Mathematics (B.E.S.T.) Standards

GRADE: K12

Strand: MATHEMATICAL THINKING AND REASONING	
Standard 1: Actively participate in effortful learning both individually and collectively.	
BENCHMARK CODE	**BENCHMARK**
MA.K12.MTR.1.1	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. *Clarifications*: Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.

Standard 2: Demonstrate understanding by representing problems in multiple ways.	
BENCHMARK CODE	**BENCHMARK**
MA.K12.MTR.2.1	**Demonstrate understanding by representing problems in multiple ways.**

	Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. *Clarifications*: Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.

Standard 3: Complete tasks with mathematical fluency.	
BENCHMARK CODE	**BENCHMARK**
MA.K12.MTR.3.1	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. *Clarifications*: Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.

Standard 4: Engage in discussions that reflect on the mathematical thinking of self and others.	
BENCHMARK CODE	**BENCHMARK**
MA.K12.MTR.4.1	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. *Clarifications*: Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.

Standard 5: Use patterns and structure to help understand and connect mathematical concepts.	
BENCHMARK CODE	**BENCHMARK**
MA.K12.MTR.5.1	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. *Clarifications*:

	Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.

Standard 6: Assess the reasonableness of solutions.	
BENCHMARK CODE	**BENCHMARK**
MA.K12.MTR.6.1	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. *Clarifications*: Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.

Standard 7: Apply mathematics to real-world contexts.	
BENCHMARK CODE	**BENCHMARK**
MA.K12.MTR.7.1	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency.

	Clarifications: Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.

Mathematics (B.E.S.T.) Standards

GRADE: 1

Strand: NUMBER SENSE AND OPERATIONS

Standard 1: Extend counting sequences and understand the place value of two-digit numbers.

BENCHMARK CODE	BENCHMARK
MA.1.NSO.1.1	Starting at a given number, count forward and backwards within 120 by ones. Skip count by 2s to 20 and by 5s to 100. *Clarifications*: *Clarification 1:* Instruction focuses on the connection to addition as "counting on" and subtraction as "counting back". *Clarification 2:*Instruction also focuses on the recognition of patterns within skip counting which helps build a foundation for multiplication in later grades. *Clarification 3:* Instruction includes recognizing counting sequences using visual charts, such as a 120 chart, to emphasize base 10 place value. **Related Access Point(s)** MA.1.NSO.1.AP.1 Starting at a given number, count forward within 100 and backwards within 20 by ones. Skip count by 5s from 5 to 100. *Date Adopted or Revised*: 03/23
MA.1.NSO.1.2	Read numbers from 0 to 100 written in standard form, expanded form and word form. Write numbers from 0 to 100 using standard form and expanded form. *Examples*: The number seventy-five written in standard form is 75 and in expanded form is 70 + 5. **Related Access Point(s)** MA.1.NSO.1.AP.2 Read numbers from 0 to 20 written in standard form and expanded form. Generate numbers from 0 to 20 using standard form. *Date Adopted or Revised*: 03/23
MA.1.NSO.1.3	Compose and decompose two-digit numbers in multiple ways using tens and ones. Demonstrate each composition or decomposition with objects, drawings and expressions or equations.

	Examples: The number 37 can be expressed as 3 tens + 7 ones, 2 tens+17 ones or as 37 ones.
	Related Access Point(s)
	MA.1.NSO.1.AP.3 Compose and decompose numbers up to 20 using tens and ones. Demonstrate each composition or decomposition with objects, drawings, and expressions or equations. *Date Adopted or Revised*: 03/23
MA.1.NSO.1.4	Plot, order and compare whole numbers up to 100. *Examples*: The numbers 72, 35 and 58 can be arranged in ascending order as 35, 58 and 72. *Clarifications*: *Clarification 1:* When comparing numbers, instruction includes using a number line and using place values of the tens and ones digits. *Clarification 2:* Within this benchmark, the expectation is to use terms (e.g., less than, greater than, between or equal to) and symbols (<, > or =).
	Related Access Point(s)
	MA.1.NSO.1.AP.4 Order (e.g., 5, 9, 13) and compare (e.g., 11 < 19) whole numbers up to 20. *Date Adopted or Revised*: 03/23

Standard 2: Develop an understanding of addition and subtraction operations with one- and two-digit numbers.

