAL PRACTICE(S)

2.MP.2. Reason abstractly and quantitatively.

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

2.MP.8. Look for and express regularity in repeated reasoning.

DOK Range Target for Instruction & Assessment

☒ 1 ☐ 2 ☐ 3 ☐ 4

Instructional Targets	Know: Concepts/Skills	Think	Do
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Know strategies for adding two-digit numbers based on place value and properties of operations.	Use strategies to add up to four two-digit numbers.	

EXPLANATIONS AND EXAMPLES

Students demonstrate addition strategies with up to four two-digit numbers either with or without regrouping. Problems may be written in a story problem format to help develop a stronger understanding of larger numbers and their values.

Interactive whiteboards and document cameras may also be used to model and justify student thinking.

DECONSTRUCTED STANDARD VS. STANDARD AND DECONSTRUCTION

2.NBT.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.

DESCRIPTION

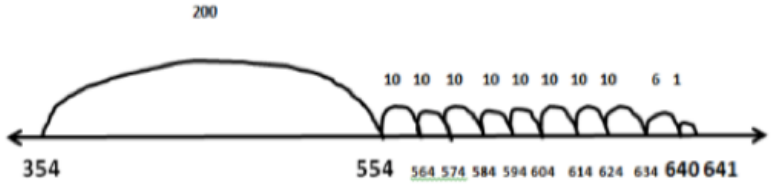
Second graders extend the work from 2.NBT.7 to two 3-digit numbers. Students should have ample experiences using concrete materials and pictorial representations to support their work.

This standard also references composing and decomposing a ten. This work should include strategies such as making a 10, making a 100, breaking apart a 10, or creating an easier problem. The standard algorithm of carrying or borrowing is not an expectation in Second Grade. Students are not expected to add and subtract whole numbers using a standard algorithm until the end of Fourth Grade.

Example: 354 + 287 = __

Student A

I started at 354 and jumped 200. I landed on 554. I then made 8 jumps of 10 and landed on 634. I then jumped 6 to land on 640.



Student B

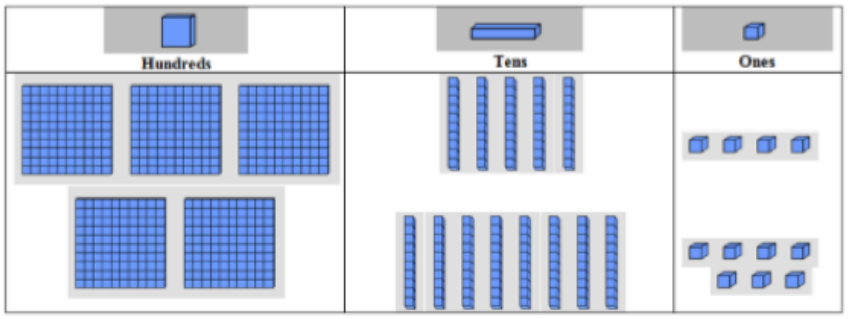
I used place value blocks and a place value mat. I broke all of the numbers and placed them on the place value mat.

I first added the ones. 4 + 7= 11

I then added the tens. 50 + 80= 130

I then added the hundreds. 300 + 200= 500

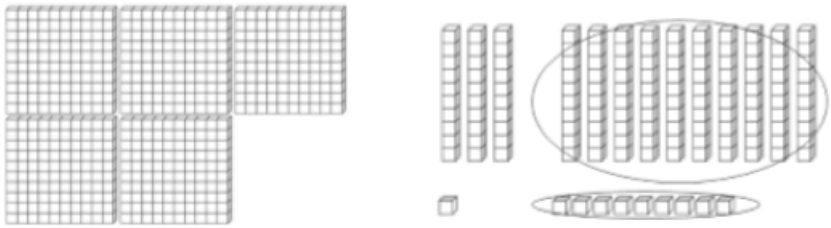
I then combined my answers. 500 + 130= 630. 630+11=641



DESCRIPTION
(continued)

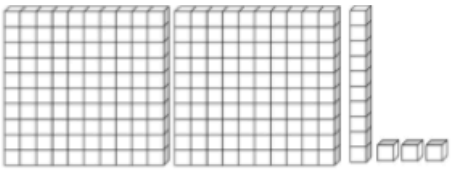
Student C

I used place value blocks. I made a pile of 354. I then added 287. That gave me 5 hundreds, 13 tens and 11 ones. I noticed that I could trade some pieces. I had 11 ones, and traded 10 ones for a ten. I then had 14 tens, so I traded 10 tens for a hundred. I ended up with 6 hundreds, 4 tens and 1 one. So, 354 + 287= 641



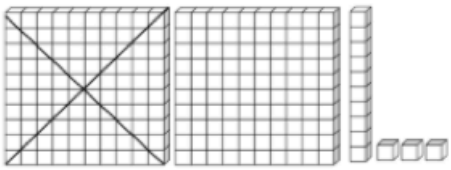
Example: 213-124 =___

I used place value blocks. I made a pile 213



I then startedd taking away blocks

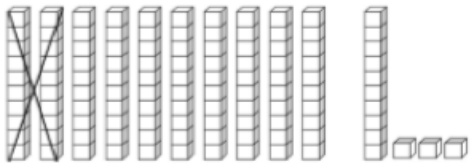
First, I took away a hundred which left me with 1 hundred and thirteen.



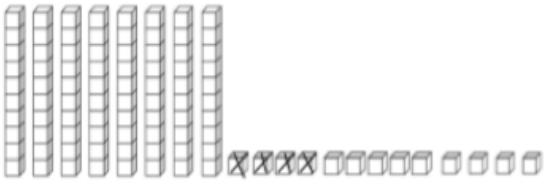
DESCRIPTION
(continued)

Now, I only need to take away 24.

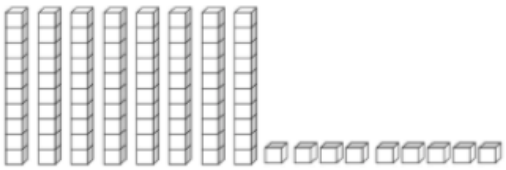
I need to take away 2 tens but I only had 1 ten so I traded in my last hundreds fo 10 tens. Then I took two tens away leaving me with no hundreds and 9 tens and 3 ones.



I then had to take 4 ones away but I only have 3 ones. I traded in a ten for 10 ones. I then took away 4 ones.



This left me with no hundreds, 8 tens, and 9 ones. My answer is 89. 213-124 = 89



ESSENTIAL QUESTION(S)	Why do I need to understand place value to add add and subtract 3-digit numbers? How can I show this addition or subtraction problem? Which strategy will help me solve this problem the best?
MATHEMATICAL PRACTICE(S)	2.MP.2. Reason abstractly and quantitatively. 2.MP.4. Model with mathematics. 2.MP.5. Use appropriate tools strategically. 2.MP.7. Look for and make use of structure. 2.MP.8. Look for and express regularity in repeated reasoning.
DOK Range Target for Instruction & Assessment	☒ 1 ☒ 2 ☐ 3 ☐ 4

Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Understand place value within 1000. Decompose any number within 1000 into hundreds, tens, and ones.	Choose an appropriate strategy for solving an addition or subtraction problem within 1000. Relate the chosen strategy (using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction) to a written method (equation) and explain the thinking used. Use composition and decomposition of hundreds and tens when necessary to add and subtract within 1000.	

