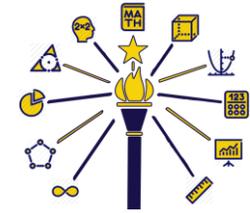




Indiana Academic Standards for Mathematics – Second Grade Standards Resource Guide Document



This Teacher Resource Guide, revised in July 2018, provides supporting materials to help educators successfully implement the Indiana Academic Standards for Second Grade. This resource guide is provided to help ensure all students meet the rigorous learning expectations set by the academic standards. Use of this guide and the resources on the web page is optional – teachers should decide which resources will work best for their students. However, all guidance contained in this document and on the website has been chosen to best support effective teaching practices and promote the Mathematics Process Standards.

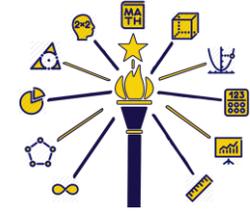
With an increased emphasis on content area literacy, academic vocabulary has been noted and defined. Additionally, necessary vocabulary that should be prior knowledge has also been listed. Best practices should be utilized when teaching students academic vocabulary. Please see the Literacy Framework for examples of best practices.

Examples have been removed from the document as they tend to limit interpretation and classroom application. Rather, success criteria, in the form of “I can” statements, have been included. According to Hattie (2017), success criteria is specific, concrete and measurable, describing what success looks like when a learning goal is reached. Additionally, success criteria contributes to teacher clarity, which has a 0.75 effect size! An effect size of 0.40 reportedly indicates one year of growth. Utilizing success criteria in the classroom allows students to monitor their own learning and increases motivation (Hattie, p. 57). **It is important to note that the success criteria provided here are not intended to be limiting. Teachers may have additional success criteria for their students.**

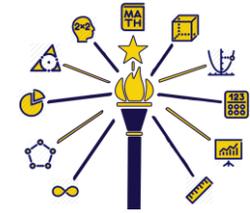
Guidance around vertical articulation has been provided in the last two columns. Knowing what was expected of students at previous grade levels will help teachers connect new learning to prior knowledge. Additionally, understanding what a student will be expected to learn in the future provides the teacher a context for the current learning. This information is not exhaustive; rather it is provided to give teachers a quick understanding of how the work builds from previous grade levels into subsequent courses. The Indiana Department of Education (IDOE) math team recommends teachers further study this vertical articulation to situate their course objectives in the broader math context.

If you have any questions, please do not hesitate to reach out to the IDOE math team. Contact information for the Elementary and Secondary Math Specialists can be found on the website: <https://www.doe.in.gov/standards/mathematics>. If you have suggested resources for the website, please share those as well.

Hattie, J., Fisher, D., Frey, N., Gojak, L. M., Moore, S. D., & Mellman, W. (2017). *Visible learning for mathematics: What works best to optimize student learning, grades K-12*. Thousand Oaks, CA: Corwin Mathematics.

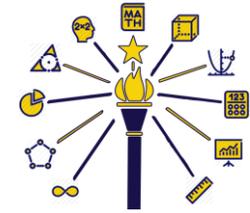


Number Sense					
Second Grade Standards		Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
2.NS.1	Count by ones, twos, fives, tens, and hundreds up to at least 1,000 from any given number.	<p>I can count on by ones from any number up to 1,000.</p> <p>I can count on by twos from any number up to 1,000.</p> <p>I can count on by fives from any number up to 1,000.</p> <p>I can count on by tens from any number up to 1,000.</p> <p>I can count on by hundreds from any number up to 1,000.</p>	Count On	Count to at least 120 by ones, fives, and tens from any given number. (MA.1.NS.1)	Represent the concept of multiplication of whole numbers with equal "jumps" on a number line. (MA.3.C.2)
2.NS.2	Read and write whole numbers up to 1,000. Use words, models, standard form and expanded form to represent and show equivalent forms of whole numbers up to 1,000.	<p>I can read and write numbers to 1,000 in standard form.</p> <p>I can read and write numbers to 1,000 in word form.</p> <p>I can read and write numbers to 1,000 in expanded form.</p> <p>I can use models to represent numbers up to 1,000.</p> <p>I can show and represent equivalent numbers in in word,</p>	<p>Word Form</p> <p>Standard Form</p> <p>Expanded Form</p> <p>Equivalent Numbers</p>	Write whole numbers from 0 to 20 and recognize number words from 0 to 10. (MA.K.NS.2)	Read and write whole numbers up to 10,000. (MA.2.NS.1)



