

## Common Core State Standards for Mathematics

### Grade 1: The Big Picture

Domains	Operations and Algebraic Thinking	Number & Operations in Base Ten	Measurement and Data	Geometry
Clusters	<ul style="list-style-type: none"> <li>Represent and solve problems involving addition and subtraction</li> <li>Understand and apply properties of operations and the relationship between addition and subtraction</li> <li>Add and subtract within 20</li> <li>Work with addition and subtraction equations</li> </ul>	<ul style="list-style-type: none"> <li>Extend the counting sequence</li> <li>Understand place value</li> <li>Use place value understanding and properties of operations to add and subtract</li> </ul>	<ul style="list-style-type: none"> <li>Measure lengths indirectly and by iterating length units</li> <li>Tell and write time</li> <li>Represent and interpret data</li> </ul>	<ul style="list-style-type: none"> <li>Reason with shapes and their attributes</li> </ul>
Mathematical Practices	1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively.	3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics.	5. Use appropriate tools strategically. 6. Attend to precision.	7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.

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

**1. Developing understanding of addition, subtraction, and strategies for addition and subtraction within 20**

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

**2. Developing understanding of whole number relationship and place value, including grouping in tens and ones**

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

**3. Developing understanding of linear measurement and measuring lengths as iterating length units**

- Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement. (Note: students should apply the principle of transitivity of measurement to make direct comparisons, but they need not use this technical term.)

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

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

**GRADE 1 MATHEMATICS: Crosswalk between the Common Core State Standards (CCSS) and the Hawaii Content and Performance Standards (HCPS) III**

Code	Common Core State Standard	Matched HCPS III Benchmark	Match*	Comments
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.	<p>1.3.2: Use a variety of strategies to solve number problems involving addition and subtraction (e.g. comparing sets, counting on, counting backwards, doubles, doubles plus one).</p> <p>1.10.1: Use objects, pictures, words, and number sentences to represent and solve numerical problem situations involving addition and subtraction.</p>	3	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. Also, for clarification of the phrase, "with unknowns in all positions," refer to Table 1 of the Glossary (page 88) in the official CCSS for Mathematics document (a PDF of the document may be downloaded at <a href="http://www.corestandards.org/the-standards">www.corestandards.org/the-standards</a> ).
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.	<p>1.10.1: Use objects, pictures, words, and number sentences to represent and solve numerical problem situations involving addition and subtraction.</p> <p><i>Related benchmark at another grade level: 2.2.1: Recognize situations involving addition and subtraction and represent the situation with a number sentence.</i></p>	1	The CC standard specifies three distinctly different components than the related HCPS3 benchmarks: word problems, addition of 3 whole numbers, and the use of a symbol for an unknown quantity in an equation.
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.)	<p>No HCPS3 benchmark at this grade level.</p> <p><i>Related benchmark at another grade level: 3.2.4: Use properties of addition of whole numbers (e.g. associative, commutative) to solve problems.</i></p>	N/A	<p>This Common Core Standard is a new learning expectation for this grade level.</p> <p>This CC standard is about understanding and applying the notion that you can put addends together in any order and get the same result. Although, 1.2.1 (HCPS III) appears to be related, 1.2.1 is more about the inverse relationship between addition and subtraction (which is addressed in CC standard 1.OA.4).</p>

\* Degree of Match: 1 = WEAK (major aspect of the CC not addressed in HCPS III); 2 = GOOD (minor aspect of the CC not addressed in HCPS III); 3 = EXCELLENT

