Purpose of this document:

1. Provide recommendations regarding which Hawaii Content and Performance Standards (HCPS) III benchmarks that Grade 1 teachers should continue to teach during SY 2011-2012 **in addition to** the 1st grade Common Core State Standards (CCSS).

2. Enable the Grade 1 teacher to compare 1st grade Common Core standards (that they will be teaching in SY 2011-2012) to the Kindergarten HCPS III benchmarks (that their students will have learned in SY 2010-2011).

3. Provide additional insights to better understand the 1st grade Common Core standards.

In SY 2011-2012, Grade 1 teachers are expected to design and implement learning and assessment opportunities that are aligned with the CCSS for mathematics. During the initial years of implementation of the CCSS, teachers will need to be particularly mindful of any curricular gaps between grade levels. For example, in SY 2011-2012 first graders will be learning CCSS, but the previous school year they would have learned HCPS III Kindergarten benchmarks. Therefore, the following recommendations are being made to help ensure students are prepared as they transition from one grade to the next:
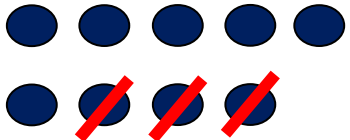
a. First grade teachers should address all of the CCSS grade 1 learning expectations.
b. While all of the 1st grade Common Core standards will prepare students for the 2nd grade Common Core standards, looking forward to the 3rd grade HCPS III benchmarks, there are a few gaps areas that need to be addressed. Thus, to ensure students will be prepared for the grade 3 HCPS III benchmarks, first grade teachers should continue to address the following HCPS III grade 1 benchmarks:

HCPS III 1st grade benchmarks to continue to address	Recommendation of which Common Core 1st grade standards to connect with *(i.e., address the HCPS III benchmark as an extension of the Common Core standard indicated below)*	Comments
1.4.2: Identify the value of coins and count coin combinations (using like coins) to a dollar.	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.NBT.5: Use place value understanding and properties of operations to add and subtract. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.	Continue to address HCPS III benchmark 1.4.2 to ensure students know the names and values of coins. In addition, students should learn to make basic coin combinations (e.g., that a dime is made up of 10 pennies, 2 nickels or 1 nickel and 5 pennies). In addition, to connect with Common Core standards 1.NBT.4 and 1.NBT.5, students can learn to add simple coin combinations (e.g., show a quarter and ask the value of that coin, then one at a time place a few dimes next to the quarter so students will need to count by ten to determine the value of the coin combination—a quarter and a dime makes 35 cents, a quarter and 2 dimes makes 45 cents, etc.).
1.9.1: Extend, create and describe repeating patterns.	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. 1.NBT.5: Use place value understanding and properties of operations to add and subtract. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. 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 $6 + 6 + 1 = 12 + 1 = 13$).	Continue to address HCPS III benchmark 1.9.1 to ensure students are prepared for second and third grade expectations regarding patterns. However, the patterns used for addressing 1.9.1 should directly support Common Core standards 1.OA.6, 1.NBT.1 and 1.NBT.5.

[1] Explanations include excerpts from the Hawaii Department of Education Curriculum and Instruction Branch's crosswalk documents (http://standardstoolkit.k12.hi.us/index.html) and from the Arizona Department of Education Standards and Assessment Division's 2010 Academic Content Standards for Mathematics (http://www.ade.az.gov/standards/math/2010MathStandards/) with permission granted by Dr. Mary Knuck, Deputy Associate Superintendent.

The next several pages are intended to provide teachers with some further insight into the first grade mathematics learning expectations in the CCSS. Teachers should have multiple opportunities to review and discuss the pages that follow, collaborating within and across grade level teams. Conversations in professional learning teams should focus upon aligning learning and assessment opportunities with the intended targets of the standards.
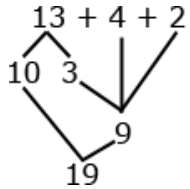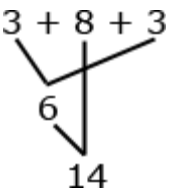
In addition, during instruction, teachers are strongly encouraged to turn students' misconceptions into learning opportunities. Whenever students express an incorrect answer or a misconception, the teacher's response should be something like, "How did you get that?" *Formative assessment is most effective when it occurs in real time*. Thus, the best way to help a student overcome a misconception is to have him or her talk about it so the teacher can identify what specifically needs to be addressed. Talking openly about misconceptions (in a safe, non-judgmental manner) helps foster a classroom learning culture in which students expect mathematics to make sense, in which they learn that effort and perseverance are necessary for learning mathematics, and in which making mistakes is a natural and important part of the learning process. Promoting a classroom culture that nurtures a disposition to learn from one's mistakes is not only an important part of the learning process, but a powerful life lesson to give to students.