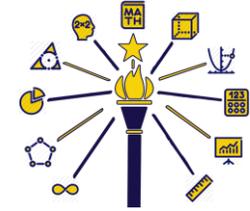
Number Sense

Number Sense					
		standard and expanded form and using models.			
2.NS.3	Plot and compare whole numbers up to 1,000 on a number line.	<p>I can plot numbers to 1,000 on a number line.</p> <p>I can use a number line to compare numbers up to 1,000.</p>	<p>Number Line</p> <p>Plot</p> <p>Compare</p>	Use place value understanding to compare two two-digit numbers based on meanings of the tens and ones digits. (MA.1.NS.4)	<p>Represent a fraction, $1/b$, on a number line. (MA.3.NS.4)</p> <p>Represent a fraction, a/b, on a number line by marking off lengths $1/b$ from 0. (MA.3.NS.4)</p>
2.NS.4	Match the ordinal numbers first, second, third, etc., with an ordered set up to 30 items.	I can match numbers with their ordinals in an ordered set with up to 30 items.	Ordinal	Match the ordinal numbers first, second, third, etc., with an ordered set up to 10 items. (MA.1.NS.3)	
2.NS.5	Determine whether a group of objects (up to 20) has an odd or even number of members (e.g., by placing that number of objects in two groups of the same size and recognizing that for even numbers no object will be left over and for odd numbers one object will be left over, or by pairing	<p>I can determine if a group of objects is odd or even.</p> <p>I can separate an even number of objects up to 20 into two equal groups.</p> <p>I can separate an odd number of objects into two equal groups with one left over.</p> <p>I can place an even number of objects into pairs.</p>	<p>Even</p> <p>Odd</p> <p>Pairing</p> <p>Remainder</p> <p>Divide</p>	Separate sets of ten or fewer objects into equal groups. (MA.K.NS.10)	<p>Represent the concept of division of whole numbers with the following models: partitioning, sharing. (MA.3.C.3)</p> <p>Solve real-world problems involving whole number multiplication and division within 100 in situations involving</p>



Number Sense

	objects or counting them by 2's).	<p>I can place an odd number of objects into pairs with one left over.</p> <p>I can count an even number of objects by 2's.</p> <p>I can count an odd number of objects by 2's with one left over.</p>			equal groups. (MA.3.AT.2)
2.NS.6	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 that 100 can be thought of as a group of ten tens — called a “hundred.” Understand that 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).	<p>I can understand that the digit in the hundreds place represents how many hundreds are in the number.</p> <p>I can understand that the digit in the tens place represents how many tens are in the number.</p> <p>I can understand that the digit in the ones place represents how many ones are in the number.</p> <p>I can understand that the number 100 can be made by making ten groups of ten.</p>	<p>Place Value</p> <p>Hundreds</p> <p>Tens</p> <p>Ones</p>	<p>Understand that 10 can be thought of as a group of ten ones — called a “ten.” (MA.1.NS.2)</p> <p>Develop initial understandings of place value and the base 10 number system. (MA.K.NS.11)</p>	Use place value understanding to round 2- and 3-digit whole numbers to the nearest 10 or 100. (MA.3.NS.9)

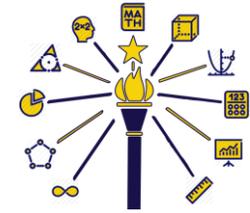


Number Sense

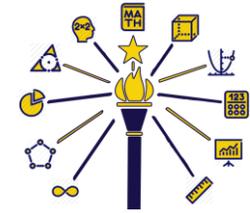
Number Sense					
		I can understand that the numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds.			
2.NS.7	Use place value understanding to compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.	<p>I can use greater than, less than, and equal to signs to compare two, three digit numbers.</p> <p>I can use place value understanding to compare two, three-digit numbers.</p>	<p>Greater than</p> <p>Less than</p> <p>Equal</p> <p>Place value</p>	Use place value understanding to compare two two-digit numbers based on meanings of the tens and ones digits. (MA.1.NS.4)	Compare two whole numbers up to 10,000 using $>$, $=$, and $<$ symbols. (MA.3.NS.2)