BENCHMARK CODE	BENCHMARK
MA.1.NSO.2.1	Recall addition facts with sums to 10 and related subtraction facts with automaticity.
	Related Access Point(s)
	MA.1.NSO.2.AP.1 Recall addition facts with sums to 5 and related subtraction facts. *Date Adopted or Revised*: 03/23
MA.1.NSO.2.2	Add two whole numbers with sums from 0 to 20, and subtract using related facts with procedural reliability. *Clarifications*: *Clarification 1:* Instruction focuses on helping a student choose a method they can use reliably. *Clarification 2:* Instruction includes situations involving adding to, putting together, comparing and taking from.
	Related Access Point(s)
	MA.1.NSO.2.AP.2 Apply a strategy for adding and subtracting two one-digit whole numbers to solve within 10. *Date Adopted or Revised*: 03/23
MA.1.NSO.2.3	Identify the number that is one more, one less, ten more and ten less than a given two-digit number. *Examples*: *Example:* One less than 40 is 39. *Example:* Ten more than 23 is 33.
	Related Access Point(s)

	MA.1.NSO.2.AP.3 Identify the number that is one more and one less than a given number within 20. *Date Adopted or Revised*: 03/23
MA.1.NSO.2.4	Explore the addition of a two-digit number and a one-digit number with sums to 100. *Clarifications*: *Clarification 1:* Instruction focuses on combining ones and tens and composing new tens from ones, when needed. *Clarification 2:* Instruction includes the use of manipulatives, number lines, drawings or models. **Related Access Point(s)** MA.1.NSO.2.AP.4 Explore the addition of a two-digit number from 11 to 19 and a one-digit number. *Date Adopted or Revised*: 03/23
MA.1.NSO.2.5	Explore subtraction of a one-digit number from a two-digit number. *Examples*: Finding 37-6 is the same as asking "What number added to 6 makes 37?" *Clarifications*: *Clarification 1:* Instruction focuses on utilizing the number line as a tool for subtraction through "counting on" or "counting back". The process of counting on highlights subtraction as a missing addend problem. *Clarification 2:* Instruction includes the use of manipulatives, drawings or equations to decompose tens and regroup ones, when needed. **Related Access Point(s)** MA.1.NSO.2.AP.5 Explore subtraction of a one-digit number from a two-digit number from 11 to 19. *Date Adopted or Revised*: 03/23

Strand: ALGEBRAIC REASONING

Standard 1: Solve addition problems with sums between 0 and 20 and subtraction problems using related facts.

BENCHMARK CODE	BENCHMARK
MA.1.AR.1.1	Apply properties of addition to find a sum of three or more whole numbers. *Examples*: 8+7+2 is equivalent to 7+8+2 which is equivalent to 7+10 which equals 17. *Clarifications*: *Clarification 1:* Within this benchmark, the expectation is to apply the associative and commutative properties of addition. It is not the expectation to name the properties or use parentheses. Refer to Properties of Operations, Equality and Inequality (Appendix D). *Clarification 2:* Instruction includes emphasis on using the properties to make a ten when adding three or more numbers. *Clarification 3:* Addition is limited to sums within 20. **Related Access Point(s)**