Domain and Cluster	1st Grade Common Core State Standard	Explanation of the Standard[1]	Students' Prior Learning Experiences (Related Kindergarten HCPS III benchmarks)
Domain: Operations and Algebraic Thinking Cluster: Represent and solve problems involving addition and subtraction.	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.	Learning opportunities should build on students' prior knowledge of and experience with addition and subtraction (and composing and decomposing numbers) from Kindergarten. Using relevant contexts and relating numbers to the items they represent will help students to make sense of what the objects and equations represent. Contextual problems that are closely connected to students' lives should be used to develop fluency with addition and subtraction. Table 1 (on the last page of this document) describes the four different addition and subtraction situations and their relationship to the position of the unknown. Students should use objects or drawings to represent the different situations. • *Take-from* example: **Kurt has 9 marbles. He gave 3 to Chad. How many marbles does Kurt have now?** • *Compare* example: **Kurt has 9 marbles. Chad has 3 marbles. How many more marbles does Kurt have than Chad?** A student will use 9 objects to represent Kurt's 9 marbles and 3 objects to represent Chad's 3 marbles. Then they will compare the 2 sets of objects (strategically arranging each set of objects should be modeled by the teacher and then applied by the student to help visualize where to see the amount "more" that Kurt has, and then showing the connection to how that is represented in an equation). **(the explanation of this standard continues on the next page)**	K.1.2: Represent whole numbers up to 30 in flexible ways (e.g., relating, composing, and decomposing numbers). K.2.1: Demonstrate addition as "putting together" or "combining sets". K.2.2: Demonstrate subtraction as "taking away," "separating sets," or "counting back". K.3.1: Use a variety of strategies (e.g., objects, fingers) to add and subtract single-digit whole numbers. K.10.1: Represent simple numerical situations with objects and number sentences.

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Domain and Cluster	1st Grade Common Core State Standard	Explanation of the Standard[1]	Students' Prior Learning Experiences *(Related Kindergarten HCPS III benchmarks)*

		Representation of the "compare" example above:
		
		Kurt has 9 marbles:
		
		Chad has 3 marbles:
		
		The teacher should facilitate classroom dialogue by asking the following questions (the teacher should model asking these questions so the students learn to ask themselves these questions; by purposefully facilitating the dialogue between the teacher and student, this process helps students to develop a cognitive map that they will be able to use on their own without teacher prompting):
		• Who has more?
		• How can we tell who has more? Where in the picture do we see "how many more" marbles Kurt has?
		   o *As students are discussing this question, it may be helpful to draw a dashed line across both sets of objects right after the 3ʳᵈ marble.*
		• How many more marbles would I have to add to Chad's set so both boys would have the same number of marbles?
		   o *Both the teachers' and the students' use of manipulatives should bring insight about the mathematics being represented. Thus, <u>the learning activity should help students make a connection between their actions with the manipulatives and the mathematical idea represented by that action</u> (i.e., putting 6 more circles in Chad's row should help students make sense of the equation 3 + ___ = 9).*
		
		Even though the modeling of the two examples above is different, the equation 9 - 3 = ? can represent both situations, and yet the compare example can also be represented by
		3 + ? = 9 (How many more do I need to make 9?)
		
		It is important to attend to the difficulty level of the problem situations in relation to the position of the unknown.
		• *Result Unknown* problems are the least complex for students followed by *Total Unknown* and *Difference Unknown*.
		• The next level of difficulty includes *Change Unknown*, *Addend*
		• *Unknown*, followed by *Bigger Unknown*.
		• The most difficult are *Start Unknown, Both Addends Unknown,* and *Smaller Unknown.*
		• Students may use document cameras to display their combining or separating strategies. This gives them the opportunity to communicate and justify their thinking.	

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Domain and Cluster	1st Grade Common Core State Standard	Explanation of the Standard[1]	Students' Prior Learning Experiences *(Related Kindergarten HCPS III benchmarks)*
Domain: Operations and Algebraic Thinking Cluster: Represent and solve problems involving addition and subtraction.	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.	To further students' understanding of the concept of addition, students create word problems with three addends. They can also increase their estimation skills by creating problems in which the sum is less than 5, 10 or 20. They use properties of operations and different strategies to find the sum of three whole numbers such as: • Counting on and counting on again (e.g., to add 3 + 2 + 4 a student writes 3 + 2 + 4 = ? and thinks, "3, 4, 5, that's 2 more, 6, 7, 8, 9 that's 4 more so 3 + 2 + 4 = 9." • Making tens (e.g., 4 + 8 + 6 = 4 + 6 + 8 = 10 + 8 = 18) • Using "plus 10, minus 1" to add 9 (e.g., 3 + 9 + 6 A student thinks, "9 is close to 10 so I am going to add 10 plus 3 plus 6 which gives me 19. Since I added 1 too many, I need to take 1 away so the answer is 18.) • Decomposing numbers between 10 and 20 into 1 ten plus some ones to facilitate adding the ones 13 + 4 + 2 / 10 3 / 9 / 19 • Using doubles 3 + 8 + 3 / 6 / 14 Students may use different strategies to add the 6 and 8. • Using near doubles (e.g.,5 + 6 + 3 = 5 + 5 + 1 + 3 = 10 + 4 =14) Contextual problems that are closely connected to students' lives should be used to develop fluency with addition and subtraction. Table 1 (on the last page of this document) describes the four different addition and subtraction situations and their relationship to the position of the unknown. Students should use objects or drawings to represent the different situations. Students may use document cameras to display their combining strategies. This gives them the opportunity to communicate and justify their thinking.	K.1.2: Represent whole numbers up to 30 in flexible ways (e.g., relating, composing, and decomposing numbers). K.2.1: Demonstrate addition as "putting together" or "combining sets". K.3.1: Use a variety of strategies (e.g., objects, fingers) to add and subtract single-digit whole numbers. K.10.1: Represent simple numerical situations with objects and number sentences.