Computation and Algebraic Thinking

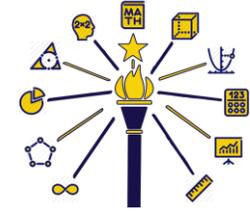
Second Grade Standards		Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
2.CA.1	Add and subtract fluently within 100.	<p>I can add within 100.</p> <p>I can subtract within 100.</p>	<p>Addend</p> <p>Sum</p> <p>Difference</p>	Demonstrate fluency with addition facts and the corresponding subtraction facts within 20. (MA.1.CA.1)	Add and subtract whole numbers fluently within 1000. (MA.3.C.1)



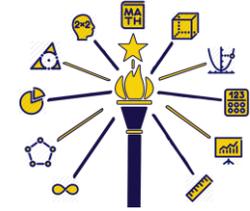
Computation and Algebraic Thinking					
				Use objects, drawings, mental images, sounds, etc., to represent addition and subtraction within 10. (MA.K.1.CA.1)	
2.CA.2	Solve real-world problems involving addition and subtraction within 100 in situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all parts of the addition or subtraction problem (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem). Use estimation to decide whether answers are reasonable in addition problems.	<p>I can solve real-world problems involving addition within 100.</p> <p>I can solve real-world problems involving subtraction within 100.</p> <p>I can use estimation to decide whether my sums are reasonable.</p> <p>I can use drawings and equations with a symbol for the unknown number to represent the problem.</p>	<p>Estimation</p> <p>Sum</p> <p>Difference</p>	<p>Solve real-world problems involving addition and subtraction within 20. (MA.1.CA.2)</p> <p>Solve real-world problems that involve addition and subtraction within 10. (MA.K.CA.2)</p>	<p>Solve real-world problems involving addition and subtraction of whole numbers within 1000. (MA.3.AT.1)</p> <p>Solve real-world problems involving whole number multiplication and division within 100 in situations involving equal groups, arrays, and measurement quantities. (MA.3.AT.2)</p> <p>Solve two-step real-world problems using the four operations of addition, subtraction, multiplication and division. (MA.3.AT.3)</p>



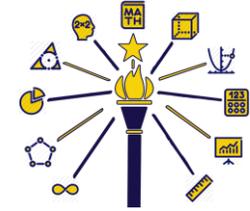
Computation and Algebraic Thinking					
2.CA.3	Solve real-world problems involving addition and subtraction within 100 in situations involving lengths that are given in the same units (e.g., by using drawings, such as drawings of rulers, and equations with a symbol for the unknown number to represent the problem).	<p>I can solve real-world problems involving adding and subtracting lengths within 100 when given in the same units.</p> <p>I can use drawings and equations with a symbols representing the unknown number to solve real-world problems involving adding and subtracting lengths within 100.</p>	Ruler Equation Sum Difference Inch Centimeter Millimeter Length	Solve real-world problems that call for addition of three whole numbers whose sum is within 20. (MA.1.CA.4)	Solve real-world problems involving addition and subtraction of whole numbers within 1000. (MA.3.AT.1)
2.CA.4	Add and subtract within 1000, using models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; describe the strategy and explain the reasoning used. Understand that in adding or subtracting three-digit numbers, one adds or	<p>I can add and subtract within 1000 using place value strategies.</p> <p>I can add and subtract within 1000 using modeling strategies.</p> <p>I can add and subtract within 1000 by drawing.</p> <p>I can describe and explain strategies used to add and subtract within 1000.</p>	Place Value Sum Difference Regroup	Add within 100. (MA.1.CA.5)	Add and subtract whole numbers fluently within 1000. (MA.3C.1)



