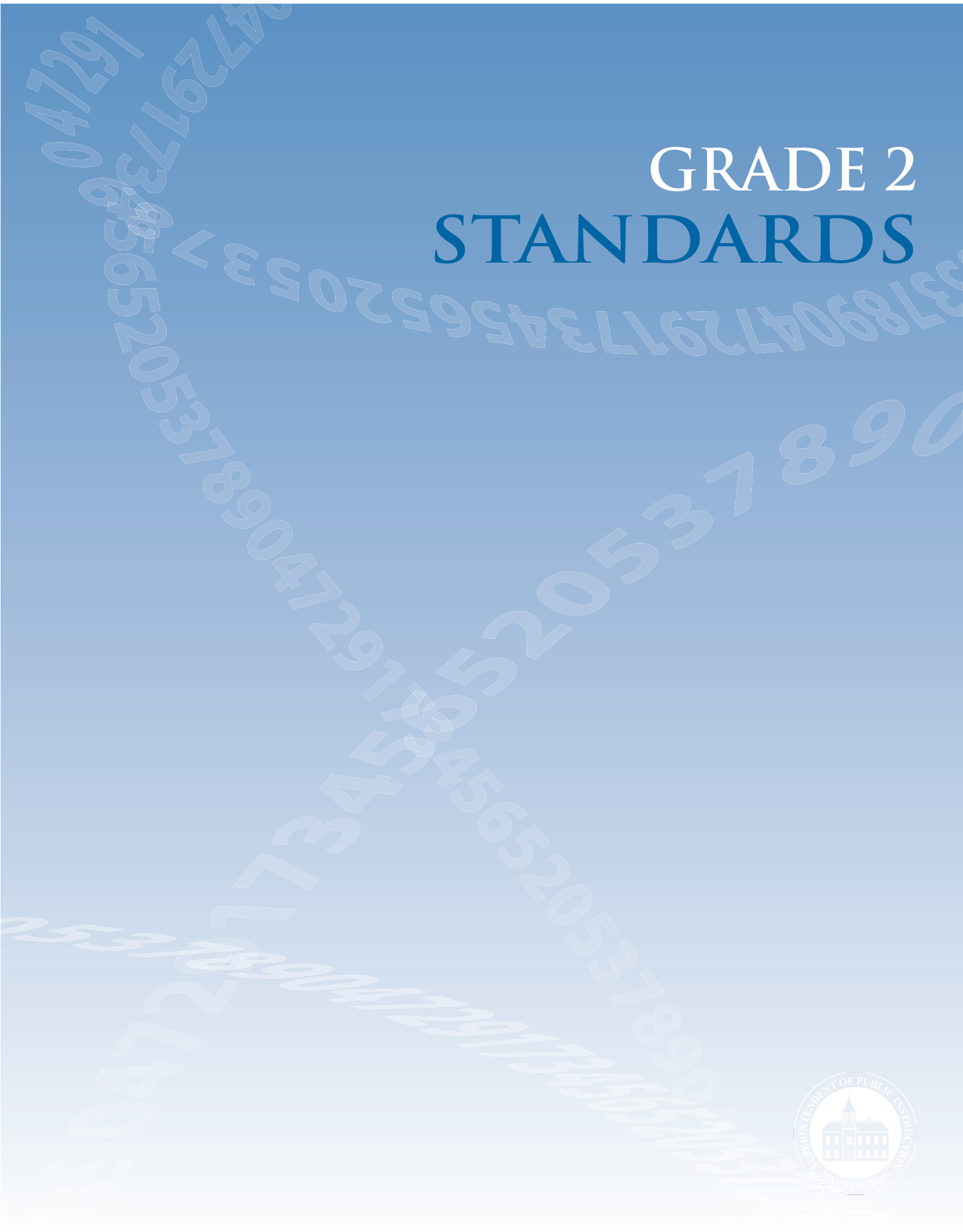
GRADE 2
STANDARDS



Grade 2

2.1. Core Content: *Place value and the base ten system* *(Numbers)*

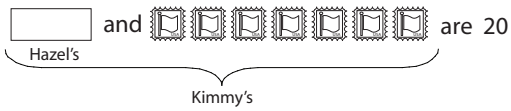
Students refine their understanding of the base ten number system and use place value concepts of ones, tens, and hundreds to understand number relationships. They become fluent in writing and renaming numbers in a variety of ways. This fluency, combined with the understanding of place value, is a strong foundation for learning how to add and subtract two-digit numbers.

