



# 2<sup>nd</sup> Grade Math





## Second Grade Mathematics Teaching & Learning Framework

Quarter 1	Quarter 2		Quarter 3	Quarter 4		
Unit 1 9 weeks	Unit 2 6 weeks	Unit 3 3 weeks	Unit 4 9 weeks	Unit 5 3 weeks	Unit 6 1 week	Unit 7 5 weeks
<b>Extending Base Ten Understanding</b>	<b>Becoming Fluent with Addition and Subtraction</b>	<b>Understanding Measurement, Length, and Time</b>	<b>Applying Base Ten Understanding</b>	<b>Understanding Plane and Solid Figures</b>	<b>Developing Multiplication</b>	<b>Review, Mastery, and Extend</b>
<b>MGSE2.NBT.1</b> (Place value- 100s) <b>MGSE2.NBT.2</b> (Count within 1,000) <b>MGSE2.NBT.3</b> (Read and write numbers to 1000) <b>MGSE2.NBT.4</b> (Compare numbers to 1,000) <b>MGSE2.OA.1</b> (One step word problems) <b>MGSE2.OA.2</b> (Add and subtract within 20) <b>MGSE2.MD.8</b> (Money: penny, nickel, dime) <b>MGSE2.MD.10</b> (Graphing)	<b>MGSE2.OA.1</b> (One and two step word problems) <b>MGSE2.OA.2</b> (Add and subtract within 20) <b>MGSE2.NBT.5</b> (Add and subtract within 100)	<b>MGSE2.MD.1</b> (Appropriate tools) <b>MGSE2.MD.2</b> (Measure objects twice) <b>MGSE2.MD.3</b> (Estimate lengths) <b>MGSE2.MD.4</b> (Measure) <b>MGSE2.MD.5</b> (Word problems involving length) <b>MGSE2.MD.6</b> (Number-line) <b>MGSE2.MD.7</b> (Time 5 minutes) <b>MGSE2.MD.9</b> (Line plot) <b>MGSE2.MD.10</b> (Graphing)	<b>MGSE2.NBT.6</b> (Four 2-digit numbers) <b>MGSE2.NBT.7</b> (Add and subtract within 1,000) <b>MGSE2.NBT.8</b> (Add 10 or 100 to 100-900) <b>MGSE2.NBT.9</b> (Explain why strategies work) <b>MGSE2.MD.8</b> (Money) <b>MGSE2.OA.2</b> (Add and subtract within 20) <b>MGSE2.OA.1</b> (One and two step word problems)	<b>MGSE2.G.1</b> (Recognize and draw shapes) <b>MGSE2.G.2</b> (Partition a rectangle) <b>MGSE2.G.3</b> (Partition circles and rectangles)	<b>MGSE2.OA.3</b> (Odd and even) <b>MGSE2.OA.4</b> (Array 5x5)	<b>Review all standards based on student needs.</b>  <u><b>Mastery:</b></u> <b>MGSE2.OA.2</b> (Add and subtract within 20 <u>from memory</u> ) <b>MGSE2.NBT.5</b> (Add and subtract within 100)  <u><b>Extend:</b></u> <b>MGSE3.OA.1</b> (Interpret multiplication with arrays) <b>MGSE3.OA.2</b> (Interpret division with arrays)

These units were written to build upon concepts from prior units, so later units contain tasks that depend upon the concepts addressed in earlier units.

All units will include the Mathematical Practices and indicate skills to maintain.

**NOTE:** Mathematical standards are interwoven and should be addressed throughout the year in as many different units and tasks as possible in order to stress the natural connections that exist among mathematical topics.

**Grades K-2 Key:** MGSE = Mathematics Georgia Standards of Excellence CC = Counting and Cardinality, G= Geometry, MD=Measurement and Data, NBT= Number and Operations in Base Ten, OA = Operations and Algebraic Thinking.



## Standards for Mathematical Practice

*Mathematical Practices are listed with each grade's mathematical content standards to reflect the need to connect the mathematical practices to mathematical content in instruction.*

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important “processes and proficiencies” with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council’s report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one’s own efficacy).