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Domain and Cluster	1st Grade Common Core State Standard	Explanation of the Standard[1]	Students' Prior Learning Experiences *(Related Kindergarten HCPS III benchmarks)*
Domain: Operations and Algebraic Thinking Cluster: Represent and solve problems involving addition and subtraction.	1.OA.3: Apply properties of operations as strategies to add and subtract. Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.) (Students need not use formal terms for these properties.)	This standard is about understanding and applying the notion that you can put addends together in any order and get the same result. Students should understand the important ideas of the following properties: • Identity property of addition (e.g., 6 = 6 + 0) • Identity property of subtraction (e.g., 9 – 0 = 9) • Commutative property of addition (e.g., 4 + 5 = 5 + 4) • Associative property of addition (e.g., 3 + 9 + 1 = 3 + 10 = 13) The purpose of this standard is to understand the implications for use of these properties (e.g., that adding or subtracting by zero results in no change to the amount I started with, or, I can rearrange the order of the numbers I need to add and I will still end up with the correct result). Thus, students should not be assessed on recall or recognition of formal vocabulary for these ideas, but rather on the application of the properties. Students need several experiences investigating whether the commutative property works with subtraction. The intent is not for students to experiment with negative numbers but only to recognize that taking 5 from 8 is not the same as taking 8 from 5. Students should recognize that they will be working with numbers later on that will allow them to subtract larger numbers from smaller numbers. However, in first grade we do not work with negative numbers.	K.3.1: Use a variety of strategies (e.g., objects, fingers) to add and subtract single-digit whole numbers. K.10.1: Represent simple numerical situations with objects and number sentences.
Domain: Operations and Algebraic Thinking Cluster: Represent and solve problems involving addition and subtraction.	1.OA.4: Understand subtraction as an unknown-addend problem. For example, subtract 10 - 8 by finding the number that makes 10 when added to 8.	The intent of this standard is for students to develop flexibility in applying the inverse relationship between addition and subtraction (although students need not use the formal term "inverse"). For example, consider the following word problem: *There are 9 monkeys at the zoo, some are boys and some are girls. If 3 of the monkeys are girls, how many are boys?* Students should understand that there are two ways to think about and represent the relationship between the quantities in the problem: both 9 - 3 = ___ or 3 + ___ = 9. When determining the answer to a subtraction problem, 12 - 5, students think, "If I have 5, how many more do I need to make 12?" Encouraging students to record this symbolically, 5 + ? = 12, will develop their understanding of the relationship between addition and subtraction. Some strategies they may use are counting objects, creating drawings, counting up, using number lines or 10 frames to determine an answer. Refer to Table 1 at the end of this document to consider the level of difficulty of this standard.	K.3.1: Use a variety of strategies (e.g., objects, fingers) to add and subtract single-digit whole numbers. K.10.1: Represent simple numerical situations with objects and number sentences.

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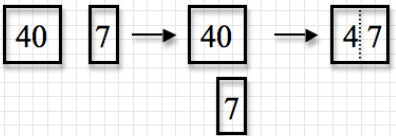| Domain and Cluster	1ˢᵗ Grade Common Core State Standard	Explanation of the Standard[1]	Students' Prior Learning Experiences *(Related Kindergarten HCPS III benchmarks)*
Domain: Operations and Algebraic Thinking Cluster: Add and subtract within 20.	1.OA.5: Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	For this standard, the learning opportunities should build upon students' prior knowledge and experiences with counting, addition and subtraction. Instruction should be designed to purposefully build students understanding of the relationship between counting and addition and subtraction. Students' multiple experiences with counting may hinder their understanding of counting on and counting back as connected to addition and subtraction. To help them make these connections when students count on 3 from 4, they should write this as 4 + 3 = 7. When students count back (3) from 7, they should connect this to 7 − 3 = 4. Students often have difficulty knowing where to begin their count when counting backward.	K.3.1: Use a variety of strategies (e.g., objects, fingers) to add and subtract single-digit whole numbers.
Domain: Operations and Algebraic Thinking Cluster: Add and subtract within 20.	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).	The standard emphasizes the use of efficient strategies that will help students to develop fluency and expertise over time. Students should progress from "counting on" as a strategy to more efficient strategies such as "making ten", using "doubles", and fact families for addition and subtraction. These strategies provide students with a critical foundation for the mathematics they will be studying in future grades. 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 10 and having experiences adding and subtracting within 20. By studying patterns and relationships in addition facts and relating addition and subtraction, students build a foundation for fluency with addition and subtraction facts. **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**. The use of objects, diagrams, or interactive whiteboards and various strategies will help students develop fluency.	K.1.2: Represent whole numbers up to 30 in flexible ways (e.g., relating, composing, and decomposing numbers). K.3.1: Use a variety of strategies (e.g., objects, fingers) to add and subtract single-digit whole numbers.
Domain: Operations and Algebraic Thinking Cluster: Work with addition and subtraction equations.	1.OA.7: Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 − 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.	This standard expects that students will <u>understand</u> that the equal sign is a symbol to indicate equivalence; it represents a relationship between two quantities. Developing this understanding provides a critical foundation for students' later mathematical experiences with solving equations and dealing with algebraic expressions. Students should have numerous experiences (including concrete and semi-concrete representations) to develop an understanding of the concept of equivalence (e.g., using the notion of balance). *(the explanation of this standard continues on the next page)*	K.10.1: Represent simple numerical situations with objects and number sentences.