EXPLANATIONS AND EXAMPLES

There is a strong connection between this standard and place value understanding with addition and subtraction of smaller numbers. Students may use concrete models or drawings to support their addition or subtraction of larger numbers. Strategies are similar to those stated in 2.NBT.5, as students extend their learning to include greater place values moving from tens to hundreds to thousands. Interactive whiteboards and document cameras may also be used to model and justify student thinking.

DECONSTRUCTED STANDARD VS. STANDARD AND DECONSTRUCTION

2.NBT.8	Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.
DESCRIPTION	Second Grade students mentally add or subtract either 10 or 100 to any number between 100 and 900. As teachers provide ample experiences for students to work with pre-grouped objects and facilitate discussion, second graders realize that when one adds or subtracts 10 or 100 that only the tens place or the digit in the hundreds place changes by 1. As the teacher facilitates opportunities for patterns to emerge and be discussed, students notice the patterns and connect the digit change with the amount changed. Opportunities to solve problems in which students cross hundreds are also provided once students have become comfortable adding and subtracting within the same hundred. Example Within the Same Hundred: What is 10 more than 218? What is 241 – 10? Example Across Hundreds: 293 + 10 = ☐. What is 10 less than 206? This standard focuses only on adding and subtracting 10 or 100. Multiples of 10 or multiples of 100 can be explored; however, the focus of this standard is to ensure that students are proficient with adding and subtracting 10 and 100 mentally.
ESSENTIAL QUESTION(S)	Why can I add or subtract 10 to a number easily? Why can I add or subtract 100 to a number easily? How will being able to add and subtract 10 or 100 for any number help me solve real-world problems?
MATHEMATICAL PRACTICE(S)	2.MP.2. Reason abstractly and quantitatively. 2.MP.7. Look for and make use of structure. 2.MP.8. Look for and express regularity in repeated reasoning.
DOK Range Target for Instruction & Assessment	☒ 1 ☐ 2 ☐ 3 ☐ 4

Instructional Targets	Know: Concepts/Skills	Think	Do
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Know place value within 1000.	Applyknowledge of place value to mentally add or subtract 10 or 100 to/from a given number 100-900.	

EXPLANATIONS AND EXAMPLES

Students need many opportunities to practice mental math by adding and subtracting multiples of 10 and 100 up to 900 using different starting points. They can practice this by counting and thinking aloud, finding missing numbers in a sequence, and finding missing numbers on a number line or hundreds chart. Explorations should include looking for relevant patterns.

Mental math strategies may include:

- Counting on; 300, 400, 500, etc.
- Counting back; 550, 450, 350, etc.

Examples:

- 100 more than 653 is ___ . (753)
- 10 less than 87 is ____ . (77)
- "Start at 248. Count up by 10s until I tell you to stop."

An interactive whiteboard or document camera may be used to help students develop these mental math skills.

DECONSTRUCTED STANDARD VS. STANDARD AND DECONSTRUCTION

2.NBT.9	Explain why addition and subtraction strategies work, using place value and the properties of operations .

DESCRIPTION

Second graders explain why addition or subtraction strategies work as they apply their knowledge of place value and the properties of operations in their explanation. They may use drawings or objects to support their explanation.

Once students have had an opportunity to solve a problem, the teacher provides time for students to discuss their strategies and why they did or didn't work.

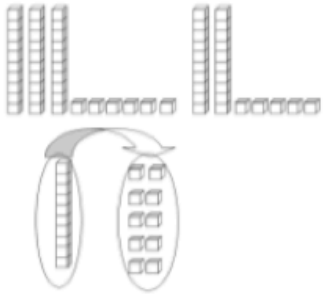
Example: There are 36 birds in the park. 25 more birds arrive. How many birds are there? Solve the problem and show your work.

Student A

I broke36 and 25 into tens and ones 30+ 6 + 20 +5. I can change the order of my numbers, since it doesn change any amounts, so I added 30 + 20 and got 50. Then I added 5 and 5 to make 10 and added it to the 50 so 50 and 10 more is 60. I added the one that was left over and got 61. So there are 61 birds in the park

Student B

I used place value blocks and made a pile of 36 and a pile of 25. Altogether, I had 5 tens and 11 ones. 11 ones. 11 ones is the same as on ten and one left over. So, I really had 6 rtens and 1 one. That makes 61.



Example: One of your classmates solved the problem 56 -34 =___ by writting " I know that I need to add 2 to the number 4 to get 6. I also know that I need to add 20 to 30 to get 20 to get 50. So, the answer is 22." Is their stragety correct? Explain why or why not?

Student: Well 20 + 30 is 50. And 5+5 is 10. So 50 + 10 is 60 too, but I did it a different way. I added 25 and 25 make 50. Then I added 5 more and got 55. Then, I added 5 more and got 60. We both have 60. I think that it doesnz't matter if you add the 20 first or last. You still get the same amount.

ESSENTIAL QUESTION(S)	Which strategy will help me solve this problem the best? Why did my strategy work to solve a problem? What could be another strategy I could have used to solve a problem?
MATHEMATICAL PRACTICE(S)	2.MP.2. Reason abstractly and quantitatively. 2.MP.3. Construct viable arguments and critique the reasoning of others. 2.MP.4. Model with mathematics. 2.MP.5. Use appropriate tools strategically. 2.MP.7. Look for and make use of structure. 2.MP.8. Look for and express regularity in repeated reasoning.
DOK Range Target for Instruction & Assessment	☒ 1 ☒ 2 ☐ 3 ☐ 4

Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Know addition and subtraction strategies using place value and properties of operations related to addition and subtraction.	Explain why addition and subtraction strategies based on place value and properties of operations work.	

EXPLANATIONS AND EXAMPLES

Students need multiple opportunities explaining their addition and subtraction thinking. Operations embedded within a meaningful context promote development of reasoning and justification.

Example:

Mason read 473 pages in June. He read 227 pages in July. How many pages did Mason read altogether?

• Karla's explanation: 473 + 227 = _____. I added the ones together (3 + 7) and got 10. Then I added the tens together (70 + 20) and got 90. I knew that 400 + 200 was 600. So I added 10 + 90 for 100 and added 100 + 600 and found out that Mason had read 700 pages altogether.

• Debbie's explanation: 473 + 227 = _____. I started by adding 200 to 473 and got 673. Then I added 20 to 673 and I got 693 and finally I added 7 to 693 and I knew that Mason had read 700 pages altogether.

• Becky's explanation: I used base ten blocks on a base ten mat to help me solve this problem. I added 3 ones (units) plus 7 ones and got 10 ones which made one ten. I moved the 1 ten to the tens place. I then added 7 tens rods plus 2 tens rods plus 1 tens rod and got 10 tens or 100. I moved the 1 hundred to the hundreds place. Then I added 4 hundreds plus 2 hundreds plus 1 hundred and got 7 hundreds or 700. So Mason read 700 pages.

Students should be able to connect different representations and explain the connections. Representations can include numbers, words (including mathematical language), pictures, number lines, and/or physical objects. Students should be able to use any/all of these representations as needed.

An interactive whiteboard or document camera can be used to help students develop and explain their thinking.

DOMAIN:

MEASUREMENT AND DATA (MD)

SECOND GRADE

MATHEMATICS

SECOND GRADE

LEXILE GRADE LEVEL BANDS: 420L TO 650L

DOMAIN	Measurement and Data (MD)
CLUSTERS	1. Measure and estimate lengths in standard units. 2. Relate addition and subtraction to length. 3. Work with time and money. 4. Represent and interpret data.