***Students are expected to:***

**1. Make sense of problems and persevere in solving them.**

In second grade, students realize that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. They may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, “Does this make sense?” They make conjectures about the solution and plan out a problem solving approach.

**2. Reason abstractly and quantitatively.**

Younger students recognize that a number represents a specific quantity. They connect the quantity to written symbols. Quantitative reasoning entails creating a representation of a problem while attending to the meanings of the quantities. Second graders begin to know and use different properties of operations and objects.

**3. Construct viable arguments and critique the reasoning of others.**

Second graders may construct arguments using concrete referents, such as objects, pictures, drawings, and actions. They practice their mathematical communication skills as they participate in mathematical discussions involving questions like “How did you get that?”, “Explain your thinking,” and “Why is that true?” They not only explain their own thinking, but listen to others’ explanations. They decide if the explanations make sense and ask appropriate questions.



## Standards for Mathematical Practice continued

### **4. Model with mathematics.**

In early grades, students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart or list, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed.

### **5. Use appropriate tools strategically.**

In second grade, students consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be better suited. For instance, second graders may decide to solve a problem by drawing a picture rather than writing an equation.

### **6. Attend to precision.**

As children begin to develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and when they explain their own reasoning.

### **7. Look for and make use of structure.**

Second graders look for patterns. For instance, they adopt mental math strategies based on patterns (making ten, fact families, doubles).

### **8. Look for and express regularity in repeated reasoning.**

Students notice repetitive actions in counting and computation, etc. When children have multiple opportunities to add and subtract, they look for shortcuts, such as rounding up and then adjusting the answer to compensate for the rounding. Students continually check their work by asking themselves, does this make sense?



## Operations and Algebraic Thinking (2.OA)

### **Represent and solve problems involving addition and subtraction.**

**MGSE2.OA.1** Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

### **Add and subtract within 20.**

**MGSE2.OA.2** Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

### **Work with equal groups of objects to gain foundations for multiplication.**

**MGSE2.OA.3** Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

**MGSE2.OA.4** 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.

## Number and Operations in Base Ten (2.NBT)

### **Understand place value.**

**MGSE2.NBT.1** Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:

- a. 100 can be thought of as a bundle of ten tens — called a “hundred.”
- b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).



### **Understand place value (continued)**

**MGSE2.NBT.2** Count within 1000; skip-count by 5s, 10s, and 100s.

**MGSE2.NBT.3** Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

**MGSE2.NBT.4** Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.

### **Use place value understanding and properties of operations to add and subtract.**

**MGSE2.NBT.5** Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

**MGSE2.NBT.6** Add up to four two-digit numbers using strategies based on place value and properties of operations.

**MGSE2.NBT.7** Add and subtract within 1000, 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.

**MGSE2.NBT.8** Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

**MGSE2.NBT.9** Explain why addition and subtraction strategies work, using place value and the properties of operations.



## Measurement and Data (2.MD)

### **Measure and estimate lengths in standard units.**

**MGSE2.MD.1** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

**MGSE2.MD.2** Measure the length of an object twice, using length units of different measurements; describe how the two measurements relate to the size of the unit chosen. Understand the relative size of units in different systems of measurement. For example, an inch is longer than a centimeter. (Students are not expected to convert between systems of measurement.)

**MGSE2.MD.3** Estimate lengths using units of inches, feet, centimeters, and meters.

**MGSE2.MD.4** Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

### **Relate addition and subtraction to length.**

**MGSE2.MD.5** Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

**MGSE2.MD.6** Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, and represent whole-number sums and differences within 100 on a number line diagram.

**MGSE2.MD.7** Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

**MGSE2.MD.8** Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?



### **Represent and interpret data.**

**MGSE2.MD.9** Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

**MGSE2.MD.10** Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

## **Geometry (2.G)**

### **Reason with shapes and their attributes.**

**MGSE2.G.1** Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

**MGSE2.G.2** Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

**MGSE2.G.3** Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.