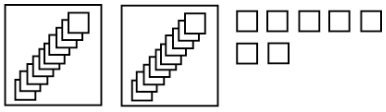
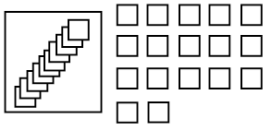
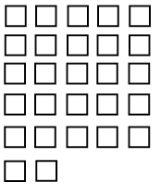
Grade 1

1.1. Core Content: *Whole number relationships* *(Numbers, Operations)*

Students continue to work with whole numbers to quantify objects. They consider how numbers relate to one another. As they expand the set of numbers they work with, students start to develop critical concepts of ones and tens that introduce them to place value in our base ten number system. An understanding of how ones and tens relate to each other allows students to begin adding and subtracting two-digit numbers, where thinking of ten ones as one ten and vice versa is routine. Some students will be ready to work with numbers larger than those identified in the *Expectations* and should be given every opportunity to do so.

Performance Expectations		***Explanatory Comments and Examples***
Students are expected to:		
1.1.A	Count by ones forward and backward from 1 to 120, starting at any number, and count by twos, fives, and tens to 100.	Research suggests that when students count past 100, they often make errors such as “99, 100, 200” and “109, 110, 120.” However, once a student counts to 120 consistently, it is highly improbable that additional counting errors will be made. Example: • Start at 113. Count backward. I'll tell you when to stop. [Stop when the student has counted backward ten numbers.]
1.1.B	Name the number that is one less or one more than any number given verbally up to 120.	
1.1.C	Read aloud numerals from 0 to 1,000.	The patterns in the base ten number system become clearer to students when they count in the hundreds. Therefore, learning the names of three-digit numbers supports the learning of more difficult two-digit numbers (such as numbers in the teens and numbers ending in 0 or 1).
1.1.D	Order objects or events using ordinal numbers.	Students use ordinal numbers to describe positions through the twentieth. Example: • John is fourth in line.
1.1.E	Write, compare, and order numbers to 120.	Students arrange numbers in lists or talk about the relationships among numbers using the words *equal to*, *greater than*, *less than*, *greatest*, and *least*. Example: • Write the numbers 27, 2, 111, and 35 from least to greatest. Students might also describe which of two numbers is closer to a given number. This is part of developing an understanding of the relative value of numbers.

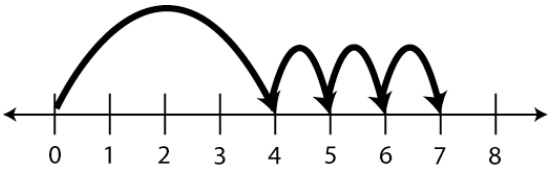
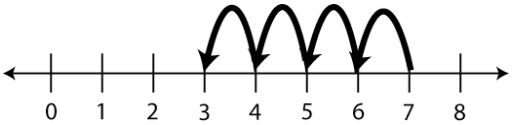
Performance Expectations *Students are expected to:*	Explanatory Comments and Examples
1.1.F Fluently compose and decompose numbers to 10.	Students put together and take apart whole numbers as a precursor to addition and subtraction. Examples: • Ten is 2 + 5 + 1 + 1 + 1. • Eight is five and three. • Here are twelve coins. I will hide some. If you see three, how many am I hiding? [This example demonstrates how students might be encouraged to go beyond the expectation.]
1.1.G Group numbers into tens and ones in more than one way.	Students demonstrate that the value of a number remains the same regardless of how it is grouped. Grouping of numbers lays a foundation for future work with addition and subtraction of two-digit numbers, where renaming may be necessary. For example, twenty-seven objects can be grouped as 2 tens and 7 ones, regrouped as 1 ten and 17 ones, and regrouped again as 27 ones. The total (27) remains constant. 27 can be shown as  $27 = 10 + 10 + 7$ 27 can be shown as  $27 = 10 + 17$ 27 can be shown as 
1.1.H Group and count objects by tens, fives, and twos.	Given 23 objects, the student will count them by tens as 10, 20, 21, 22, 23; by fives as 5, 10, 15, 20, 21, 22, 23; and by twos as 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 23.

Performance Expectations	Explanatory Comments and Examples
Students are expected to:	
1.1.I Classify a number as odd or even and demonstrate that it is odd or even.	Students use words, objects, or pictures to demonstrate that a given number is odd or even. Example: • 13 is odd because 13 counters cannot be regrouped into two equal piles. • 20 is even because every counter in this set of 20 counters can be paired with another counter in the set.

Grade 1

1.2. Core Content: *Addition and subtraction* *(Operations, Algebra)*

Students learn how to add and subtract, when to add and subtract, and how addition and subtraction relate to each other. Understanding that addition and subtraction undo each other is an important part of learning to use these operations efficiently and accurately. Students notice patterns involving addition and subtraction, and they work with other types of patterns as they learn to make generalizations about what they observe.