MEASUREMENT AND DATA		
FIRST	**SECOND**	**THIRD**
TIME AND MONEY		
Time	**Time**	**Time**
1.MD.3 Tell and write time in hours and half-hours using analog and digital clocks.	2.MD.7 Read and write time (digital and analog) to nearest 5 minutes.	3.MD.1 Read and write time to nearest minute and calculate time intervals.
Money	**Money**	**Money**
	2.MD.8 Solve word problems involving money (dollars, quarters, dimes, nickels, and pennies) including symbols.	
LENGTH, AREA, AND VOLUME		
Attributes, Measuring Length by Direct Comparison	**Attributes, Measuring Length by Direct Comparison**	**Attributes, Measuring Length by Direct Comparison**
1.MD.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.		
Length Measurement using Units and Tools	**Length Measurement using Units and Tools**	**Length Measurement using Units and Tools**
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.	2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	
	2.MD.2 Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.	

MEASUREMENT AND DATA		
FIRST	**SECOND**	**THIRD**
LENGTH, AREA, AND VOLUME		
Length Measurement using Units and Tools	**Length Measurement using Units and Tools**	**Length Measurement using Units and Tools**
	2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters.	
	2.MD.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.	
	2.MD.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.	
	2.MD.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.	
Area and Perimeter	**Area and Perimeter**	**Area and Perimeter**
		3.MD.5.b A plane figure that can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.
		3.MD.5.a A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.
		3.MD.6 Measure areas by counting unit squares (square cm, square m, square in, square ft., and improvised units).
		3.MD.7.a Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
		3.MD.7.b Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

MEASUREMENT AND DATA		
FIRST	**SECOND**	**THIRD**
LENGTH, AREA, AND VOLUME		
Area and Perimeter	**Area and Perimeter**	**Area and Perimeter**
		3.MD.7.c Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a × b and a × c. Use area models to represent the distributive property in mathematical reasoning.
		3.MD.7.d Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.
		3.MD.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters."
		3.MD.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (Excludes compound units such as cm3 and finding the geometric volume of a container.)

MEASUREMENT AND DATA		
FIRST	**SECOND**	**THIRD**
ELEMENTARY DATA AND MONITORING		
Attributes and Categories	**Attributes and Categories**	**Attributes and Categories**
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.		
Modeling with Data	**Modeling with Data**	Modeling with Data
	2.MD.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.	3.MD.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.
	2.MD.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. Source: turnonccmath.net, NC State University College of Education	3.MD.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units-whole numbers, halves, or quarters.

SECOND GRADE

LEXILE GRADE LEVEL BANDS: 420L TO 650L

CLUSTER :	**1. Measure and estimate lengths in standard units. (MD)**
DESCRIPTION:	**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.**
BIG IDEA:	**Measurable attributes of objects can be described mathematically by standard units. Approximating calculations using place value understanding and measurements using units can assist in mental computation and approximating measurements in known units can assist in efficient measuring. Numbers, measures and expressions can be compared directly by their relative values.**
ACADEMIC VOCABULARY:	**About, a little less than, a little more than, longer, shorter, inch, foot, centimeter, meter, ruler, yardstick, meterstick, measuring tape, estimate.**

STANDARD AND DECONSTRUCTION

2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

DESCRIPTION

Second Graders build upon their non-standard measurement experiences in First Grade by measuring in standard units for the first time. Using both customary (inches and feet) and metric (centimeters and meters) units, Second Graders select an attribute to be measured (e.g., length of classroom), choose an appropriate unit of measurement (e.g., yardstick), and determine the number of units (e.g., yards). As teachers provide rich tasks that ask students to perform real measurements, these foundational understandings of measurement are developed:

Understand that larger units (e.g., yard) can be subdivided into equivalent units (e.g., inches) (partition).

Understand that the same object or many objects of the same size such as paper clips can be repeatedly used to determine the length of an object (iteration).

- Understand the relationship between the size of a unit and the number of units needed (compensatory principal). Thus, the smaller the unit, the more units it will take to measure the selected attribute.

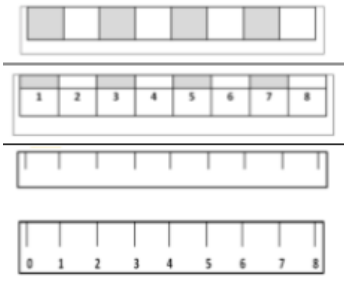
When Second Grade students are provided with opportunities to create and use a variety of rulers, they can connect their understanding of non-standard units from First Grade to standard units in second grade.

For example:

By helping students progress from a "ruler" that is blocked off into colored units (no numbers)....

... to a "ruler" that has numbers along with the colored units....

... to a "ruler: that has inches (centimeters) with and without numbers, students develop the understanding that the numbers on a rulee do not count the individual marks but indicate the spaces (distance) between the marks. This is critical understand students need when using such tools as rulers, yardsticks, meter sticks, and measuring tapes.



The end of Second Grade, students will have also learned specific measurements as it relates to feet, yards and meters:

. There are 12 inches in a foot.
. There are 3 feet in a yard.
. There are 100 centimeters in a meter.

ESSENTIAL QUESTION(S)	Why do we use tools to measure? Why did I choose the tool I did to measure an object? How would changing the tool I use to measure change the measurement?		
MATHEMATICAL PRACTICE(S)	2.MP.5. Use appropriate tools strategically. 2.MP.6. Attend to precision. 2.MP.7. Look for and make use of structure.		
DOK Range Target for Instruction & Assessment	☒ 1 ☐ 2 ☐ 3 ☐ 4		
Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Identify tools that can be used to measure length.	etermine which tool is most appropriate to use to measure the length of an object.	Measure the length of objects, using appropriate tools.

EXPLANATIONS AND EXAMPLES

Students in second grade will build upon what they learned in first grade from measuring length with non-standard units to the new skill of measuring length in metric and U.S. Customary with standard units of measure. They should have many experiences measuring the length of objects with rulers, yardsticks, meter sticks, and tape measures. They will need to be taught how to actually use a ruler appropriately to measure the length of an object especially as to where to begin the measuring. Do you start at the end of the ruler or at the zero?

STANDARD AND DECONSTRUCTION

2.MD.2	**Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.**
DESCRIPTION	Second Grade students measure an object using two units of different lengths. This experience helps students realize that the unit used is as important as the attribute being measured. This is a difficult concept for young children and will require numerous experiences for students to predict, measure, and discuss outcomes. Example: A student measured the length of a desk in both feet and centimeters. She found that the desk was 3 feet long. She also found out that it was 36 inches long. Teacher: Why do you think you have two different measurements for the same desk? Student: It only took 3 feet because the feet are so big. It took 36 inches because an inch is a whole lot smaller than a foot.
ESSENTIAL QUESTION(S)	How does measuring the same object with a different unit change the measurement? Why does one unit make more sense to use than another?
MATHEMATICAL PRACTICE(S)	2.MP.2. Reason abstractly and quantitatively. 2.MP.3. Construct viable arguments and critique the reasoning of others. 2.MP.5. Use appropriate tools strategically. 2.MP.6. Attend to precision. 2.MP.7. Look for and make use of structure.
DOK Range Target for Instruction & Assessment	☒ 1 ☒ 2 ☐ 3 ☐ 4

Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Know how to measure the length of objects with different units.	Compare measurements of an object taken with two different units. Describe why the measurements of an object taken with two different units are different. Explain the length of an object in relation to the size of the units used to measure it.	