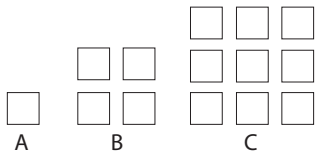
Performance Expectations		***Explanatory Comments and Examples***
Students are expected to:		
2.1.A	Count by tens or hundreds forward and backward from 1 to 1,000, starting at any number.	Example: • Count forward by tens out loud starting at 32.
2.1.B	Connect place value models with their numerical equivalents to 1,000.	Understanding the relative value of numbers using place value is an important element of our base ten number system. Students should be familiar with representing numbers using words, pictures (including those involving grid paper), or physical objects such as base ten blocks. Money can also be an appropriate model.
2.1.C	Identify the ones, tens, and hundreds place in a number and the digits occupying them.	Examples: • 4 is located in what place in the number 834? • What digit is in the hundreds place in 245?
2.1.D	Write three-digit numbers in expanded form.	Examples: • 573 = 500 + 70 + 3 • 600 + 30 + 7 = 637
2.1.E	Group three-digit numbers into hundreds, tens, and ones in more than one way.	Students should become fluent in naming and renaming numbers based on number sense and their understanding of place value. Examples: • In the number 647, there are 6 hundreds, there are 64 tens, and there are 647 ones. • There are 20 tens in 200 and 10 hundreds in 1,000. • There are 23 tens in 230. • 3 hundreds + 19 tens + 3 ones describes the same number as 4 hundreds + 8 tens + 13 ones.
2.1.F	Compare and order numbers from 0 to 1,000.	Students use the words *equal to*, *greater than*, *less than*, *greatest*, or *least* and the symbols =, <, and >.

Grade 2

2.2. Core Content: *Addition and subtraction* *(Operations, Geometry/Measurement, Algebra)*

Students focus on what it means to add and subtract as they become fluent with single-digit addition and subtraction facts and develop addition and subtraction procedures for two-digit numbers. Students make sense of these procedures by building on what they know about place value and number relationships and by putting together or taking apart sets of objects. This is students' first time to deal formally with step-by-step procedures (algorithms)—an important component of mathematics where a generalizable technique can be used in many similar situations. Students begin to use estimation to determine if their answers are reasonable.

Performance Expectations	***Explanatory Comments and Examples***
Students are expected to:	
2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20.	
2.2.B Solve addition and subtraction word problems that involve joining, separating, and comparing and verify the solution.	Problems should include those involving take-away situations, missing addends, and comparisons. The intent of this expectation is for students to show their work, explain their thinking, and verify that the answer to the problem is reasonable in terms of the original context and the mathematics used to solve the problem. Verifications can include the use of numbers, words, pictures, or physical objects. Example: • Hazel and Kimmy each have stamp collections. Kimmy's collection has 7 more stamps than Hazel's. Kimmy has a total of 20 stamps. How many stamps are in Hazel's collection? Explain your answer. [Students may verify their work orally, with pictures, or in writing. For instance, students might give the equation below or might use the picture.] 20 – 7 = 13 
2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.	Students should be able to connect the numerical procedures with other representations, such as words, pictures, or physical objects. This is students' first exposure to mathematical algorithms. It sets the stage for all future work with computational procedures. The standard algorithms for addition and subtraction are formalized in grade three.

Performance Expectations	Explanatory Comments and Examples
Students are expected to:	
2.2.D Add and subtract two-digit numbers mentally and explain the strategies used.	Examples of strategies include • Combining tens and ones: 68 + 37 = 90 + 15 = 105 • Compensating: 68 + 37 = 65 + 40 = 105 • Incremental: 68 + 37 = 68 + 30 + 7 = 105
2.2.E Estimate sums and differences.	Example: • Students might estimate that 198 + 29 is a little less than 230.
2.2.F Create and state a rule for patterns that can be generated by addition and extend the pattern.	Examples: • 2, 5, 8, 11, 14, 17, . . . • Look at the pattern of squares below. Draw a picture that shows what the next set of squares might look like and explain why your answer makes sense. 
2.2.G Solve equations in which the unknown number appears in a variety of positions.	Students need this kind of experience with equivalence to accompany their first work with addition and subtraction. Flexible use of equivalence and missing numbers sets the stage for later work when solving equations in which the variable is in different positions. Examples: • 8 + 3 = □ + 5 • 10 – 7 = 2 + □ • □ = 9 + 4 + 2
2.2.H Name each standard U.S. coin, write its value using the $ sign and the ¢ sign, and name combinations of other coins with the same total value.	Students should be expected to express, for example, the value of a quarter as twenty-five cents, $0.25, and 25¢, and they should be able to give other combinations of coins whose value is 25¢. This is a precursor to decimal notation.
2.2.I Determine the value of a collection of coins totaling less than $1.00.	

Grade 2

2.3. Core Content: *Measurement* *(Geometry/Measurement)*

Students understand the process of measuring length and progress from measuring length with objects such as toothpicks or craft sticks to the more practical skill of measuring length with standard units and tools such as rulers, tape measures, or meter sticks. As students are well acquainted with two-digit numbers by this point, they tell time on different types of clocks.