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Code	Common Core State Standard	Matched HCPS III Benchmark	Match*	Comments
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.	<p>1.2.1: Demonstrate that addition and subtraction of whole numbers can undo each other.</p> <p>1.10.1: Use objects, pictures, words, and number sentences to represent and solve numerical problem situations involving addition and subtraction.</p>	2	<p>The intent of CC.1.OA.4 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:</p> <p><i>There are 9 monkeys at the zoo, some are big and some are small. If 3 of the monkeys are small, how many are big?</i></p> <p>Students should understand that there are two ways to think about and represent the relationship between the quantities in the problem: both <math>9 - 3 = \underline{\quad}</math> or <math>3 + \underline{\quad} = 9</math>.</p>
1.OA.5	Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	<p>1.1.1: Count whole numbers up to 100 in a variety of ways (e.g., skip counts by 2's, 5's, 10's).</p> <p>1.3.2: Use a variety of strategies to solve number problems involving addition and subtraction (e.g. comparing sets, counting on, counting backwards, doubles, doubles plus one).</p>	3	For this CC 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.
1.OA.6	<p>Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as</p> <ul style="list-style-type: none"> <li>counting on;</li> <li>making ten (e.g., <math>8 + 6 = 8 + 2 + 4 = 10 + 4 = 14</math>);</li> <li>decomposing a number leading to a ten (for example, <math>13 - 4 = 13 - 3 - 1 = 10 - 1 = 9</math>);</li> <li>using the relationship between addition and subtraction (e.g., knowing that <math>8 + 4 = 12</math>, one knows <math>12 - 8 = 4</math>); and,</li> <li>creating equivalent but easier or known sums (e.g., adding <math>6 + 7</math> by creating the known equivalent <math>6 + 6 + 1 = 12 + 1 = 13</math>).</li> </ul>	<p>1.3.2: Use a variety of strategies to solve number problems involving addition and subtraction (e.g. comparing sets, counting on, counting backwards, doubles, doubles plus one).</p> <p>1.2.1: Demonstrate that addition and subtraction of whole numbers can undo each other.</p>	2	The CC 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.

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Code	Common Core State Standard	Matched HCPS III Benchmark	Match*	Comments
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? $6 = 6$ , $7 = 8 - 1$ , $5 + 2 = 2 + 5$ , $4 + 1 = 5 + 2$ .	No HCPS3 benchmark at this grade level.	N/A	This Common Core Standard is a new learning expectation for this grade level.  This CC 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).
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: $8 + ? = 11$ , $5 = ? - 3$ , $6 + 6 = ?$ .	1.3.2: Use a variety of strategies to solve number problems involving addition and subtraction (e.g. comparing sets, counting on, counting backwards, doubles, doubles plus one).  1.10.1: Use objects, pictures, words, and number sentences to represent and solve numerical problem situations involving addition and subtraction.  1.3.1: Recall single-digit addition facts.	1	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 CC standard is closely related to (and thus, builds off of) 1.OA.4. CC 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.
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.	1.1.1: Count whole numbers up to 100 in a variety of ways (e.g., skip counts by 2's, 5's, 10's).	2	

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Code	Common Core State Standard	Matched HCPS III Benchmark	Match*	Comments
1.NBT.2	<p>Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:</p> <p>a. 10 can be thought of as a bundle of ten ones — called a “ten.”</p> <p>b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.</p> <p>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).</p>	1.1.3: Represent whole numbers up to 100 in flexible ways (e.g., relating, composing, and decomposing numbers).	1	This CC standard provides a critical foundation for understanding not only number names, but place value. Students should have numerous learning opportunities to develop the understanding that is described in these learning expectations to provide students with a foundation that is needed for several other standards in grade 1 as well as in subsequent grades. 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 CC standard builds upon the Kindergarten standard K.NBT.1. Grade 1 teachers should refer to this related Kindergarten standard to scaffold instruction appropriately.
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 $<$ .	1.1.3: Represent whole numbers up to 100 in flexible ways (e.g., relating, composing, and decomposing numbers).	1	Building on standard 1.NBT.2, this CC 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.
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.	<p>1.3.2: Use a variety of strategies to solve number problems involving addition and subtraction (e.g. comparing sets, counting on, counting backwards, doubles, doubles plus one).</p> <p>1.2.1: Demonstrate that addition and subtraction of whole numbers can undo each other.</p>	2	<p>This CC 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").</p> <p>In this CC 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).</p>