	MA.1.AR.1.AP.1 Apply the commutative property of addition to find a sum of two whole numbers within 20. *Date Adopted or Revised*: 03/23
MA.1.AR.1.2	Solve addition and subtraction real-world problems using objects, drawings or equations to represent the problem. *Clarifications*: *Clarification 1:* Instruction includes understanding the context of the problem, as well as the quantities within the problem. *Clarification 2:* Students are not expected to independently read word problems. *Clarification 3:* Addition and subtraction are limited to sums within 20 and related subtraction facts. Refer to Situations Involving Operations with Numbers (Appendix A). **Related Access Point(s)** MA.1.AR.1.AP.2 Solve addition and subtraction real-world problems within 10 using objects, drawings or equations to represent the problem. *Date Adopted or Revised*: 03/23

Standard 2: Develop an understanding of the relationship between addition and subtraction.	
BENCHMARK CODE	**BENCHMARK**
MA.1.AR.2.1	Restate a subtraction problem as a missing addend problem using the relationship between addition and subtraction. *Examples*: *Example:* The equation 12-7=? can be restated as 7+?=12 to determine the difference is 5. *Clarifications*: *Clarification 1:* Addition and subtraction are limited to sums within 20 and related subtraction facts. **Related Access Point(s)** MA.1.AR.2.AP.1 Use the relationship between addition and subtraction to explore subtraction as addition with a missing addend. *Date Adopted or Revised*: 03/23
MA.1.AR.2.2	Determine and explain if equations involving addition or subtraction are true or false. *Examples*: Given the following equations, 8=8, 9-1=7, 5+2=2+5 and 1=9-8, 9-1=7 can be determined to be false. *Clarifications*: *Clarification 1:* Instruction focuses on understanding of the equal sign. *Clarification 2:* Problem types are limited to an equation with no more than four terms. The sum or difference can be on either side of the equal sign. *Clarification 3:* Addition and subtraction are limited to sums within 20 and related subtraction facts. **Related Access Point(s)** MA.1.AR.2.AP.2 Determine if addition or subtraction equations (with no more than three terms) are true or false. Sums may not exceed 10 and their related subtraction facts. *Date Adopted or Revised*: 03/23
MA.1.AR.2.3	Determine the unknown whole number in an addition or subtraction equation, relating three whole numbers, with the unknown in any position. *Examples*: *Example*: 9+?=12

	Example: $17 = \square + 5$ *Example*: ?-4=8 *Clarifications*: *Clarification 1:* Instruction begins the development of algebraic thinking skills where the symbolic representation of the unknown uses any symbol other than a letter. *Clarification 2:* Problems include the unknown on either side of the equal sign. *Clarification 3:* Addition and subtraction are limited to sums within 20 and related subtraction facts. Refer to Situations Involving Operations with Numbers (Appendix A). **Related Access Point(s)** MA.1.AR.2.AP.3 Determine the unknown whole number in an addition or subtraction equation, relating three whole numbers, with the result unknown (e.g., 8 − 2 = __, __ = 7 + 3). Sums may not exceed 10 and their related subtraction facts. *Date Adopted or Revised*: 03/23

Strand: MEASUREMENT

Standard 1: Compare and measure the length of objects.

BENCHMARK CODE	BENCHMARK
MA.1.M.1.1	Estimate the length of an object to the nearest inch. Measure the length of an object to the nearest inch or centimeter. *Clarifications*: *Clarification 1:* Instruction emphasizes measuring from the zero point of the ruler. The markings on the ruler indicate the unit of length by marking equal distances with no gaps or overlaps. *Clarification 2:* When estimating length, the expectation is to give a reasonable number of inches for the length of a given object. **Related Access Point(s)** MA.1.M.1.AP.1a Use a ruler to measure the length of an object with exact whole units to the nearest inch. *Date Adopted or Revised*: 03/23 MA.1.M.1.AP.1b Explore familiar objects that can be used to develop a mental measurement benchmark to understand the relative size of an inch. *Date Adopted or Revised*: 03/23
MA.1.M.1.2	Compare and order the length of up to three objects using direct and indirect comparison. *Clarifications*: *Clarification 1:* When directly comparing objects, the objects can be placed side by side or they can be separately measured in the same units and the measurements can be compared.