Performance Expectations	***Explanatory Comments and Examples***
Students are expected to:	
1.2.A Connect physical and pictorial representations to addition and subtraction equations.	The intention of the standard is for students to understand that mathematical equations represent situations. Simple student responses are adequate. Combining a set of 3 objects and a set of 5 objects to get a set of 8 objects can be represented by the equation 3 + 5 = 8. The equation 2 + 6 = 8 could be represented by drawing a set of 2 cats and a set of 6 cats making a set of 8 cats. The equation 9 – 5 = 4 could be represented by taking 5 objects away from a set of 9 objects.
1.2.B Use the equal sign (=) and the word *equals* to indicate that two expressions are equivalent.	Students need to understand that *equality* means *is the same as*. This idea is critical if students are to avoid common pitfalls in later work with numbers and operations, where they may otherwise fall into habits of thinking that the answer always follows the equal sign. Examples: • 7 = 8 – 1 • 5 + 3 equals 10 – 2
1.2.C Represent addition and subtraction on the number line.	Examples: • 4 + 3 = 7  • 7 – 4 = 3 

Performance Expectations *Students are expected to:*	Explanatory Comments and Examples
1.2.D Demonstrate the inverse relationship between addition and subtraction by undoing an addition problem with subtraction and vice versa.	The relationship between addition and subtraction is an important part of developing algebraic thinking. Students can demonstrate this relationship using physical models, diagrams, numbers, or acting-out situations. Examples: • 3 + 5 = 8, so 8 – 3 = 5 • Annie had ten marbles, but she lost three. How many marbles does she have? Joe found her marbles and gave them back to her. Now how many does she have?
1.2.E Add three or more one-digit numbers using the commutative and associative properties of addition.	Examples: • 3 + 5 + 5 = 3 + 10 (Associativity allows us to add the last two addends first.) • (5 + 3) + 5 = 5 + (5 + 3) = (5 +5) + 3 = 13 (Commutativity and associativity allow us to reorder addends.) This concept can be extended to address a problem like 3 + △ + 2 = 9, which can be rewritten as 5 + △ = 9.
1.2.F Apply and explain strategies to compute addition facts and related subtraction facts for sums to 18.	Strategies for addition include counting on, but students should be able to move beyond counting on to use other strategies, such as making 10, using doubles or near doubles, etc. Subtraction strategies include counting back, relating the problem to addition, etc.
1.2.G Quickly recall addition facts and related subtraction facts for sums equal to 10.	Adding and subtracting zero are included.
1.2.H Solve and create word problems that match addition or subtraction equations.	Students should be able to represent addition and subtraction sentences with an appropriate situation, using objects, pictures, or words. This standard is about helping students connect symbolic representations to situations. While some students may create word problems that are detailed or lengthy, this is not necessary to meet the expectation. Just as we want students to be able to translate 5 boys and 3 girls sitting at a table into 5 + 3 = 8, we want students to look at an expression like 7 – 4 = 3 and connect it to a situation or problem using objects, pictures, or words.

Performance Expectations *Students are expected to:*	Explanatory Comments and Examples
	Example: • For the equation 7 + ? = 10, a possible story might be: Jeff had 7 marbles in his pocket and some marbles in his drawer. He had 10 marbles altogether. How many marbles did he have in his drawer? Use pictures, words, or objects to show your answer.
1.2.I Recognize, extend, and create number patterns.	Example: • Extend the simple addition patterns below and tell how you decided what numbers come next: 1, 3, 5, 7, . . . 2, 4, 6, 8, 10, . . . 50, 45, 40, 35, 30, . . .

Grade 1

1.3. Core Content: *Geometric attributes* *(Geometry/Measurement)*

Students expand their knowledge of two- and three-dimensional geometric figures by sorting, comparing, and contrasting them according to their characteristics. They learn important mathematical vocabulary used to name the figures. Students work with composite shapes made out of basic two-dimensional figures as they continue to develop their spatial sense of shapes, objects, and the world around them.

Performance Expectations	***Explanatory Comments and Examples***
Students are expected to:	
1.3.A Compare and sort a variety of two- and three-dimensional figures according to their geometric attributes.	The student may sort a collection of two-dimensional figures into those that have a particular attribute (e.g., those that have straight sides) and those that do not.
1.3.B Identify and name two-dimensional figures, including those in real-world contexts, regardless of size or orientation.	Figures should include circles, triangles, rectangles, squares (as special rectangles), rhombi, hexagons, and trapezoids. Contextual examples could include classroom clocks, flags, desktops, wall or ceiling tiles, etc. Triangles should appear in many positions and orientations and should not all be equilateral or isosceles.
1.3.C Combine known shapes to create shapes and divide known shapes into other shapes.	Students could be asked to trace objects or use a drawing program to show different ways that a rectangle can be divided into three triangles. They can also use pattern blocks or plastic shapes to make new shapes. The teacher can give students cutouts of shapes and ask students to combine them to make a particular shape. Example: • What shapes can be made from a rectangle and a triangle? Draw a picture to show your answers.