EXPLANATIONS AND EXAMPLES

Students need multiple opportunities to measure using different units of measure. They should not be limited to measuring within the same standard unit. Students should have access to tools, both U.S.Customary and metric. The more students work with a specific unit of measure, the better they become at choosing the appropriate tool when measuring.

Students measure the length of the same object using different tools (ruler with inches, ruler with centimeters, a yardstick, or meter stick). This will help students learn which tool is more appropriate for measuring a given object. They describe the relationship between the size of the measurement unit and the number of units needed to measure something. For instance, a student might say, "The longer the unit, the fewer I need." Multiple opportunities to explore provide the foundation for relating metric units to customary units, as well as relating within customary (inches to feet to yards) and within metric (centimeters to meters).

STANDARD AND DECONSTRUCTION

2.MD.3	Estimate lengths using units of inches, feet, centimeters, and meters.		
DESCRIPTION	Second Grade students estimate the lengths of objects using inches, feet, centimeters, and meters prior to measuring. Estimation helps the students focus on the attribute being measured and the measuring process. As students estimate, the student has to consider the size of the unit- helping them to become more familiar with the unit size. In addition, estimation also creates a problem to be solved rather than a task to be completed. Once a student has made an estimate, the student then measures the object and reflects on the accuracy of the estimate made and considers this information for the next measurement. Example: Teacher: How many inches do you think this string is if you measured it with a ruler? Student: An inch is pretty small. I'm thinking it will be somewhere between 8 and 9 inches. Teacher: Measure it and see. Student: It is 9 inches. I thought that it would be somewhere around there.		
ESSENTIAL QUESTION(S)	How does knowing about different units of measurement help me estimate the length of an object?		
MATHEMATICAL PRACTICE(S)	2.MP.5. Use appropriate tools strategically. 2.MP.6. Attend to precision.		
DOK Range Target for Instruction & Assessment	☒ 1 ☐ 2 ☐ 3 ☐ 4		
Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Know strategies for estimating length. Recognize the size of inches, feet, centimeters, and meters.	Determine if an estimate is reasonable. Estimate lengths in units of inches, feet, centimeters, and meters.	

EXPLANATIONS AND EXAMPLES

Estimation helps develop familiarity with the specific unit of measure being used. To measure the length of a shoe, knowledge of an inch or a centimeter is important so that one can approximate the length in inches or centimeters. Students should begin practicing estimation with items which are familiar to them (length of desk, pencil, favorite book, etc.). See an example below.

STANDARD AND DECONSTRUCTION

2.MD.4	Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
DESCRIPTION	Second Grade students determine the difference in length between two objects by using the same tool and unit to measure both objects. Students choose two objects to measure, identify an appropriate tool and unit, measure both objects, and then determine the differences in lengths. Example: Teacher: Choose two pieces of string to measure. How many inches do you think each string is? Student: I think String A is about 8 inches long. I think string B is only about 4 inches long. It's really short. Teacher: Measure to see how long each string is. Student measures. What did you notice? Student: String A is definitely the longest one. It is 10 inches long. String B was only 5 inches long. I was close! Teacher: How many more inches does your short string need to be so that it is the same length as your long string? Student: Hmmm. String B is 5 inches. It would need 5 more inches to be 10 inches. 5 and 5 is 10.
ESSENTIAL QUESTION(S)	Why is it important to use the same unit when measuring to compare two objects?
MATHEMATICAL PRACTICE(S)	2.MP.5. Use appropriate tools strategically. 2.MP.6. Attend to precision.
DOK Range Target for Instruction & Assessment	☒ 1 ☐ 2 ☐ 3 ☐ 4

Instructional Targets	Know: Concepts/Skills	Think	Do
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Name standard length units.	Compare lengths of two objects. Determine how much longer one object is than another in standard length units.	

EXPLANATIONS AND EXAMPLES

Second graders should be familiar enough with inches, feet, yards, centimeters, and meters to be able to compare the differences in lengths of two objects. They can make direct comparisons by measuring the difference in length between two objects by laying them side by side and selecting an appropriate standard length unit of measure. Students should use comparative phrases such as "It is longer by 2 inches" or "It is shorter by 5 centimeters" to describe the difference between two objects. An interactive whiteboard or document camera may be used to help students develop and demonstrate their thinking.

CLUSTER:	**2. Relate addition and subtraction to length. (MD)**
DESCRIPTION:	**Work with equal groups of objects to gain foundations for multiplication.**
BIG IDEA:	**Addition, Subtraction, Multiplication, and Division can be used with models, strategies, and their relationships with one another to solve real-world problems.** **The set of real numbers is infinite, has a numerical sequence, corresponds to unique points on the number line, and represent values.** **Addition, Subtraction, Multiplication, and Division can be used with models, strategies, and their relationships with one another to solve real-world problems.**
ACADEMIC VOCABULARY:	**inch, foot, yard, centimeter, meter, ruler, yardstick, meter stick, measuring tape, estimate, length, equation, number line, equally spaced, point.**

STANDARD AND DECONSTRUCTION

2.MD.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.**
DESCRIPTION	Second Grade students apply the concept of length to solve addition and subtraction word problems with numbers within 100. Students should use the same unit of measurement in these problems. Equations may vary depending on students' interpretation of the task. Notice in the examples below that these equations are similar to those problem types in Table 1 at the end of this document. Example: In P.E. class Kate jumped 14 inches. Mary jumped 23 inches. How much farther did Mary jump than Kate? Write an equation and then solve the problem. **Student A** My equation is 14 +__= 23 since I though, "14 and what maked 23?" I used Unifix cubes. I made a train of 14. Then I made a train of 23. When I put them side by side, I saw that Kate would need 9 more cubes to be the same as Mary. So, Mary jumped 9 more inches than Kate. 14 + 9 +23  **Student B** My equation is 23 - 14 = __since I though about what the difference was between Kate and Mary. I broke up 14 into 10 and 4. I know that 23 minus 10 is 13. Then, I broke up the 4 into 3 and 1. 13 minus 3 is 10. Then, I took one more away. That left me with 9. So, Mary jumped 9 more inches than Kate. That seems to make sence since 23 is almost 10 more than 14. 23 - 10 =23 13 - 3 = 10 1 0 - 1 = 9

ESSENTIAL QUESTION(S)	What strategy will help me solve this problem the best? How can knowing some of the lengths in the problem help me find the unknown length? How can I represent this problem? Why do I need to units in the problem to be the same?
MATHEMATICAL PRACTICE(S)	2.MP.1. Make sense of problems and persevere in solving them. 2.MP.2. Reason abstractly and quantitatively. 2.MP.4. Model with mathematics. 2.MP.5. Use appropriate tools strategically. 2.MP.8. Look for and express regularity in repeated reasoning.
DOK Range Target for Instruction & Assessment	☒ 1 ☒ 2 ☐ 3 ☐ 4

Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Add and subtract lengths within 100. Recognize the size of inches, feet, centimeters, and meters	Solve word problems involving lengths that are given in the same units. Solve word problems involving length that have equations with a symbol for the unknown number.	

EXPLANATIONS AND EXAMPLES

Students need experience working with addition and subtraction to solve word problems which include measures of length. It is important that word problems stay within the same unit of measure. Counting on and/or counting back on a number line will help tie this concept to previous knowledge. Some representations students can use include drawings, rulers, pictures, and/or physical objects. An interactive whiteboard or document camera may be used to help students develop and demonstrate their thinking.

