

Understanding the Content Standards

Clicking on each of the standards below will provide a brief description of the standard along with a breakdown of the standard through its learning objectives. For more detailed information about how to help students build toward mastery of these standards and background information, review *Explanation of the Mathematics Content Standards*.

Grade 2 Mathematics	
Mathematical Practice <u>2.MP</u>	
Numerical Reasoning <u>2.NR.1</u> <u>2.NR.2</u> <u>2.NR.3</u>	Patterning & Algebraic Reasoning <u>2.PAR.4</u>
Measurement & Data Reasoning <u>2.MDR.5</u> <u>2MDR.6</u>	Geometric & Spatial Reasoning <u>2.GSR.7</u>

Understanding the Content Standards

MATHEMATICAL PRACTICES STANDARD/KEY COMPETENCY

MATHEMATICAL PRACTICES – *reasoning and explaining, modeling and using tools, seeing structure and generalizing*

2.MP: *Display perseverance and patience in problem-solving. Demonstrate skills and strategies needed to succeed in mathematics, including critical thinking, reasoning, and effective collaboration and expression. Seek help and apply feedback. Set and monitor goals.*

Understanding the Intent and Rigor of the Standard

This standard consists of a breakdown through several learning objectives. These learning objectives are not meant to be taught in isolation, but rather in clusters of related learning objectives. The Grade 2 curriculum map provides suggestions for clustering learning objectives within each unit.

The Mathematical Practices describe the reasoning behaviors students should develop as they build an understanding of mathematics – the “habits of mind” that help students become mathematical thinkers. There are eight standards, which apply to all grade levels and conceptual categories.

These mathematical practices describe how students should engage with the mathematics content for their grade level. Developing these habits of mind builds students’ capacity to become mathematical thinkers. These practices can be applied individually or together in mathematics lessons, and no particular order is required. In well-designed lessons, there are often two or more Mathematical Practices present.

Breakdown of Standard/Key Competency (Expectation/Learning Objective)

2.MP.1 Make sense of problems and persevere in solving them.

2.MP.2 Reason abstractly and quantitatively.

2.MP.3 Construct viable arguments and critique the reasoning of others.

2.MP.4 Model with mathematics.

2.MP.5 Use appropriate tools strategically.

2.MP.6 Attend to precision.

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

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

STANDARD/KEY COMPETENCY 1

NUMERICAL REASONING – counting within 1000, place value, addition and subtraction, fluency to 20, developing multiplication through arrays

2.NR.1: Using the place value structure, explore the count sequences to represent, read, write, and compare numerical values to 1000 and describe basic place-value relationships and structures.

Understanding the Intent and Rigor of the Standard

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When learning this standard, students are building on their knowledge of patterns in the base ten place value system and counting learned in first grade. This standard refers explaining values of three-digit numbers in a variety of ways using hundreds, tens and ones. In addition, students extend their understanding of the count sequence to numbers to 1000, by counting by ones, fives, tens, hundreds, and twenty-fives, within 1000. Students also use place value reasoning to represent, compare, and order whole numbers to 1000. The emphasis here is on place value and equality.

Breakdown of Standard/Key Competency 1 (Expectation/Learning Objective)

2.NR.1.1 Explain the value of a three-digit number using hundreds, tens, and ones in a variety of ways.

2.NR.1.2 Count forward and backward by ones from any number within 1000. Count forward by fives from multiples of 5 within 1000. Count forward and backward by 10s and 100s from any number within 1000. Count forward by 25s from 0.

2.NR.1.3 Represent, compare, and order whole numbers to 1000 with an emphasis on place value and equality. Use $>$, $=$, and $<$ symbols to record the results of comparisons.

STANDARD/KEY COMPETENCY 2

NUMERICAL REASONING – counting within 1000, place value, addition and subtraction, fluency to 20, developing multiplication through arrays

2.NR.2: Apply multiple part-whole strategies, properties of operations and place value understanding to solve real-life, mathematical problems involving addition and subtraction within 1,000.

Understanding the Intent and Rigor of the Standard

This standard consists of a breakdown through several learning objectives. These learning objectives are not meant to be taught in isolation, but rather in clusters of related learning objectives. The Grade 2 curriculum map provides suggestions for clustering learning objectives within each unit.