Domain and Cluster	1st Grade Common Core State Standard	Explanation of the Standard[1]	Students' Prior Learning Experiences *(Related Kindergarten HCPS III benchmarks)*
		Interchanging the language of "equal to" and "the same as" as well as "not equal to" and "not the same as" will help students grasp the meaning of the equal sign. Students should understand that "equality" means "the same quantity as". In order for students to avoid the common pitfall that the equal sign means "to do something" or that the equal sign means "the answer is," they need to be able to: • Express their understanding of the meaning of the equal sign • Accept sentences other than a + b = c as true (a = a, c = a + b, a = a + 0, a + b = b + a) • Know that the equal sign represents a relationship between two equal quantities • Compare expressions without calculating These key skills are hierarchical in nature and need to be developed over time. Experiences determining if equations are true or false help student develop these skills. Initially, students develop an understanding of the meaning of equality using models. However, the goal is for students to reason at a more abstract level. At all times students should justify their answers, make conjectures (e.g., if you add a number and then subtract that same number, you always get zero), and make estimations. Once students have a solid foundation of the key skills listed above, they can begin to rewrite true/false statements using the symbols, < and >. Examples of true and false statements: • $7 = 8 - 1$ • $8 = 8$ • $1 + 1 + 3 = 7$ • $4 + 3 = 3 + 4$ • $6 - 1 = 1 - 6$ • $12 + 2 - 2 = 12$ • $9 + 3 = 10$ • $5 + 3 = 10 - 2$ • $3 + 4 + 5 = 3 + 5 + 4$ • $3 + 4 + 5 = 7 + 5$ • $13 = 10 + 4$ • $10 + 9 + 1 = 19$	

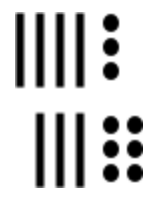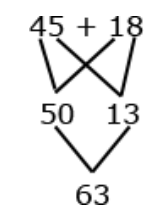| Domain and Cluster	1st Grade Common Core State Standard	Explanation of the Standard[1]	Students' Prior Learning Experiences (Related Kindergarten HCPS III benchmarks)
Domain: Operations and Algebraic Thinking Cluster: Work with addition and subtraction equations.	1.OA.8: Determine the unknown number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = ? - 3, 6 + 6 = ?.	Learning opportunities should build on students' prior knowledge of and experience with addition, subtraction (and composing and decomposing numbers), and equivalence (from Kindergarten and other grade 1 standards). Learning opportunities should include a variety of equations, with the symbol for the unknown quantity appearing in any position. This standard is closely related to (and thus, builds off of) 1.OA.4. Standard 1.OA.4 describes an expectation to "understand" an important mathematical idea, while 1.OA.8 describes an expectation of applying that understanding to perform a task or skill. In addition, this standard is closely related to (and thus, builds off of) 1.OA.7. Students need to understand the meaning of the equal sign and know that the quantity on one side of the equal sign must be the same quantity on the other side of the equal sign. They should be exposed to problems with the unknown in different positions. Having students create word problems for given equations will help them make sense of the equation and develop strategic thinking. Examples of possible student "think-throughs": - *8 + ? = 11*: "8 and some number is the same as 11. 8 and 2 is 10 and 1 more makes 11. So the answer is 3." - *5 = □ – 3*: "This equation means I had some cookies and I ate 3 of them. Now I have 5. How many cookies did I have to start with? Since I have 5 left and I ate 3, I know I started with 8 because I count on from 5. . . 6, 7, 8." Students may use a document camera or interactive whiteboard to display their combining or separating strategies for solving the equations. This gives them the opportunity to communicate and justify their thinking.	K.10.1: Represent simple numerical situations with objects and number sentences.
Domain: Number and Operations in Base Ten Cluster: Extend the counting sequence.	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.	Students use objects, words, and/or symbols to express their understanding of numbers. They extend their counting beyond 100 to count up to 120 by counting by 1s. Some students may begin to count in groups of 10 (while other students may use groups of 2s or 5s to count). Counting in groups of 10 as well as grouping objects into 10 groups of 10 will develop students understanding of place value concepts. *(the explanation of this standard continues on the next page)*	K.1.1: Count and compare groups of objects up to 30 according to the number of objects in each group. K.1.2: Represent whole numbers up to 30 in flexible ways (e.g., relating, composing, and decomposing numbers).