Equations include:

- 20 + 35 = c
- c - 20 = 35
- c – 35 = 20
- 20 + b = 55
- 35 + a = 55
- 55 = a + 35
- 55 = 20 + b

EXPLANATIONS AND EXAMPLES (continued)

Example:

• A word problem for 5 – n = 2 could be: Mary is making a dress. She has 5 yards of fabric. She uses some of the fabric and has 2 yards left. How many yards did Mary use?

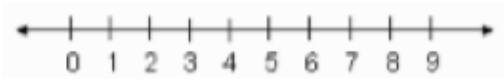
There is a strong connection between this standard and demonstrating fluency of addition and subtraction facts. Addition facts through 10 + 10 and the related subtraction facts should be included.

STANDARD AND DECONSTRUCTION

2.MD.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.**

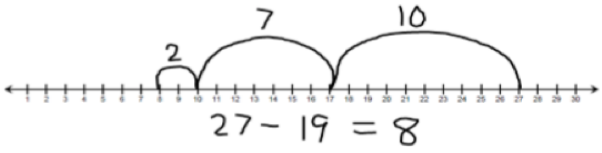
DESCRIPTION

Building upon their experiences with open number lines, Second Grade students create number lines with evenly spaced points corresponding to the numbers to solve addition and subtraction problems to 100. They recognize the similarities between a number line and a ruler.



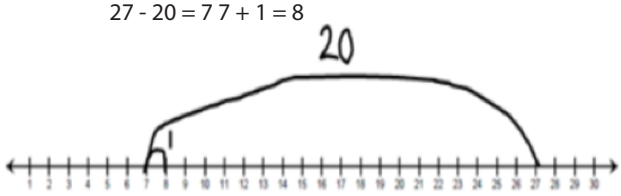
Example: There were 27 students on the bus. 19 got off the bus. How many students are on the bus?

Student A: I used a number line. I started at 27. I broke up 19 into 10 and 9. That way, I could take a jump of 10. I landed on 17. Then I broke the 9 up into 7 and 2. I took a jump of 7. That got me to 10. Then I took a jump of 2. That's 8. So, there are 8 students now on the bus.



Student B: I used a number line. I saw that 19 is really close to 20. Since 20 is a lot easier to work with, I took a jump of 20. But, that was one too many. So, I took a jump of 1 to make up for the extra. I landed on 8. So, there are 8 students on the bus.

27 - 20 = 7 7 + 1 = 8



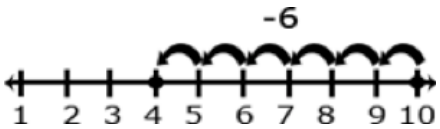
ESSENTIAL QUESTION(S)	How does a number line help me show a number? How can I describe numbers on a number line using length? Why does using a number line to add and subtract help me understand the sum or difference?
MATHEMATICAL PRACTICE(S)	2.MP.2. Reason abstractly and quantitatively. 2.MP.4. Model with mathematics. 2.MP.5. Use appropriate tools strategically.
DOK Range Target for Instruction & Assessment	☒ 1 ☐ 2 ☐ 3 ☐ 4

Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Represent whole numbers from 0 on a number line with equally spaced points.	Explain length as the distance between zero and another mark on the number line diagram. Use a number line to represent the solution of whole-number sums and differences related to length within 100.	

EXPLANATIONS AND EXAMPLES

Students represent their thinking when adding and subtracting within 100 by using a number line. An interactive whiteboard or document camera can be used to help students demonstrate their thinking.

Example: 10 – 6 = 4



CLUSTER:	**3. Work with time and money. (MD)**
DESCRIPTION:	**Work with equal groups of objects to gain foundations for multiplication.**
BIG IDEA:	**Numbers, measures, and expressions can be expressed in an infinite number of equal ways.** **Addition, Subtraction, Multiplication, and Division can be used with models, strategies, and their relationships with one another to solve real-world problems.**
ACADEMIC VOCABULARY:	**clocks, hand, hour hand, minute hand, hour, minute, a.m., p.m., o'clock, multiples of 5 (e.g., five, ten, fifteen, etc.), analog clock, digital clock, quarter 'til, quarter after, half past, quarter hour, half hour, 30 minutes before, 30 minutes after, 30 minutes until, 30 minutes past, quarter, dime, nickel, dollar, cent(s), $, ¢, heads, tails**

STANDARD AND DECONSTRUCTION

2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

DESCRIPTION

Second Grade students extend their work with telling time to the hour and half-hour in First Grade in order to tell (orally and in writing) the time indicated on both analog and digital clocks to the nearest five minutes. Teachers help students make connections between skip counting by 5s (2.NBT.2) and telling time to the nearest five minutes on an analog clock. Students also indicate if the time is in the morning (a.m.) or in the afternoon/evening (p.m) as they record the time.

Learning to tell time is challenging for children. In order to read an analog clock, they must be able to read a dial-type instrument. Furthermore, they must realize that the hour hand indicates broad, approximate time while the minute hand indicates the minutes in between each hour. As students experience clocks with only hour hands, they begin to realize that when the time is two o'clock, two-fifteen, or two forty-five, the hour hand looks different- but is still considered "two". Discussing time as "about 2 o'clock", "a little past 2 o'clock", and "almost 3 o'clock" helps build vocabulary to use when introducing time to the nearest 5 minutes.

All of these clocks indicte the hour od "two" although they look slighrly diffferent. This is an important idea for students as they learn to tell time.

ESSENTIAL QUESTION(S)	How do the hands on a clock help me tell time? How can I show a time on a clock?		
MATHEMATICAL PRACTICE(S)	2.MP.5. Use appropriate tools strategically. 2.MP.6. Attend to precision.		
DOK Range Target for Instruction & Assessment	☒ 1 ☐ 2 ☐ 3 ☐ 4		
Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Look for and make use of structure. Tell time using analog clocks to the nearest 5 minutes. Tell time using digital clocks to the nearest 5 minutes. Write time using analog clocks and digital clocks. Identify the hour and minute hand on an analog clock. Identify and label when a.m. and p.m. occur.	Determine what time is represented by the combination of the number on the clock face and the position of the hands.	

EXPLANATIONS AND EXAMPLES

In first grade, students learned to tell time to the nearest hour and half-hour. Students build on this understanding in second grade by skip-counting by 5 to recognize 5-minute intervals on the clock. They need exposure to both digital and analog clocks. It is important that they can recognize time in both formats and communicate their understanding of time using both numbers and language. Common time phrases include the following: quarter till ___, quarter after ___, ten 'til ___, ten after ___, and half past ___.

Students should understand that there are 2 cycles of 12 hours in a day - a.m. and p.m. Recording their daily actions in a journal would be helpful for making real-world connections and understanding the difference between these two cycles. An interactive whiteboard or document camera may be used to help students demonstrate their thinking.

STANDARD AND DECONSTRUCTION

2.MD.8	**Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?**

DESCRIPTION

In Second Grade, students solve word problems involving either dollars or cents. Since students have not been introduced to decimals, problems focus on whole dollar amounts or cents.

This is the first time money is introduced formally as a standard. Therefore, students will need numerous experiences with coin recognition and values of coins before using coins to solve problems. Once students are solid with coin recognition and values, they can then begin using the values coins to count sets of coins, compare two sets of coins, make and recognize equivalent collections of coins (same amount but different arrangements), select coins for a given amount, and make change.

Solving problems with money can be a challenge for young children because it builds on prerequisite number and place value skills and concepts. Many times money is introduced before students have the necessary number sense to work with money successfully.