When learning this standard, students will add and subtract numbers within 1000 using a variety of strategies based on place value, part-whole, and properties of operations. Students will work on building fluency with addition and subtraction within 20 and within 100 and extend this to work with three-digit numbers. Multiple strategies enable students to develop fluency and transfer that understanding to related computation problems.

Breakdown of Standard/Key Competency 2 (Expectation/Learning Objective)

2.NR.2.1 Fluently add and subtract within 20 using a variety of mental, part-whole strategies.

2.NR.2.2 Find 10 more or 10 less than a given three-digit number and find 100 more or 100 less than a given three-digit number.

2.NR.2.3 Solve problems involving the addition and subtraction of two-digit numbers using part whole strategies.

2.NR.2.4 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

STANDARD/KEY COMPETENCY 3

NUMERICAL REASONING – counting within 1000, place value, addition and subtraction, fluency to 20, developing multiplication through arrays

2.NR.3: Work with equal groups to gain foundations for multiplication through real-life, mathematical problems.

Understanding the Intent and Rigor of the Standard

This standard consists of a breakdown through several learning objectives. These learning objectives are not meant to be taught in isolation, but rather in clusters of related learning objectives. The Grade 2 curriculum map provides suggestions for clustering learning objectives within each unit.

When learning this standard, students will begin to lay the foundation for a deep understanding of multiplication using equal groups and arrays. In addition, students will develop an understanding of even and odd numbers through explorations and investigations of these numbers.

Breakdown of Standard/Key Competency 3 (Expectation/Learning Objective)

2.NR.3.1 Determine whether a group (up to 20) has an odd or even number of objects. Write an equation to express an even number as a sum of two equal addends.

2.NR.3.2 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

STANDARD/KEY COMPETENCY 4

PATTERNING & ALGEBRAIC REASONING – patterns up to 20 and addition and subtraction within 1,000

2.PAR.4: Identify, describe, extend, and create repeating patterns, growing patterns, and shrinking patterns.

Understanding the Intent and Rigor of the Standard

This standard consists of a breakdown through several learning objectives. These learning objectives are not meant to be taught in isolation, but rather in clusters of related learning objectives. The Grade 2 curriculum map provides suggestions for clustering learning objectives within each unit.

When learning this standard, students investigate patterns related to repeating an operations such as addition and subtraction. This helps build the foundation of algebraic reasoning as students make predictions, and identify and describe patterns. Students also extend their work with growing and shrinking patterns to involve addition and subtraction up to 20.

Breakdown of Standard/Key Competency 4 (Expectation/Learning Objective)

2.PAR.4.1 Identify, describe, and create a numerical pattern resulting from repeating an operation such as addition and subtraction.

2.PAR.4.2 Identify, describe, and create growing patterns and shrinking patterns involving addition and subtraction up to 20.

STANDARD/KEY COMPETENCY 5

MEASUREMENT & DATA REASONING – length, distance, time, and money

2.MDR.5: Estimate and measure the lengths of objects and distance to solve problems found in real-life using standard units of measurement, including inches, feet, and yards.

Understanding the Intent and Rigor of the Standard

This standard consists of a breakdown through several learning objectives. These learning objectives are not meant to be taught in isolation, but rather in clusters of related learning objectives. The Grade 2 curriculum map provides suggestions for clustering learning objectives within each unit.

When learning this standard, students will construct simple measurement instruments to build an understanding of iteration of one-inch units and compare unit models to rulers. Students will also estimate and measure objects and distances to the nearest whole unit using appropriate tools. In addition, students will measure to determine how much longer on object is than another and use measurement reasoning to express the length difference in terms of a standard-length unit. Students will also use a number line diagram to represent whole number sums and differences of standard units. Students will also learn to ask statistical questions, and collect, display and analyze data to answer these questions.

Breakdown of Standard/Key Competency 5 (Expectation/Learning Objective)

2.MDR.5.1 Construct simple measuring instruments using unit models. Compare unit models to rulers.

2.MDR.5.2 Estimate and measure the length of an object or distance to the nearest whole unit using appropriate units and standard measuring tools.