Domain and Cluster	1st Grade Common Core State Standard	Explanation of the Standard[1]	Students' Prior Learning Experiences *(Related Kindergarten HCPS III benchmarks)*
		Students extend reading and writing numerals beyond 20 to 120. After counting objects, students write the numeral or use numeral cards to represent the number. Given a numeral, students read the numeral, identify the quantity that each digit represents using numeral cards, and count out the given number of objects. Students should experience counting from different starting points (e.g., start at 83; count to 120). To extend students' understanding of counting, they should be given opportunities to count backwards by ones and tens. They should also investigate patterns in the base 10 system.	
Domain: Number and Operations in Base Ten Cluster: Understand place value.	1.NBT.2: Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones — called a "ten." b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).	This is the first learning expectation in CCSS where students are using "10" as a unit (i.e., understanding that "1 ten" is made up of 10 ones). This standard builds upon the Kindergarten standard K.NBT.1. Grade 1 teachers should refer to this related Kindergarten standard to scaffold instruction appropriately. This standard provides a critical foundation for understanding not only number names, but place value. Students should have numerous learning opportunities to develop the foundational understanding that is necessary to build upon in subsequent grades. Understanding the concept of 10 is fundamental to children's mathematical development. Students need multiple opportunities counting 10 objects and "bundling" them into one group of ten. They count between 10 and 20 objects and make a bundle of 10 with or without some left over (this will help students who find it difficult to write teen numbers). Finally, students count any number of objects up to 99, making bundles of 10s with or without leftovers. As students are representing the various amounts, it is important that an emphasis is placed on the language associated with the quantity. For example, 53 should be expressed in multiple ways such as 53 ones or 5 groups of ten with 3 ones leftover. When students read numbers, they read them in standard form as well as using place value concepts. For example, 53 should be read as "fifty-three" as well as five tens, 3 ones. Reading 10, 20, 30, 40, 50 as "one ten, 2 tens, 3 tens, etc." helps students see the patterns in the number system. Students may use the document camera or interactive whiteboard to demonstrate their "bundling" of objects. This gives them the opportunity to communicate their counting and thinking.	K.1.2: Represent whole numbers up to 30 in flexible ways (e.g., relating, composing, and decomposing numbers).

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Domain and Cluster	1st Grade Common Core State Standard	Explanation of the Standard[1]	Students' Prior Learning Experiences (Related Kindergarten HCPS III benchmarks)
Domain: Number and Operations in Base Ten Cluster: Understand place value.	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 <.	Building on standard 1.NBT.2, this standard extends students' number sense so that they can apply their conceptual understanding (of place value) in a way that helps them to make comparisons between quantities. Students use models that represent two sets of numbers. To compare, students first attend to the number of tens, then, if necessary, to the number of ones. Students may also use pictures, number lines, and spoken or written words to compare two numbers. Comparative language includes but is not limited to more than, less than, greater than, most, greatest, least, same as, equal to and not equal to.	K.1.1: Count and compare groups of objects up to 30 according to the number of objects in each group. K.1.2: Represent whole numbers up to 30 in flexible ways (e.g., relating, composing, and decomposing numbers).
Domain: Number and Operations in Base Ten Cluster: Use place value understanding and properties of operations to add and subtract.	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.	This standard builds on students' prior experiences and background knowledge regarding addition and place value. For example, as students previously learned the strategy of "making ten" for adding single-digit numbers, learning opportunities should be provided to extend students' understanding to develop fluency with the "make the nearest ten" strategy for addition of larger numbers. Students should gradually become less reliant on "counting on" strategies and develop fluency with more efficient strategies for addition of larger numbers (for example, applying the strategy of "partitioning"). In this standard, the phrase, "and sometimes it is necessary to compose a ten" implies that students will be able to use "regrouping" as a strategy (which is a strategy was not explicitly addressed in HCPS III grade 1 benchmarks). Students extend their number fact and place value strategies to add within 100. They represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols. It is important for students to understand if they are adding a number that has 10s to a number with 10s, they will have more tens than they started with; the same applies to the ones. Also, students should be able to apply their place value skills to decompose numbers. For example, 17 + 12 can be thought of 1 ten and 7 ones plus 1 ten and 2 ones. Numeral cards may help students decompose the numbers into 10s and 1s. Students should be exposed to problems both in and out of context and presented in horizontal and vertical forms. As students are solving problems, it is important that they use language associated with proper place value (see example). They should always explain and justify their mathematical thinking both verbally and in a written format. Estimating the solution prior to finding the answer focuses students on the meaning of the operation and helps them attend to the actual quantities. This standard focuses on developing addition - the intent is not to introduce traditional algorithms or rules. ***Additional examples of this standard are provided on the next page.***	K.1.2: Represent whole numbers up to 30 in flexible ways (e.g., relating, composing, and decomposing numbers). K.3.1: Use a variety of strategies (e.g., objects, fingers) to add and subtract single-digit whole numbers.