For these values to make sense, students must have an understanding of 5, 10, and 25. More than that, they need to be able to think of these quantities without seeing countable objects… A child whose number concepts remain tied to counts of objects [one object is one count] is not going to be able to understand the value of coins. (Van de Walle & Lovin, p. 150, 2006)

Just as students learn that a number (38) can be represented different ways (3 tens and 8 ones; 2 tens and 18 ones) and still remain the same amount (38), students can apply this understanding to money. For example, 25 cents can look like a quarter, two dimes and a nickel, and it can look like 25 pennies, and still all remain 25 cents. This concept of equivalent worth takes time and requires numerous opportunities to create different sets of coins, count sets of coins, and recognize the "purchase power" of coins (a nickel can buy the same things as 5 pennies).

As teachers provide students with sufficient opportunities to explore coin values (25 cents) and actual coins (2 dimes, 1 nickel), teachers will help guide students over time to learn how to mentally give each coin in a set a value, place the random set of coins in order, and use mental math, adding on to find differences, and skip counting to determine the final amount.

Example: How many different ways can you make 37¢ using pennies, nickels, dimes, and quarters?

Example: How many different ways can you make 12 dollars using $1, $5, and $10 bills?

ESSENTIAL QUESTION(S)	What strategy will help me solve this problem the best? Why is it important to count, add, and subtract money?		
MATHEMATICAL PRACTICE(S)	2.MP.1. Make sense of problems and persevere in solving them. 2.MP.2. Reason abstractly and quantitatively. 2.MP.4. Model with mathematics. 2.MP.5. Use appropriate tools strategically. 2.MP.8. Look for and express regularity in repeated reasoning.		
DOK Range Target for Instruction & Assessment	☒ 1 ☒ 2 ☐ 3 ☐ 4		
Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Identify and recognize the value of dollar bills, quarters, dimes, nickels, and pennies. Identify the $ and ¢ symbols.	Think: Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies using $ and ¢ symbols appropriately.	

EXPLANATIONS AND EXAMPLES

Since money is not specifically addressed in kindergarten, first grade, or third grade, students should have multiple opportunities to identify, count, recognize, and use coins and bills in and out of context. They should also experience making equivalent amounts using both coins and bills. "Dollar bills" should include denominations up to one hundred ($1.00, $5.00, $10.00, $20.00, $100.00).

Students should solve story problems connecting the different representations. These representations may include objects, pictures, charts, tables, words, and/or numbers. Students should communicate their mathematical thinking and justify their answers. An interactive whiteboard or document camera may be used to help students demonstrate and justify their thinking.

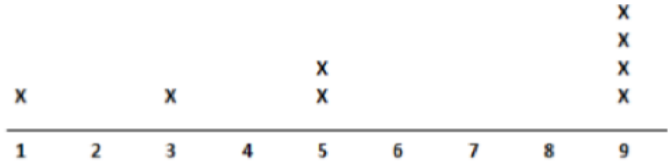
Example:

• Sandra went to the store and received $ 0.76 in change. What are three different sets of coins she could have received?

CLUSTER:	**4. Represent and interpret data. (MD)**
BIG IDEA:	**Collecting data from sources can lead to analyzing and interpreting real world situations and problems.** **Tables, charts, and graphs allows for analyzing data efficiency and effectively.**
ACADEMIC VOCABULARY:	**Clocks, hand, hour hand, minute hand, hour, minute, a.m., p.m., o'clock, multiples of 5 (e.g., five, ten, fifteen, etc.), analog clock, digital clock, quarter 'til, quarter after, half past, quarter hour, half hour, thirty minutes before, 30 minutes after, 30 minutes until, 30 minutes past, quarter, dime, nickel, dollar, cent(s), $, ¢, heads, tails**

STANDARD AND DECONSTRUCTION

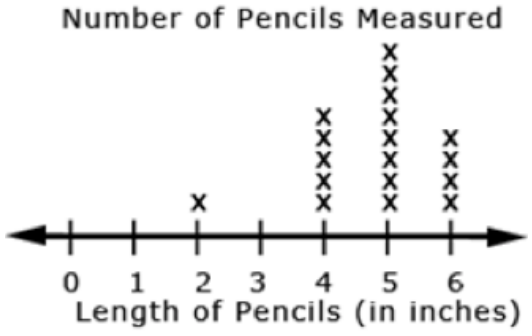
2.MD.9	**Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.**
DESCRIPTION	Second Graders use measurement data as they move through the statistical process of posing a question, collecting data, analyzing data, creating representations, and interpreting the results. In second grade students represent the length of several objects by making a line plot. Students should round their lengths to the nearest whole unit. Example: Measure 8 objects in the basket to the nearest inch. Then, display your data on a line plot. Teacher: What do you notice about your data? Student: Most of the objects I measured were 9 inches. Only 2 objects were smaller than 4 inches. I was surprised that none of my objects measured more than 9 inches! Teacher: Do you think that if you chose all new objects from the basket that your data would look the same? Different? Why do you think so?



ESSENTIAL QUESTION(S)	How can I best show a set of data? What does the data tell me? Why does showing the data this way help me tell about it?		
MATHEMATICAL PRACTICE(S)	2.MP.4. Model with mathematics. 2.MP.5. Use appropriate tools strategically. 2.MP.6. Attend to precision. 2.MP.8. Look for and express regularity in repeated reasoning.		
DOK Range Target for Instruction & Assessment	☒ 1 ☐ 2 ☐ 3 ☐ 4		
Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Read tools of measurement to the nearest unit.	Represent measurement data on a line plot.	Measure lengths of several objects to the nearest whole unit. Measure lengths of objects by making repeated measurements of the same object. Create a line plot with a horizontal scale marked in whole numbers using measurements.

EXPLANATIONS AND EXAMPLES

This standard emphasizes representing data using a line plot. Students will use the measurement skills learned in earlier standards to measure objects. Line plots are first introduced in this grade level. A line plot can be thought of as plotting data on a number line. An interactive whiteboard may be used to create and/or model line plots.



STANDARD AND DECONSTRUCTION

2.MD.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.**

DESCRIPTION

In Second Grade, students pose a question, determine up to 4 categories of possible responses, collect data, represent data on a picture graph or bar graph, and interpret the results. This is an extension from first grade when students organized, represented, and interpreted data with up to three categories. They are able to use the graph selected to note particular aspects of the data collected, including the total number of responses, which category had the most/least responses, and interesting differences/similarities between the four categories. They then solve simple one-step problems using the information from the graph.

Example: The Second Graders were responsible for purchasing ice cream for an Open House event at school. They decided to collect data to determine which flavors to buy for the event. As a group, the students decided on the question, "What is your favorite flavor of ice cream?" and 4 likely responses, "chocolate", "vanilla", "strawberry", and "cherry."

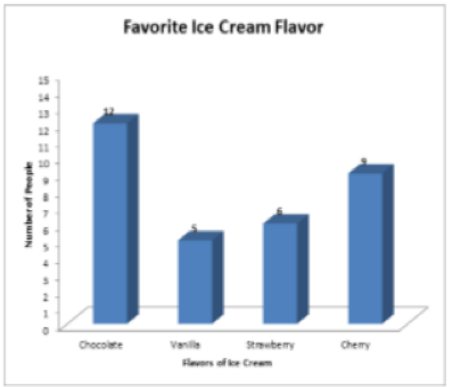
The students then divided into teams and collected data from different classes in the school. Each team decided how to keep track of the data. Most teams used tally marks to keep up with the responses. A few teams used a table and check marks.