Grade 1

1.4. Core Content: *Concepts of measurement* *(Geometry/Measurement)*

Students start to learn about measurement by measuring length. They begin to understand what it means to measure something, and they develop their measuring skills using everyday objects. As they focus on length, they come to understand that units of measure must be equal in size and learn that standard-sized units exist. They develop a sense of the approximate size of those standard units (like inches or centimeters) and begin using them to measure different objects. Students learn that when a unit is small, it takes more of the unit to measure an item than it does when the units are larger, and they relate and compare measurements of objects using units of different sizes. Over time they apply these same concepts of linear measurement to other attributes such as weight and capacity. As students practice using measurement tools to measure objects, they reinforce their numerical skills and continue to develop their sense of space and shapes.

Performance Expectations	***Explanatory Comments and Examples***
Students are expected to:	
1.4.A Recognize that objects used to measure an attribute (length, weight, capacity) must be consistent in size.	Marbles can be suitable objects for young children to use to measure weight, provided that all the marbles are the same weight. Paper clips are appropriate for measuring length as long as the paper clips are all the same length.
1.4.B Use a variety of non-standard units to measure length.	Use craft sticks, toothpicks, coffee stirrers, etc., to measure length.
1.4.C Compare lengths using the transitive property.	Example: • If Jon is taller than Jacob, and Jacob is taller than Luisa, then Jon is taller than Luisa.
1.4.D Use non-standard units to compare objects according to their capacities or weights.	Examples can include using filled paper cups to measure capacity or a balance with marbles or cubes to measure weight.
1.4.E Describe the connection between the size of the measurement unit and the number of units needed to measure something.	Examples: • It takes more toothpicks than craft sticks to measure the width of my desk. The longer the unit, the fewer I need. • It takes fewer marbles than cubes to balance my object. The lighter the unit, the more I need. • It takes more little medicine cups filled with water than larger paper cups filled with water to fill my jar. The less my unit holds, the more I need.

Performance Expectations

Students are expected to:

1.4.F Name the days of the week and the months of the year, and use a calendar to determine a day or month.

Explanatory Comments and Examples

Examples:

- Name the days of the week in order.
- Name the months of the year in order.
- How many days until your birthday?
- What month comes next?
- What day was it yesterday?

Grade 1

1.5. Additional Key Content *(Data/Statistics/Probability)*

Students are introduced to early ideas of statistics by collecting and visually representing data. These ideas reinforce their understanding of the Core Content areas related to whole numbers and addition and subtraction as students ask and answer questions about the data. As they move through the grades, students will continue to apply what they learn about data, making mathematics relevant and connecting numbers to applied situations.

Performance Expectations	***Explanatory Comments and Examples***
Students are expected to:	
1.5.A Represent data using tallies, tables, picture graphs, and bar-type graphs.	In a picture graph, a single picture represents a single object. Pictographs, where a symbol represents more than one unit, are introduced in grade three when multiplication is developed. Students are expected to be familiar with all representations, but they need not use them all in every situation.
1.5.B Ask and answer comparison questions about data.	Students develop questions that can be answered using information from their graphs. For example, students could look at tallies showing the number of pockets on pants for each student today. Andy 𝍸 | Sara |||| Chris 𝍸 They might ask questions such as: — Who has the most pockets? — Who has the fewest pockets? — How many more pockets does Andy have than Chris?

Grade 1

1.6. Core Processes: *Reasoning, problem solving, and communication*

Students further develop the concept that doing mathematics involves solving problems and discussing what they did to solve them. Problems in first grade emphasize addition, subtraction, and solidifying number concepts, and sometimes include precursors to multiplication. Students continue to develop their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?"; "Why did you do that?"; and "How do you know that?" Students begin to build their mathematical vocabulary as they use correct mathematical language appropriate to first grade.

Performance Expectations

Students are expected to:

1.6.A Identify the question(s) asked in a problem.

1.6.B Identify the given information that can be used to solve a problem.

1.6.C Recognize when additional information is required to solve a problem.

1.6.D Select from a variety of problem-solving strategies and use one or more strategies to solve a problem.

1.6.E Answer the question(s) asked in a problem.

1.6.F Identify the answer(s) to the question(s) in a problem.

1.6.G Describe how a problem was solved.

1.6.H Determine whether a solution to a problem is reasonable.

Explanatory Comments and Examples

Descriptions of solution processes and explanations can include numbers, words (including mathematical language), pictures, or physical objects. Students should be able to use all of these representations as needed. For a particular solution, students should be able to explain or show their work using at least one of these representations and verify that their answer is reasonable.

Examples:

- Think about how many feet a person has. How many feet does a cat have? How many feet does a snail have? How about a fish or a snake?

  There are ten feet living in my house. Who could be living in my house?

  Come up with a variety of ways you can have a total of ten feet living in your house. Use pictures, words, or numbers to show how you got your answer.

- You are in charge of setting up a dining room with exactly twenty places for people to sit. You can use any number and combination of different-shaped tables. A hexagon-shaped table seats six people. A triangle-shaped table seats three people. A square-shaped table seats four people.

  Draw a picture showing which tables and how many of each you could set up so that twenty people have a place to sit. Is there more than one way to do this? How many ways can you find?