	Clarification 2: Two objects can be compared indirectly by directly comparing them to a third object. **Related Access Point(s)** MA.1.M.1.AP.2 Compare and order the length of up to three objects using direct comparison. *Date Adopted or Revised*: 03/23

Standard 2: Tell time and identify the value of coins and combinations of coins and dollar bills.	
BENCHMARK CODE	**BENCHMARK**
MA.1.M.2.1	Using analog and digital clocks, tell and write time in hours and half-hours. *Clarifications*: *Clarification 1:* Within this benchmark, the expectation is not to understand military time or to use a.m. or p.m. *Clarification 2:* Instruction includes the connection to partitioning circles into halves and to semi-circles. **Related Access Point(s)** MA.1.M.2.AP.1 Using analog and digital clocks, express the time in hours. *Date Adopted or Revised*: 03/23
MA.1.M.2.2	Identify pennies, nickels, dimes and quarters, and express their values using the ¢ symbol. State how many of each coin equal a dollar. *Clarifications*: *Clarification 1:* Instruction includes the recognition of both sides of a coin. *Clarification 2:* Within this benchmark, the expectation is not to use decimal values. **Related Access Point(s)** MA.1.M.2.AP.2 Identify the names and values of pennies, nickels, dimes and quarters. *Date Adopted or Revised*: 03/23
MA.1.M.2.3	Find the value of combinations of pennies, nickels and dimes up to one dollar, and the value of combinations of one, five and ten dollar bills up to $100. Use the ¢ and $ symbols appropriately. *Clarifications*: *Clarification 1:* Instruction includes the identification of a one, five and ten-dollar bill and the computation of the value of combinations of pennies, nickels and dimes or one, five and ten dollar bills. *Clarification 2:* Instruction focuses on the connection to place value and skip counting. *Clarification 3:* Within this benchmark, the expectation is not to use decimal values or to find the value of a combination of coins and dollars. **Related Access Point(s)** MA.1.M.2.AP.3a Find the value of a group of only pennies, only nickels or only dimes up to $1. *Date Adopted or Revised*: 03/23

	MA.1.M.2.AP.3b Find the value of a group of only one-, only five- or only ten-dollar bills up to $100. *Date Adopted or Revised*: 03/23

Strand: FRACTIONS

Standard 1: Develop an understanding of fractions by partitioning shapes into halves and fourths.

BENCHMARK CODE	BENCHMARK
MA.1.FR.1.1	Partition circles and rectangles into two and four equal-sized parts. Name the parts of the whole using appropriate language including halves or fourths. *Clarifications*: *Clarification 1:* This benchmark does not require writing the equal sized parts as a fraction with a numerator and denominator.
	Related Access Point(s)
	MA.1.FR.1.AP.1 Partition circles and rectangles into two and four equal-sized parts. Recognize the parts of the whole as halves or fourths. *Date Adopted or Revised*: 03/23

Strand: GEOMETRIC REASONING

Standard 1: Identify and analyze two- and three-dimensional figures based on their defining attributes.

BENCHMARK CODE	BENCHMARK
MA.1.GR.1.1	Identify, compare and sort two- and three-dimensional figures based on their defining attributes. Figures are limited to circles, semi-circles, triangles, rectangles, squares, trapezoids, hexagons, spheres, cubes, rectangular prisms, cones and cylinders. *Clarifications*: *Clarification 1:* Instruction focuses on the defining attributes of a figure: whether it is closed or not; number of vertices, sides, edges or faces; and if it contains straight, curved or equal length sides or edges. *Clarification 2:* Instruction includes figures given in a variety of sizes, orientations and non-examples that lack one or more defining attributes. *Clarification 3:* Within this benchmark, the expectation is not to sort a combination of two- and three-dimensional figures at the same time or to define the attributes of trapezoids. *Clarification 4:* Instruction includes using formal and informal language to describe the defining attributes of figures when comparing and sorting.
	Related Access Point(s)
	MA.1.GR.1.AP.1 Sort and identify two- or three-dimensional figures based on their defining attributes. (e.g., number of sides, vertices, edges, faces, etc., rather than color, orientation or size). Figures are limited to circles, semi-circles, triangles, rectangles, squares, trapezoids, hexagons, spheres, cubes, rectangular prisms, cones and cylinders. *Date Adopted or Revised*: 03/23
MA.1.GR.1.2	Sketch two-dimensional figures when given defining attributes. Figures are limited to triangles, rectangles, squares and hexagons.