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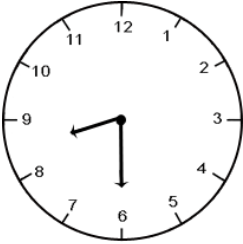| Domain and Cluster	1st Grade Common Core State Standard	Explanation of the Standard[1]		Students' Prior Learning Experiences *(Related Kindergarten HCPS III benchmarks)*
		Example 1: **43 + 36** Student counts the 10s (10, 20, 30…70 or 1, 2, 3…7 tens) and then the 1s. (diagram of tens and ones) Note: while this is a strategy that students can use initially, ***students should eventually build fluency with more efficient strategies that don't rely on counting*** (i.e., examples 3 and 4 below).	Example 2: **28** **+ 34** Student thinks: 2 tens plus 3 tens is 5 tens or 50. S/he counts the ones and notices there is another 10 plus 2 more. 50 and 10 is 60 plus 2 more or 62. (diagram of tens and ones with ones circled)	
		Example 3: **45 + 18** Student thinks: Four 10s and one 10 are 5 tens or 50. Then 5 and 8 is 5 + 5 + 3 (or 8 + 2 + 3) or 13. 50 and 13 is 6 tens plus 3 more or 63. 45 + 18 50 13 63	Example 4: **29** **+ 14** Student thinks: "29 is almost 30. I added one to 29 to get to 30. 30 and 14 is 44. Since I added one to 29, I have to subtract one so the answer is 43."	

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Domain and Cluster	1st Grade Common Core State Standard	Explanation of the Standard[1]	Students' Prior Learning Experiences *(Related Kindergarten HCPS III benchmarks)*
Domain: Number and Operations in Base Ten Cluster: Use place value understanding and properties of operations to add and subtract.	1.NBT.5: Use place value understanding and properties of operations to add and subtract. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.	This standard requires students to understand and apply the concept of 10 which provides an important foundation for learning future place value concepts. It is critical for students to do this **without** counting. Prior use of models such as base ten blocks, number lines, and 100s charts helps facilitate this understanding. It also helps students see the pattern involved when adding or subtracting 10. Examples: - 10 more than 43 is 53 because 53 is one more 10 than 43 - 10 less than 43 is 33 because 33 is one 10 less than 43 Students may use interactive versions of models (base ten blocks, 100s charts, number lines, etc) to develop prior understanding.	K.3.1: Use a variety of strategies (e.g., objects, fingers) to add and subtract single-digit whole numbers.
Domain: Number and Operations in Base Ten Cluster: Use place value understanding and properties of operations to add and subtract.	1.NBT.6: Use place value understanding and properties of operations to add and subtract. 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.	This standard is foundational for future work in subtraction with more complex numbers. Students should have multiple experiences representing numbers that are multiples of 10 (e.g. 90) with models or drawings. Then they subtract multiples of 10 (e.g. 20) using these representations or strategies based on place value. These opportunities develop fluency of addition and subtraction facts and reinforce counting up and back by 10s. Examples: - 70 - 30: Seven 10s take away three 10s is four 10s - 80 - 50: 80, 70 (one 10), 60 (two 10s), 50 (three 10s), 40 (four 10s), 30 (five 10s) - 60 - 40: I know that 4 + 2 is 6 so four 10s + two 10s is six 10s so 60 - 40 is 20 Students may use interactive versions of models (base ten blocks,100s charts, number lines, etc.) to demonstrate and justify their thinking. Looking forward to grade 2, students must develop fluency with the understanding expected to be learned in this standard. A second grade expectation builds upon this standard expecting students to apply this strategy to larger numbers. Grade 1 teachers should refer to the second grade standard, 2.NBT.8.	K.3.1: Use a variety of strategies (e.g., objects, fingers) to add and subtract single-digit whole numbers.

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Domain and Cluster	1st Grade Common Core State Standard	Explanation of the Standard[1]	Students' Prior Learning Experiences (Related Kindergarten HCPS III benchmarks)
Domain: Measurement and Data

Cluster: Measure lengths indirectly and by iterating length units. | 1.MD.1: Order three objects by length; compare the lengths of two objects indirectly by using a third object. | In order for students to be able to compare objects, students need to understand that length is measured from one end point to another end point. They determine which of two objects is longer, by physically aligning the objects. Typical language of length includes taller, shorter, longer, and higher. When students use bigger or smaller as a comparison, they should explain what they mean by the word. Some objects may have more than one measurement of length, so students identify the length they are measuring. Both the length and the width of an object are measurements of length.