2.MDR.5.3 Measure to determine how much longer one object is than another and express the length difference in terms of a standard-length unit.

2.MDR.5.4 Ask questions and answer them based on gathered information, observations, and appropriate graphical displays to solve problems relevant to everyday life.

2.MDR.5.5 Represent whole-number sums and differences within a standard unit of measurement on a number line diagram.

STANDARD/KEY COMPETENCY 6

MEASUREMENT & DATA REASONING – length, distance, time, and money

2.MDR.6: Solve real-life problems involving time and money.

Understanding the Intent and Rigor of the Standard

This standard consists of a breakdown through several learning objectives. These learning objectives are not meant to be taught in isolation, but rather in clusters of related learning objectives. The Grade 2 curriculum map provides suggestions for clustering learning objectives within each unit.

When learning this standard, students will tell and write time from analog and digital clocks to the nearest five minutes. Students will also estimate and measure elapsed time using a time number line, to the nearest hour and half-hour. The goal here is to build on the elapsed time work from first grade and problems presented to students should avoid crossing over a.m. and p.m. Students will also build on their understanding of money to solve problems involving groups of coins and problems involving dollar bills. Since the use of decimal numbers is not an expectation for second grade, students should solve problems involving only dollars and only cents.

Breakdown of Standard/Key Competency 6 (Expectation/Learning Objective)

2.MDR.6.1 Tell and write time from analog and digital clocks to the nearest five minutes, and estimate and measure elapsed time using a timeline, to the hour or half hour on the hour or half hour.

2.MDR.6.2 Find the value of a group of coins and determine combinations of coins that equal a given amount that is less than one hundred cents, and solve problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately.

STANDARD/KEY COMPETENCY 7

GEOMETRIC & SPATIAL REASONING – sorting shapes, lines of symmetry, partitioning circles and rectangles

2.GSR.7: Draw and partition shapes and other objects with specific attributes and conduct observations of everyday items and structures to identify how shapes exist in the world.

Understanding the Intent and Rigor of the Standard

This standard consists of a breakdown through several learning objectives. These learning objectives are not meant to be taught in isolation, but rather in clusters of related learning objectives. The Grade 2 curriculum map provides suggestions for clustering learning objectives within each unit.

When learning this standard, students describe, compare, and sort 2-D shapes including polygons, and 3-D shapes including rectangular prisms, and cones, given a set of attributes. Students should be encouraged to sort shapes based on their choice of attributes and discuss the results of the sort with other students and the teacher prior to being provided an attribute to sort shapes. Students will also begin to identify symmetry in everyday objects such as signs, flowers, and insects. The objective here is to build a conceptual understanding of what symmetry is so this idea can be fostered in grade levels to follow. Students will also build foundational understandings of fractional parts including halves, thirds, and fourths (quarters). These foundational understandings are built upon the idea of equal shares of a whole. The expectation is that students are able to partition shapes into equal shares and name the shares as halves, thirds, and fourths (quarters). Students are not expected to shade shapes nor to write fractions at this grade level. These ideas and notations will be developed in third grade. Building on this idea of equal shares, students will recognize that equal shares may be different shapes within the same whole. So, a rectangle may be sliced in half, vertically. The left half of the rectangle may be sliced in half diagonally, while the right half of the rectangle may be sliced in half horizontally. The resulting partitioning of this rectangle results in four equal shares of one-fourth even though they are different shapes. Students can use paper and scissors to prove that these pieces represent the same amount.

Breakdown of Standard/Key Competency 7 (Expectation/Learning Objective)

2.GSR.7.1 Describe, compare and sort 2-D shapes including polygons, triangles, quadrilaterals, pentagons, hexagons, and 3-D shapes including rectangular prisms and cones, given a set of attributes.

2.GSR.7.2 Identify at least one line of symmetry in everyday objects to describe each object as a whole.

2.GSR.7.3 Partition circles and rectangles into two, three, or four equal shares. Identify and describe equal-sized parts of the whole using fractional names (“halves,” “thirds,” “fourths”, “half of,” “third of,” “quarter of,” etc.).

2.GSR.7.4 Recognize that equal shares of identical wholes may be different shapes within the same whole.