When back in the classroom, each team organized their data by totaling each category in a chart or table. Team A's data was as follows:

Flavor	Number of People
Chocolate	12
Vanilla	5
Strawberry	6
Cherry	9

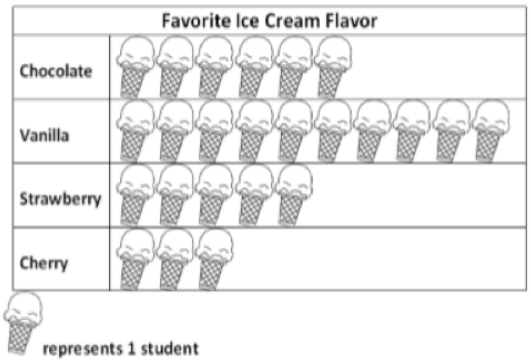
Each team selected either a picture graph or a bar graph to display their data and created it using either paper or the computer. Team A and Team B graphs are provided here:

Team A: Bar Graph



DESCRIPTION (continued)

Team B: Pictograph Graph



Once the data were represented on a graph, the teams then analyzed and recorded observations made from the data. Statements such as, "Chocolate had the most votes" and "Vanilla had more votes than strawberry and cherry votes combined" were recorded.

The teacher then facilitated a discussion around the combination of the data collected to determine the overall data of the school. Simple problems were posed:

- The total number of chocolate votes for Team A was 12 and the total number of chocolate votes for Team B was 6. How many chocolate votes are there altogether? -Right now, with data from Team A, Team B, and Team C, vanilla has 45 votes and chocolate has 34 votes. How many more votes would we need from Team D so that chocolate had the same number of votes as vanilla?
- Right now, Cherry has a total of 22 votes. What if eleven people came and wanted to change their vote from Cherry to another choice? How many votes would Cherry have?
- After a careful study of the data, students determined that Vanilla was the most preferred flavor. Chocolate was the second most popular. The class decided that more vanilla should be purchased than chocolate, but that both should be purchased. The teacher then asked the class, "If each gallon of ice cream served 20 children, how many gallons of ice cream would we need to buy for 460 students? How many of those total gallons should be chocolate? How many should be vanilla? Why?" The students were off solving the next task.

ESSENTIAL QUESTION(S)	How can I best show a set of data? What does the data tell me? Why does showing the data this way help me tell about it?
MATHEMATICAL PRACTICE(S)	2.MP.1. Make sense of problems and persevere in solving them. 2.MP.2. Reason abstractly and quantitatively. 2.MP.4. Model with mathematics. 2.MP.5. Use appropriate tools strategically. 2.MP.6. Attend to precision. 2.MP.8. Look for and express regularity in repeated reasoning.
DOK Range Target for Instruction & Assessment	☒ 1 ☒ 2 ☐ 3 ☐ 4

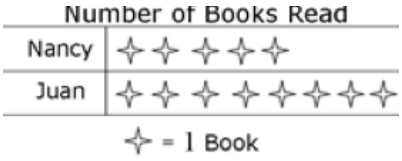
Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Recognize and identify picture graphs and bar graphs. Identify and label the components of a picture graph and bar graph.	Make comparisons between categories in the graph using more than, less than, etc. Solve problems relating to data in graphs by using addition and subtraction.	Draw a single-unit scale picture graph to represent a given set of data with up to four categories. Draw a single-unit scale bar graph to represent a given set of data with up to four categories.

EXPLANATIONS AND EXAMPLES

Students should draw both picture and bar graphs representing data that can be sorted with up to four categories using single unit scales (e.g., scales should count by ones).

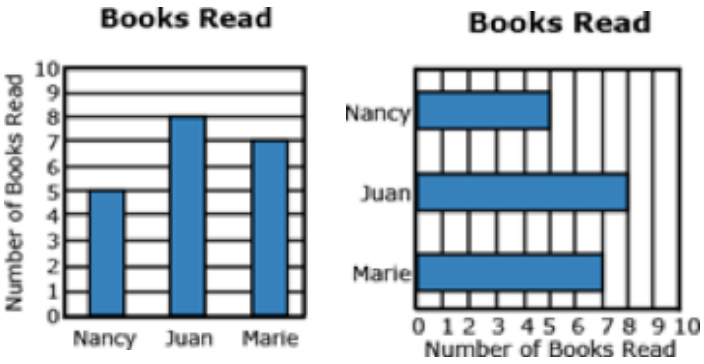
The data should be used to solve put-together, take-apart, and compare problems as listed in Table 1.

In second grade, picture graphs (pictographs) include symbols that represent single units. Pictographs should include a title, categories, category label, key, and data.



EXPLANATIONS AND EXAMPLES (continued)

Second graders should draw both horizontal and vertical bar graphs. Bar graphs include a title, scale, scale label, categories, category label, and data.



DOMAIN:

GEOMETRY (G)

SECOND GRADE

MATHEMATICS

SECOND GRADE

LEXILE GRADE LEVEL BANDS: 420L TO 650L

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

GEOMETRY		
FIRST	**SECOND**	**THIRD**
EQUAPARTITIONING		
Equipartitioning Wholes	**Equipartitioning Wholes**	**Equipartitioning Wholes**
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 for these examples that decomposing into more equal shares creates smaller shares.		3.G.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.
	2.G.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	3.NF.1 Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.
SHAPES AND ANGLES		
Shapes and Properties	**Shapes and Properties**	**Shapes and Properties**
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.	2.G.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. Source: turnonccmath.net, NC State University College of Education	3.G.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

CLUSTER:	**1. Reason with shapes and their attributes. (G)**
DESCRIPTION:	**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.**
BIG IDEA:	**Shapes and objects can be described, classified and compared by defining and non-defining attributes.** **Measurable attributes of objects can be described mathematically by standard units.** **Fractions are numbers that can be represented in many different ways and correspond to a unique point on the infinite number line.**
ACADEMIC VOCABULARY:	**Attribute1, feature1 angle, side, triangle, quadrilateral, square, rectangle, trapezoid, pentagon, hexagon, cube, face, edge, vertex, surface, figure, shape, closed, open, partition, equal size, equal shares, half, halves, thirds, half of, a third of, whole, two halves, three thirds, four fourths, partition, rows, columns From previous grades: circle, sphere, half-circle, quarter-circle, cone, prism, cylinder 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").**

STANDARD AND DECONSTRUCTION

2.G.1	**Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.5 Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.**
DESCRIPTION	Second Grade students identify (recognize and name) shapes and draw shapes based on a given set of attributes. These include triangles, quadrilaterals (squares, rectangles, and trapezoids), pentagons, hexagons and cubes. Example: Teacher: Draw a closed shape that has five sides. What is the name of the shape? Student: I drew a shape with 5 sides. It is called a pentagon.  Example: Teacher: Draw a closed shape that has five sides. What is the name of the shape? Student: I drew a shape with 5 sides. It is called a pentagon.  TEACHER NOTE: 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.)

STANDARD AND DECONSTRUCTION

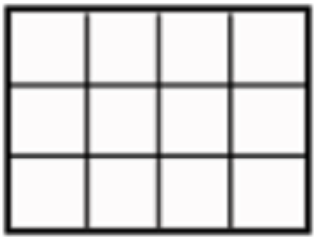
2.G.2	Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
DESCRIPTION	Second graders partition a rectangle into squares (or square-like regions) and then determine the total number of squares. This work connects to the standard 2.OA.4 where students are arranging objects in an array of rows and columns. Example: Teacher: Partition the rectangle into 2 rows and 4 columns. How many small squares did you make? Student: There are 8 squares in this rectangle. See- 2, 4, 6, 8. I folded the paper to make sure that they were all the same size. 