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Code	Common Core State Standard	Matched HCPS III Benchmark	Match*	Comments
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.	1.3.2: Use a variety of strategies to solve number problems involving addition and subtraction (e.g. comparing sets, counting on, counting backwards, doubles, doubles plus one).	2	
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.	1.3.2: Use a variety of strategies to solve number problems involving addition and subtraction (e.g. comparing sets, counting on, counting backwards, doubles, doubles plus one).  1.2.1: Demonstrate that addition and subtraction of whole numbers can undo each other.	2	Looking forward to grade 2, students must develop fluency with this; a second grade expectation builds upon this standard expecting students to apply this strategy to larger numbers. Grade 1 teachers should refer to grade 2 CC standard 2.NBT.8.
1.MD.1	Order three objects by length; compare the lengths of two objects indirectly by using a third object.	No HCPS3 benchmark at this grade level.  <i>Related benchmark at another grade level: K.4.1: Compare and order objects according to length, weight, capacity, area, and volume.</i>	N/A	This Common Core Standard is a new learning expectation for this grade level.
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.	1.4.1: Measure with multiple copies of standard (e.g., inch tiles, foot-long lengths of string) or non-standard (e.g., paper clips, pencils) units of the same size.	3	This CC standard is focused on using non-standard units of measurement.
1.MD.3	Tell and write time in hours and half-hours using analog and digital clocks.	1.4.3: Tell time to the half-hour and quarter hour.	3	
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.	1.11.1: Collect and organize information using concrete objects and pictures.  1.12.1: Interpret data using simple language (e.g. more, less, fewer, equal).	3	This CC standard expects that students will be able to organize data into tables and represent the information in simple bar graphs.

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Code	Common Core State Standard	Matched HCPS III Benchmark	Match*	Comments
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.	1.5.2: Identify attributes and parts of common two- and three-dimensional shapes.  <i>Related benchmark at another grade level: 2.5.1: Compare and sort two- and three-dimensional shapes according to selected attributes.</i>	1	This CC 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.
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.")	No HCPS3 benchmark at this grade level.	N/A	This Common Core Standard is a new learning expectation for this grade level.
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.	1.1.2: Identify representations of simple fractions (e.g., one-half, one-third, one fourth).	2	This CC standard provides a concrete representation of and a rudimentary introduction to the concepts of division (partitioning into "equal shares") and fractions.

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## MATHEMATICS: HCPS III Benchmarks Mapped to the Common Core State Standards

## GRADE 1

HCPS III Code	HCPS III Benchmark	Related Common Core Standard
1.1.1	Count whole numbers up to 100 in a variety of ways (e.g., skip counts by 2's, 5's, 10's)	1.OA.5, 1.NBT.1
1.1.2	Identify representations of simple fractions (e.g., one-half, one-third, one fourth)	1.G.2
1.1.3	Represent whole numbers up to 100 in flexible ways (e.g., relating, composing, and decomposing numbers), including the use of tens as a unit	1.NBT.1, 1.NBT.2, 1.NBT.3
1.2.1	Demonstrate that addition and subtraction of whole numbers can undo each other	1.OA.4, 1.OA.6, 1.NBT.4, 1.NBT.6
1.3.1	Recall single-digit addition facts	1.OA.8
1.3.2	Use a variety of strategies to solve number problems involving addition and subtraction (e.g., comparing sets, counting on, counting backwards, doubles, doubles plus one)	1.OA.1, 1.OA.2, 1.OA.5, 1.OA.6, 1.OA.8, 1.NBT.4, 1.NBT.5, 1.NBT.6
1.4.1	Measure with multiple copies of standard (e.g., inch tiles, foot-long lengths of string) or non-standard (e.g., paper clips, pencils) units of the same size	1.MD.2
<del>1.4.2</del>	<del>Identify the value of coins and count coin combinations (using like coins) to a dollar</del>	None
1.4.3	Tell time to the half-hour and quarter-hour	1.MD.3*
<del>1.4.4</del>	<del>Identify measurement tools that could be used to measure length, capacity, and weight</del>	None
<del>1.5.1</del>	<del>Identify basic three-dimensional geometric solids (e.g., cube, sphere, rectangular prism)</del>	None
1.5.2	Identify attributes and parts of common two- and three-dimensional shapes	1.G.1
<del>1.6.1</del>	<del>Identify symmetrical shapes found in the real world</del>	None
<del>1.8.1</del>	<del>Use directional words to locate an object or place (e.g., left, right, near, far)</del>	None
<del>1.9.1</del>	<del>Extend, create, and describe repeating patterns</del>	None
1.10.1	Use objects, pictures, words, and number sentences to represent and solve numerical problem situations involving addition and subtraction	1.OA.1, 1.OA.2, 1.OA.4, 1.OA.8
1.11.1	Collect and organize information using concrete objects and pictures	1.MD.4
1.12.1	Interpret data using simple language (e.g., more, less, fewer, equal)	1.MD.4

\* There are no CC standards in Grade K addressing concepts of telling time (whereas HCPS III did have a Grade K benchmark dealing with telling time). Standard 1.MD.3 is the first learning expectation regarding time in the Common Core.