Computation and Algebraic Thinking					
	subtracts hundreds and hundreds, tens and tens, ones and ones, and that sometimes it is necessary to compose or decompose tens or hundreds.	<p>I can show that when adding or subtracting, I perform the given operation on digits in matching place values.</p> <p>I can use regrouping to add or subtract within 1000.</p>			
2.CA.5	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 groups.	<p>I can add to find the total number of objects within a rectangular array up to 5 rows and 5 columns.</p> <p>I can write an equation to show the total as a sum of equal groups.</p>	<p>Sum</p> <p>Array</p>	Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. (MA.1.CA.6)	<p>Represent the concept of multiplication of whole numbers with the following models: equal-sized groups, arrays. (MA.3.C.2)</p> <p>Solve real-world problems involving whole number multiplication and division within 100 in situations involving equal groups, arrays. (MA.3.AT.2)</p>
2.CA.6	Show that the order in which two numbers are added (commutative property) and how the numbers are grouped in addition (associative property) will not change	<p>I can show how the order in which two numbers are added won't change the sum.</p> <p>I can show how grouping numbers in different orders will not change the sum.</p>	<p>Commutative property</p> <p>Associative property</p>	Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true	Show how the order in which two numbers are multiplied and how numbers are grouped in multiplication will not change the product. (MA.4.C.7)

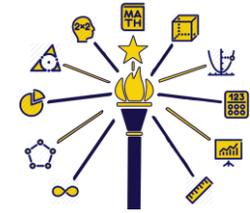


Computation and Algebraic Thinking					
	the sum. These properties can be used to show that numbers can be added in any order.	I can show that numbers can be added in any order.		or false. (MA.1.CA.6) Find the number that makes 10 when added to the given number for any number from 1 to 9. (MA.K.CA.4)	
2.CA.7	Create, extend, and give an appropriate rule for number patterns using addition and subtraction within 1000.	<p>I can create rules for number patterns for addition and subtraction within 1,000.</p> <p>I can extend rules for number patterns for addition and subtraction within 1,000.</p> <p>I can give rules for number patterns using addition and subtraction within 1,000.</p>	Number Pattern	<p>Create, extend, and give an appropriate rule for number patterns using addition within 100. (MA.1.CA.7)</p> <p>Create, extend, and give an appropriate rule for simple repeating and growing patterns with numbers and shapes. (MA.K.CA.5)</p>	<p>Demonstrate fluency with multiplication facts and corresponding division facts of 0 to 10. (MA.3.C.6)</p> <p>Create, extend, and give an appropriate rule for number patterns using multiplication within 100. (MA.3.AT.6)</p>



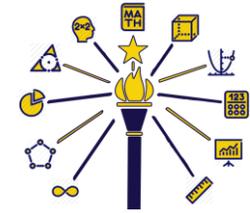
Geometry

Geometry					
Second Grade Standards		Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
2.G.1	Identify, describe, and classify two- and three-dimensional shapes (triangle, square, rectangle, cube, right rectangular prism) according to the number and shape of faces and the number of sides and/or vertices. Draw two-dimensional shapes.	<p>I can identify two- and three-dimensional shapes.</p> <p>I can describe two- and three-dimensional shapes.</p> <p>I can classify three-dimensional shapes according to the number and shape of the faces.</p> <p>I can classify two-dimensional shapes according to the number of sides and/or vertices.</p> <p>I can draw two-dimensional shapes.</p>	<p>Two-Dimensional</p> <p>Three-Dimensional</p> <p>Triangle</p> <p>Square</p> <p>Rectangle</p> <p>Cube</p> <p>Rectangular Prism</p> <p>Face</p> <p>Sides</p> <p>Vertex</p>	<p>Identify objects as two-dimensional or three-dimensional. (MA.1.G.1)</p> <p>Compare two- and three-dimensional shapes in different sizes and orientations. (MA.K.G.2)</p>	Identify and describe the following: cube, sphere, prism, pyramid, cone, and cylinder. (MA.3.G.1)
2.GA.2	Create squares, rectangles, triangles, cubes, and right rectangular prisms using appropriate materials.	<p>I can create squares.</p> <p>I can create rectangles.</p> <p>I can create triangles.</p> <p>I can create right rectangular prisms.</p>	<p>Square</p> <p>Rectangle</p> <p>Triangle</p> <p>Rectangular Prism</p>	Use two-dimensional shapes or three-dimensional shapes to create a composite shape, and compose new shapes. (MA.1.G.3)	Recognize and draw rhombuses, rectangles, and squares as examples of quadrilaterals. (MA.3.G.2)