ESSENTIAL QUESTION(S)	What does the number of squares in this rectangle tell me?		
MATHEMATICAL PRACTICE(S)	2.MP.2. Reason abstractly and quantitatively. 2.MP.6. Attend to precision. 2.MP.8. Look for and express regularity in repeated reasoning.		
DOK Range Target for Instruction & Assessment	☒ 1 ☐ 2 ☐ 3 ☐ 4		
Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Define partition. Identify a row. Identify a column. Count to find the total number of same-size squares.	Determine how to partition a rectangle into same-size squares.	

EXPLANATIONS AND EXAMPLES

This standard is a precursor to learning about the area of a rectangle and using arrays for multiplication. An interactive whiteboard or manipulatives such as square tiles, cubes, or other square shaped objects can be used to help students partition rectangles.

Rows are horizontal and columns are vertical.



ESSENTIAL QUESTION(S)	How do I know this shape is its name? Why should we identify shapes using angles and faces?		
MATHEMATICAL PRACTICE(S)	2.MP.4. Model with mathematics. 2.MP.7. Look for and make use of structure.		
DOK Range Target for Instruction & Assessment	☒ 1 ☐ 2 ☐ 3 ☐ 4		
Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Identify the attributes of triangles, quadrilaterals, pentagons, hexagons, and cubes (e.g., faces, angles, sides, vertices, etc.) - Identify triangles, quadrilaterals, pentagons, hexagons, and cubes based on the given attributes.	Describe and analyze shapes by examining their sides and angles, not by measuring. Compare shapes by their attributes (e.g., faces, angles).	Draw shapes with specified attributes.

EXPLANATIONS AND EXAMPLES

Students identify, describe, and draw triangles, quadrilaterals, pentagons, and hexagons. Pentagons, triangles, and hexagons should appear as both regular (equal sides and equal angles) and irregular. Students recognize all four sided shapes as quadrilaterals. Students use the vocabulary word "angle" in place of "corner" but they do not need to name angle types. Interactive whiteboards and document cameras may be used to help identify shapes and their attributes. Shapes should be presented in a variety of orientations and configurations.

STANDARD AND DECONSTRUCTION

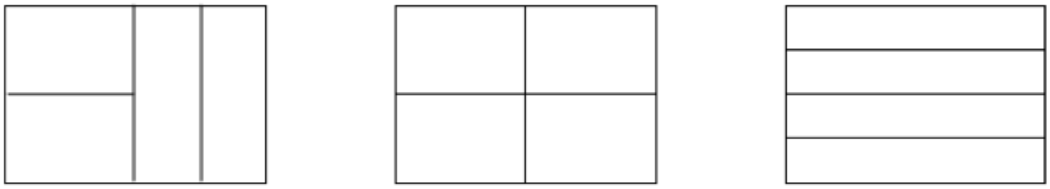
2.G.3	**Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.**

DESCRIPTION

Second Grade students partition circles and rectangles into 2, 3 or 4 equal shares (regions). Students should be given ample experiences to explore this concept with paper strips and pictorial representations. Students should also work with the vocabulary terms halves, thirds, half of, third of, and fourth (or quarter) of. While students are working on this standard, teachers should help them to make the connection that a "whole" is composed of two halves, three thirds, or four fourths.

This standard also addresses the idea that equal shares of identical wholes may not have the same shape.

Example: Teacher: Partition each rectangle into fourths a different way. Student A: I partitioned this rectangle 3 different ways. I folded or cut the paper to make sure that all of the parts were the same size.



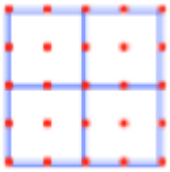
Teacher: In your 3 pictures, how do you know that each part is a fourth?

Student: There are four equal parts. Therefore, each part is one-fourth of the whole piece of paper.

NOTE: It is important for students to understand that fractional parts may not be symmetrical. The only criteria for equivalent fractions is that the area is equal, as illustrated in the first example above.

2nd Grade Mathematics Unpacked Content

Example: How many different ways can you partition this 4 by 4 geoboard into fourths?



Student A: I partitioned the geoboard into four equal sized squares.

Teacher: How do you know that each section is a fourth?

Student A: Because there are four equal sized squares. That means that each piece is a fourth of the whole geoboard.

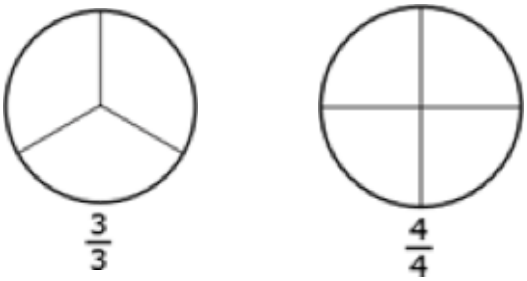
Student B: I partitioned the geoboard in half down the middle. The section on the left I divided into two equal sized squares. The other section I partitioned into two equal sized triangles.

Teacher: How do you know that each section is a fourth? Student B: Each section is a half of a half, which is the same as a fourth.

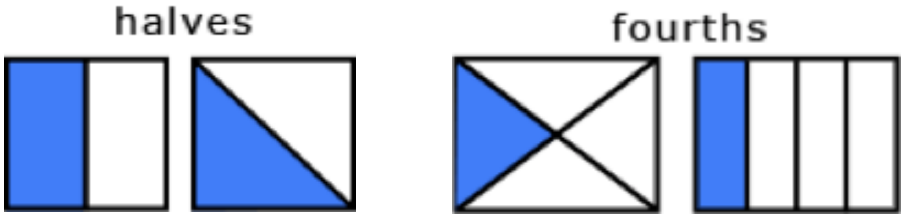
ESSENTIAL QUESTION(S)	How can I describe the equal shares of this shape? What happens to the equal shares as more equal shares are made within a shape? How can I show equal shares of the same whole in a different way?		
MATHEMATICAL PRACTICE(S)	2.MP.2. Reason abstractly and quantitatively. 2.MP.3. Construct viable arguments and critique the reasoning of others. 2.MP.6. Attend to precision. 2.MP.8. Look for and express regularity in repeated reasoning.		
DOK Range Target for Instruction & Assessment	☒ 1 ☒ 2 ☐ 3 ☐ 4		
Instructional Targets	**Know: Concepts/Skills**	**Think**	**Do**
Assessment Types	Tasks assessing concepts, skills, and procedures.	Tasks assessing expressing mathematical reasoning.	Tasks assessing modeling applications.
Students should be able to:	Identify two, three, and four equal shares of a whole. Describe equal shares using vocabulary: halves, thirds, fourths, half of, third of, etc. Describe the whole as two halves, three thirds, or four fourths.	Justify why equal shares of identical wholes need not have the same shape.	

EXPLANATIONS AND EXAMPLES

This standard introduces fractions in an area model. Students need experiences with different sizes, circles, and rectangles. For example, students should recognize that when they cut a circle into three equal pieces, each piece will equal one third of its original whole. In this case, students should describe the whole as three thirds. If a circle is cut into four equal pieces, each piece will equal one fourth of its original whole and the whole is described as four fourths.



Students should see circles and rectangles partitioned in multiple ways so they learn to recognize that equal shares can be different shapes within the same whole. An interactive whiteboard may be used to show partitions of shapes.



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