Examples for ordering:
- Order three students by their height
- Order pencils, crayons, and/or markers by length
- Build three towers (with cubes) and order them from shortest to tallest
- Three students each draw one line, then order the lines from longest to shortest

Example for comparing indirectly:
- Two students each make a dough "snake." Given a tower of cubes, each student compares his/her snake to the tower. Then students make statements such as, "My snake is longer than the cube tower and your snake is shorter than the cube tower. So, my snake is longer than your snake."

Students may use interactive whiteboard or document camera to demonstrate and justify comparisons. | K.4.1: Compare and order objects according to length, weight, capacity, area, and volume. |
| Domain: Measurement and Data

Cluster: Measure lengths indirectly and by iterating length units. | 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. | Students use their counting skills while measuring with non-standard units. While this standard limits measurement to whole numbers of length, in a natural environment, not all objects will measure to an exact whole unit. When students determine that the length of a pencil is six to seven paperclips long, they can state that it is about six paperclips long. For example,

- Ask students to use multiple units of the same object to measure the length of a pencil. (How many paper clips will it take to measure how long the pencil is?)

Students may use the document camera or interactive whiteboard to demonstrate their counting and measuring skills. | K.4.1: Compare and order objects according to length, weight, capacity, area, and volume. |
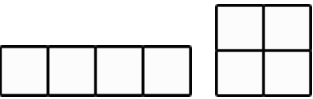
[1] Explanations include excerpts from the Hawaii Department of Education Curriculum and Instruction Branch's crosswalk documents (http://standardstoolkit.k12.hi.us/index.html) and from the Arizona Department of Education Standards and Assessment Division's 2010 Academic Content Standards for Mathematics (http://www.ade.az.gov/standards/math/2010MathStandards/) with permission granted by Dr. Mary Knuck, Deputy Associate Superintendent.

Domain and Cluster	1st Grade Common Core State Standard	Explanation of the Standard[1]	Students' Prior Learning Experiences *(Related Kindergarten HCPS III benchmarks)*
Domain: Measurement and Data Cluster: Tell and write time.	1.MD.3: Tell and write time in hours and half-hours using analog and digital clocks.	Ideas to support telling time: • within a day, the hour hand goes around a clock twice (the hand moves only in one direction) • when the hour hand points exactly to a number, the time is exactly on the hour • time on the hour is written in the same manner as it appears on a digital clock • the hour hand moves as time passes, so when it is half way between two numbers it is at the half hour • there are 60 minutes in one hour; so halfway between an hour, 30 minutes have passed • half hour is written with "30" after the colon "It is 4 o'clock" "It is halfway between 8 o'clock and 9 o'clock. It is 8:30." The idea of 30 being "halfway" is difficult for students to grasp. Students can write the numbers from 0 - 60 counting by tens on a sentence strip. Fold the paper in half and determine that halfway between 0 and 60 is 30. A number line on an interactive whiteboard may also be used to demonstrate this.	K.4.3: Tell time to the hour.

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Domain and Cluster	1st Grade Common Core State Standard	Explanation of the Standard[1]	Students' Prior Learning Experiences (Related Kindergarten HCPS III benchmarks)
Domain: Measurement and Data Cluster: Represent and interpret data.	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.	This standard expects that students will be able to organize data into tables and represent the information in simple bar graphs. Students create object graphs and tally charts using data relevant to their lives (e.g., favorite ice cream, eye color, pets, etc.). Graphs may be constructed by groups of students as well as by individual students. Counting objects should be reinforced when collecting, representing, and interpreting data. Students describe the object graphs and tally charts they create. They should also ask and answer questions based on these charts or graphs that reinforce other mathematics concepts such as sorting and comparing. The data chosen or questions asked give students opportunities to reinforce their understanding of place value, identifying ten more and ten less, relating counting to addition and subtraction and using comparative language and symbols. Students may use an interactive whiteboard to place objects onto a graph. This gives them the opportunity to communicate and justify their thinking.	K.1.1: Count and compare groups of objects up to 30 according to the number of objects in each group.
Domain: Geometry Cluster: Reason with shapes and attributes.	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) for a wide variety of shapes; build and draw shapes to possess defining attributes.	This standard builds on students prior experiences and first grade teachers should refer to the Kindergarten standards in the Geometry domain. CC standard K.G.5 expected student to "build shapes," for example, using sticks and clay balls. Attributes refer to any characteristic of a shape. Students use attribute language to describe a given two-dimensional shape: number of sides, number of vertices/points, straight sides, closed. A child might describe a triangle as "right side up" or "red." These attributes are not defining because they are not relevant to whether a shape is a triangle or not. Students should articulate ideas such as, "A triangle is a triangle because it has three straight sides and is closed." It is important that students are exposed to both regular and irregular shapes so that they can communicate defining attributes. Students should use attribute language to describe why these shapes are not triangles. Students should also use appropriate language to describe a given three-dimensional shape: number of faces, number of vertices/points, and number of edges. ***(the explanation of this standard continues on the next page)***	K.5.1: Identify common geometric shapes (e.g., circle, square, rectangle, triangle). K.6.1: Use slides, flips, and turns to solve puzzles.