Performance Expectations		***Explanatory Comments and Examples***
Students are expected to:		
2.3.A	Identify objects that represent or approximate standard units and use them to measure length.	At this level, students no longer rely on non-standard units. Students find and use approximations for standard length units, like a paper clip whose length is about an inch, or the width of a particular student's thumbnail that might be about a centimeter. They might also use commonly available classroom objects like inch tiles or centimeter cubes.
2.3.B	Estimate length using metric and U.S. customary units.	Students could make observations such as, "The ceiling of the classroom is about 8 feet high."
2.3.C	Measure length to the nearest whole unit in both metric and U.S. customary units.	Standard tools may include rulers, yardsticks, meter sticks, or centimeter/inch measuring tapes. Students should measure some objects that are longer than the measurement tool being used.
2.3.D	Describe the relative size among minutes, hours, days, weeks, months, and years.	Students should be able to describe relative sizes using statements like, "Since a minute is less than an hour, there are more minutes than hours in one day."
2.3.E	Use both analog and digital clocks to tell time to the minute.	

Grade 2

2.4. Additional Key Content

(Numbers, Operations, Geometry/Measurement, Data/Statistics/Probability)

Students make predictions and answer questions about data as they apply their growing understanding of numbers and the operations of addition and subtraction. They extend their spatial understanding of Core Content in geometry developed in kindergarten and grade one by solving problems involving two- and three-dimensional geometric figures. Students are introduced to a few critical concepts that will become Core Content in grade three. Specifically, they begin to work with multiplication and division and learn what a fraction is.

Performance Expectations	***Explanatory Comments and Examples***
Students are expected to:	
2.4.A Solve problems involving properties of two- and three-dimensional figures.	A critical component in the development of students' spatial and geometric understanding is the ability to solve problems involving the properties of figures. At the primary level, students must move from judging plane and space shapes by their appearance as whole shapes to focusing on the relationship of the sides, angles, or faces. At the same time, students must learn the language important for describing shapes according to their essential characteristics. Later, they will describe properties of shapes in more formal ways as they progress in geometry. Examples: • How many different ways can you fill the outline of the figure with pattern blocks? What is the greatest number of blocks you can use? The least number? Can you fill the outline with every whole number of blocks between the least number of blocks and the greatest number of blocks? • Build a figure or design out of five blocks. Describe it clearly enough so that someone else could build it without seeing it. Blocks may represent two-dimensional figures (i.e., pattern blocks) or three-dimensional figures (i.e., wooden geometric solids).
2.4.B Collect, organize, represent, and interpret data in bar graphs and picture 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 skills are developed.
2.4.C Model and describe multiplication situations in which sets of equal size are joined.	Multiplication is introduced in grade two only at a conceptual level. This is a foundation for the more systematic study of multiplication in grade three. Small numbers should be used in multiplication problems that are posed for students in grade two. Example: • You have 4 boxes with 3 apples in each box. How many apples do you have?

Performance Expectations	Explanatory Comments and Examples
Students are expected to:	
2.4.D Model and describe division situations in which sets are separated into equal parts.	Division is introduced in grade two only at a conceptual level. This is a foundation for the more systematic study of division in grade three. Small numbers should be used in division problems that are posed for students in grade two. Example: • You have 15 apples to share equally among 5 classmates. How many apples will each classmate get?
2.4.E Interpret a fraction as a number of equal parts of a whole or a set.	Examples: • Juan, Chan, and Hortense are going to share a large cookie in the shape of a circle. Draw a picture that shows how you can cut up the cookie in three fair shares, and tell how big each piece is as a fraction of the whole cookie. • Ray has two blue crayons, one red crayon, and one yellow crayon. What fraction of Ray's crayons is red? What fraction of the crayons is blue?

Grade 2

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

Students further develop the concept that doing mathematics involves solving problems and talking about what they did to solve those problems. Second-grade problems emphasize addition and subtraction with increasingly large numbers, measurement, and early concepts of multiplication and division. Students communicate their mathematical thinking and make increasingly more convincing mathematical arguments. Students participate in mathematical discussions involving questions like "How did you get that?"; "Why did you use that strategy?"; and "Why is that true?" Students continue to build their mathematical vocabulary as they use correct mathematical language appropriate to grade two when discussing and refining solutions to problems.

Performance Expectations

Students are expected to:

2.5.A Identify the question(s) asked in a problem and any other questions that need to be answered in order to solve the problem.

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

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

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

2.5.E Identify the answer(s) to the question(s) in a problem.

2.5.F Describe how a problem was solved.

2.5.G 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:

- A bag full of jellybeans is on the table. There are 10 black jellybeans in the bag. There are twice as many red jellybeans as black jellybeans. There are 2 fewer red jellybeans than yellow jellybeans. There are half as many pink jellybeans as yellow jellybeans. How many jellybeans are in the bag? Explain your answer.
- Suzy, Ben, and Pedro have found 1 quarter, 1 dime, and 4 pennies under the sofa. Their mother has lots of change in her purse, so they could trade any of these coins for other coins adding up to the same value. She says they can keep the money if they can tell her what coins they need so the money can be shared equally among them. How can they do this?