Geometry

2.G.3	Investigate and predict the result of composing and decomposing two- and three-dimensional shapes.	<p>I can investigate the impact of decomposing two- and three-dimensional shapes.</p> <p>I can investigate the impact of composing two- and three-dimensional shapes.</p> <p>I can predict the result of composing two and three dimensional shapes.</p> <p>I can predict the result of decomposing two and three dimensional shapes.</p>	<p>Compose</p> <p>Decompose</p> <p>Investigate</p> <p>Predict</p>	Use two-dimensional shapes or three-dimensional shapes to create a composite shape, and compose new shapes. (MA.1.G.3)	Recognize area as additive and find the area of complex shapes composed of rectangles by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts. (MA.4.M.4)
2.G.4	Partition a rectangle into rows and columns of same-size (unit) squares and count to find the total number of same-size squares.	<p>I can partition a rectangle into squares of equal size.</p> <p>After partitioning a rectangle into equal sized squares, I can count the number of same-size squares.</p>	<p>Partition</p> <p>Fraction</p>	Partition circles and rectangles into two and four equal parts; describe the parts using the words halves, fourths, and quarters. (MA.1.G.4)	<p>Understand a fraction, $1/b$, as the quantity formed by 1 part when a whole is partitioned. (MA.3.NS.3)</p> <p>Represent the concept of division of whole numbers with the following models: partitioning. (MA.3.C.3)</p>
2.G.5	Partition circles and rectangles into two, three, or four equal parts;	I can partition circles into two, three, and four equal parts.	<p>Fraction</p> <p>Numerator</p>	Partition circles and rectangles into two and four equal	Understand a fraction, $1/b$, as the quantity formed by 1 part

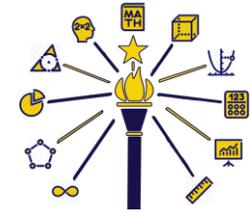


Geometry

	<p>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 parts of identical wholes need not have the same shape.</p>	<p>I can partition rectangles into two, three, and four equal parts.</p> <p>I can identify halves, thirds, and fourths.</p> <p>I can describe partitions of circles and rectangles.</p> <p>I can describe a whole as two halves, three thirds, and four fourths.</p> <p>I can recognize that equal parts of identical wholes do not need to have the same shape.</p>	<p>Denominator</p> <p>Whole</p>	<p>parts; describe the parts using the words halves, fourths, and quarters. (MA.1.G.4)</p>	<p>when a whole is partitioned. (MA.3.NS.3)</p> <p>Represent the concept of division of whole numbers with the following models: partitioning. (MA.3.C.3)</p>
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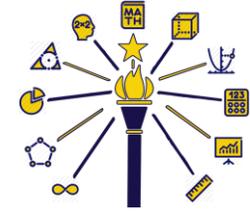
Measurement

Second Grade Standards	Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
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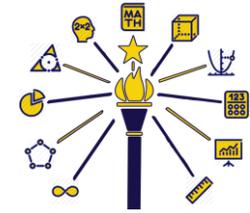
Measurement

2.M.1	Describe the relationships among inch, foot, and yard. Describe the relationship between centimeter and meter.	<p>I can describe the relationship between inch, foot, and yard.</p> <p>I can describe the relationship between centimeter and meter.</p>	<p>Inch</p> <p>Yard</p> <p>Foot</p> <p>Centimeter</p> <p>Meter</p>	Use direct comparison or a nonstandard unit to compare and order objects according to length. (MA.1.M.1)	Convert among different-sized standard measurement units within a given measurement system. (MA.5.M.1)
2.M.2	Estimate and measure the length of an object by selecting and using appropriate tools, such as rulers, yardsticks, meter sticks, and measuring tapes to the nearest inch, foot, yard, centimeter and meter.	<p>I can estimate the length of an object to the nearest inch, foot, yard, centimeter and meter.</p> <p>I can measure to the nearest inch, foot, yard, centimeter, and meter.</p> <p>I can use a ruler, yardstick, and meter stick to measure lengths.</p>	<p>Estimate</p> <p>Inch</p> <p>Yard</p> <p>Foot</p> <p>Centimeter</p> <p>Meter</p> <p>Metric System</p> <p>US Standard System</p>	Use direct comparison or a nonstandard unit to compare and order objects according to length. (MA.1.M.1)	<p>Estimate and measure length to a quarter-inch. (MA.3.M.2)</p> <p>Measure length to the nearest quarter-inch, eighth-inch. (MA.4.M.1)</p>