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Domain and Cluster	1st Grade Common Core State Standard	Explanation of the Standard[1]	Students' Prior Learning Experiences (Related Kindergarten HCPS III benchmarks)
		Example: A cylinder would be described as a solid that has two circular faces connected by a curved surface (which is not considered a face). Students may say, "It looks like a can." Students should compare and contrast two-and three-dimensional figures using defining attributes. Examples: • List two things that are the same and two things that are different between a triangle and a cube. • Given a circle and a sphere, students identify the sphere as being three-dimensional but both are round. • Given a trapezoid, find another two-dimensional shape that has two things that are the same. Students may use interactive whiteboards or computer environments to move shapes into different orientations and to enlarge or decrease the size of a shape still keeping the same shape. They can also move a point/vertex of a triangle and identify that the new shape is still a triangle. When they move one point/vertex of a rectangle they should recognize that the resulting shape is no longer a rectangle.	
Domain: Geometry Cluster: Reason with shapes and attributes.	1.G.2: Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. (Students do not need to learn formal names such as "right rectangular prism.")	The ability to describe, use and visualize the effect of composing and decomposing shapes is an important mathematical skill. It is not only relevant to geometry, but is related to children's ability to compose and decompose numbers. Students may use pattern blocks, plastic shapes, tangrams, or computer environments to make new shapes. The teacher can provide students with cutouts of shapes and ask them to combine them to make a particular shape. Example: • What shapes can be made from four squares? Students can make three-dimensional shapes with clay or dough, slice into two pieces (not necessarily congruent) and describe the two resulting shapes. For example, slicing a cylinder will result in two smaller cylinders.	K.5.1: Identify common geometric shapes (e.g., circle, square, rectangle, triangle). K.6.1: Use slides, flips, and turns to solve puzzles.

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Domain and Cluster	1st Grade Common Core State Standard	Explanation of the Standard[1]	Students' Prior Learning Experiences *(Related Kindergarten HCPS III benchmarks)*
Domain: Geometry Cluster: Reason with shapes and attributes.	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.	This learning expectation provides a concrete representation of and a rudimentary introduction to the concepts of division (partitioning into "equal shares") and fractions. In addition, this standard compels a variety of learning activities (including *kinesthetic* learning activities) with objects that should be purposefully designed to help students **make a connection between their actions performed upon the concrete objects** (e.g., folding a sheet of paper to show 2 equal parts) **and the mathematical idea being represented as a result of that action** (e.g., that one side of the fold represents one-half of the whole). Students need experiences with different sized circles and rectangles to recognize that when they cut something into two equal pieces, each piece will equal one half of its original whole. Children should recognize that halves of two different wholes are not necessarily the same size. Example: Student partitions a rectangular candy bar to share equally with one friend and thinks "I cut the rectangle into two equal parts. When I put the two parts back together, they equal the whole candy bar. One half of the candy bar is smaller than the whole candy bar." Example: Students partition a pizza to share equally with three friends. They recognize that they now have four equal pieces and each will receive a fourth or quarter of the whole pizza. Example: Student partitions a rectangular candy bar (identical to the one above in the first example) to share equally with 3 friends and thinks "I cut the rectangle into four equal parts. Each piece is one fourth of or one quarter of the whole candy bar. When I put the four parts back together, they equal the whole candy bar. I can compare the pieces (one half and one fourth) by placing them side-by-side. One fourth of the candy bar is smaller than one half of the candy bar.	None.

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

	Result Unknown	Change Unknown	Start Unknown
Add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? 2 + 3 = ?	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? 2 + ? = 5	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? ? + 3 = 5
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? 5 − 2 = ?	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? 5 − ? = 3	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? ? − 2 = 3
	Total Unknown	**Addend Unknown**	**Both Addends Unknown** (Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation, especially for small numbers less than or equal to 10.)
Put Together / Take Apart (These "take apart" situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean makes or results in but always does mean is the same number as.)	Three red apples and two green apples are on the table. How many apples are on the table? 3 + 2 = ?	Five apples are on the table. Three are red and the rest are green. How many apples are green? 3 + ? = 5, 5 − 3 = ?	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 5 = 0 + 5, 5 = 5 + 0 5 = 1 + 4, 5 = 4 + 1 5 = 2 + 3, 5 = 3 + 2
	Difference Unknown	**Bigger Unknown**	**Smaller Unknown**
Compare (For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using more for the bigger unknown and using less for the smaller unknown). The other versions are more difficult.)	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? 2 + ? = 5, 5 − 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? 2 + 3 = ?, 3 + 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? 5 − 3 = ?, ? + 3 = 5