	Related Access Point(s) MA.1.GR.1.AP.2 Produce two-dimensional figures when given defining attributes. Figures are limited to triangles, rectangles and squares. *Date Adopted or Revised*: 03/23
MA.1.GR.1.3	Compose and decompose two- and three-dimensional figures. Figures are limited to semi-circles, triangles, rectangles, squares, trapezoids, hexagons, cubes, rectangular prisms, cones and cylinders. *Examples*: *Example:* A hexagon can be decomposed into 6 triangles. *Example:* A semi-circle and a triangle can be composed to create a two-dimensional representation of an ice cream cone. *Clarifications*: *Clarification 1:* Instruction focuses on the understanding of spatial relationships relating to part-whole, and on the connection to breaking apart numbers and putting them back together. *Clarification 2:* Composite figures are composed without gaps or overlaps. *Clarification 3:* Within this benchmark, it is not the expectation to compose two- and three- dimensional figures at the same time. **Related Access Point(s)** MA.1.GR.1.AP.3 Recognize that different figures can be formed by putting together smaller two- or three-dimensional figures and that smaller figures can be formed by taking apart larger two- or three-dimensional figures. Figures are limited to semi-circles, triangles, rectangles, squares, trapezoids, hexagons, cubes, rectangular prisms, cones and cylinders. *Date Adopted or Revised*: 03/23
MA.1.GR.1.4	Given a real-world object, identify parts that are modeled by two- and three-dimensional figures. Figures are limited to semi-circles, triangles, rectangles, squares and hexagons, spheres, cubes, rectangular prisms, cones and cylinders. **Related Access Point(s)** MA.1.GR.1.AP.4 Explore real-world objects with parts that can be modeled by a given two- or three-dimensional figure. Figures are limited to semi-circles, triangles, rectangles, squares and hexagons, spheres, cubes, rectangular prisms, cones and cylinders. *Date Adopted or Revised*: 03/23

Strand: DATA ANALYSIS AND PROBABILITY

Standard 1: Collect, represent and interpret data using pictographs and tally marks.

BENCHMARK CODE	BENCHMARK
MA.1.DP.1.1	Collect data into categories and represent the results using tally marks or pictographs. *Examples*: A class collects data on the number of students whose birthday is in each month of the year and represents it using tally marks. *Clarifications*: *Clarification 1:* Instruction includes connecting tally marks to counting by 5s.

	Clarification 2: Data sets include geometric figures that are categorized using their defining attributes and data from the classroom or school. *Clarification 3:* Pictographs are limited to single-unit scales. **Related Access Point(s)** MA.1.DP.1.AP.1 Sort data into two categories and represent the results using tally marks or pictographs. *Date Adopted or Revised*: 03/23
MA.1.DP.1.2	Interpret data represented with tally marks or pictographs by calculating the total number of data points and comparing the totals of different categories. *Clarifications*: *Clarification 1:* Instruction focuses on the connection to addition and subtraction when calculating the total and comparing, respectively. **Related Access Point(s)** MA.1.DP.1.AP.2 Interpret data represented with tally marks or pictographs to determine how many in each category and compare the values of two categories of data in terms of more or less. *Date Adopted or Revised*: 03/23