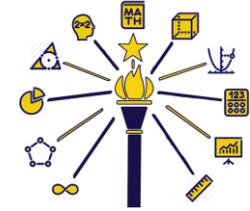
Measurement

2.M.3	Understand that the length of an object does not change regardless of the units used. Measure the length of an object twice using length units of different lengths for the two measurements. Describe how the two measurements relate to the size of the unit chosen.	<p>I can understand that the length of an object does not change no matter what unit it is measured in.</p> <p>I can measure the length of an object twice using different units and describe how the two measurements relate to the size of the chosen unit.</p>	<p>Unit of Measurement</p> <p>Length</p>	Use direct comparison or a nonstandard unit to compare and order objects according to length. (MA.1.M.1)	Measure length to the nearest quarter-inch, eighth-inch, and millimeter. (MA.4.M.1)
2.M.4	Estimate and measure volume (capacity) using cups and pints.	<p>I can estimate volume (capacity) in cups and pints.</p> <p>I can measure volume in cups and pints.</p>	<p>Estimate</p> <p>Cup</p> <p>Pint</p> <p>Volume</p>	Use direct comparison or a nonstandard unit to compare and order objects according to capacity. (MA.1.M.1)	Estimate and measure the volume of objects in quarts (qt), gallons (gal), and liters (l). (MA.3.M.1)
2.M.5	Tell and write time to the nearest five minutes from analog clocks, using a.m. and p.m. Solve real-world problems involving addition and subtraction of time intervals on the hour or half hour.	<p>I can tell time to the nearest five minutes on an analog clock.</p> <p>I can write time to the nearest five minutes on an analog clock.</p> <p>I can use a.m. and p.m. to write the time.</p>	<p>Analog Clock</p> <p>Time Interval</p>	Tell and write time to the nearest half-hour. (MA.1.M.2)	Tell and write time to the nearest minute from analog clocks, using a.m. and p.m., and measure time intervals in minutes. (MA.3.M.3)



Measurement

Measurement					
		I can solve real-world problems that involve adding and subtracting time on the hour or half hour.			
2.M.6	Describe relationships of time, including: seconds in a minute; minutes in an hour; hours in a day; days in a week; and days, weeks, and months in a year.	<p>I can show how many seconds are in one minute.</p> <p>I can show how many minutes are in an hour.</p> <p>I can show how many hours are in a day.</p> <p>I can show how many days are in a week.</p> <p>I can show how many weeks are in a month.</p> <p>I can show how many months are in a year.</p> <p>I can explain the relationship between different units of time.</p>	<p>Second</p> <p>Minute</p> <p>Hour</p> <p>Day</p> <p>Week</p> <p>Month</p> <p>Year</p>	Tell and write time to the nearest half-hour and relate time to events. (MA.1.M.2)	Use the four operations to solve real-world problems involving intervals of time. (MA.4.M.3)
2.M.7	Find the value of a collection of pennies, nickels, dimes, quarters and dollars.	I can find the value of a set of pennies, nickels, dimes, quarters, and dollars.	Value	Find the value of a collection of pennies, nickels, and dimes. (MA.1.M.3)	Find the value of any collection of coins and bills. (MA.3.M.4)



Data Analysis

Second Grade Standards		Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
2.DA.1	Draw a picture graph (with single-unit scale) and a bar graph (with single-unit scale) to represent a data set with up to four choices (What is your favorite color? red, blue, yellow, green). Solve simple put-together, take-apart, and compare problems using information presented in the graphs.	<p>I can draw a picture graph.</p> <p>I can draw a bar graph.</p> <p>I can represent data sets that have up to four choices using bar graphs and picture graphs.</p> <p>I can solve simple addition, subtraction, and comparison problems using information shown on a graph.</p>	<p>Picture graph</p> <p>Bar graph</p> <p>Compare</p>	Organize and interpret data with up to three choices. (MA.1.DA.1)	<p>Create scaled picture graphs, and scaled bar graphs. (MA.3.DA.1)</p> <p>Interpret data using tables, line plots, bar graphs, and line graphs. (MA.5.DS.1)</p>