Second Grade Math Standards and Benchmarks

Standard #1: Number and Operations Definition: Students will understand numerical concepts and mathematical operations.		
Benchmark #1: Understand numbers, ways of representing numbers, relationships among numbers, and number systems	Performance Objective 1	☐ Understand the relationship between numbers, quantities, and place value in whole numbers up to 1,000 and develop flexible ways of thinking about numbers: ☐Use multiple models to explore place value and the base-ten number system ☐Represent whole numbers and use them in flexible ways including decomposing and recombining numbers and see their relationships (e.g., 3 is one less than 4, one more than 2, two less than 5) ☐Identify whether a set of objects has an odd or even number of elements ☐Compare and order numbers using a variety of terms (e.g., tens, less than, odd numbers) ☐Apply strategies for computation utilizing an understanding of place value (e.g., 48 + 25 would be 40 + 20 is 60, 8 + 5 is 13, 60 + 13 is 73)
	Performance Objective 2	☐ Apply counting skills and number sense through meaningful activities: ☐Count and recognize “how many” in sets of objects up to 1,000 ☐Count forward and backward from given numbers to 1,000 ☐Connect number words and numerals to the quantities they represent using physical models and other representations (e.g., 23 can be twenty-three 1s , one 10 and thirteen 1s, or two 10s and three 1s) ☐Model how many parts make a whole using equal fractions parts (e.g., ½, 1/3, ¼, and 1/6 as equal parts of a whole)
Benchmark #2: Understand the meaning of operations and how they relate to each other	Performance Objective 1	☐ Find the sum of two whole numbers up to three digits long (e.g., 235 + 476 = 564).
	Performance Objective 2	☐ Find the difference of two whole numbers up to three digits long.
	Performance Objective 3	☐ Understand and use the inverse relationships between addition and subtraction to solve problems and check solutions (28 + 31 = 59, therefore, 59 – 31 = 28).
	Performance Objective 4	☐ Identify and describe situations that require multiplication and division and develop strategies to solve problems for repeated joining of groups and partitioning into equal subgroups or share (e.g., repeated addition and subtraction, counting by multiples, equal sharing).
Benchmark #3: Compute fluently and make reasonable estimates	Performance Objective 1	☐ Use an explain strategies for addition and subtraction of multi-digit whole numbers.
	Performance Objective 2	☐ Model and solve problems representing adding and subtracting amounts of money using dollars and coins,
	Performance Objective 3	☐ Use addition combinations (addends through 10) and related subtraction combinations, and develop strategies for computing based on number sense (e.g., 25 + 37: Take 3 from the 25 and us it to turn 37 into 40; then add 40 and 22 to get 62)
	Performance Objective 4	☐ Select and use a variety of appropriate strategies methods to compute (e.g., objects, mental computation, estimation, paper and pencil)
	Performance Objective 5	☐ Skip-count by 2, 5, and 10 to develop multiplicative reasoning and notational representations (e.g., 5, 10, 15, 20; 4 x 5 = 20; four groups of 5 equals 20).

Standard #2: Algebra Definition: Students will understand algebraic concepts and applications.		
Benchmark #1: Understand patterns, relations, and functions	Performance Objective 1	☐ Recognize, reproduce, describe, extend, and create repeating and growing patterns, and translate from one representation to another.
	Performance Objective 2	☐ Skip-count using calculators or a hundreds chart to identify, describe, predict, and make generalizations about number patterns to differentiate rote counting versus the meaning of the numbers.
	Performance Objective 3	☐ Construct and solve open sentences that have variables (e.g., 10 = 7 + Í).
	Performance Objective 4	☐ Relate everyday problem situations to number sentences involving addition and subtraction (e.g., 25 students are going to the store. Five students can ride in a car. How many cars will be needed?).
Benchmark #2: Represent and analyze mathematical situations and structures using algebraic symbols	Performance Objective 1	☐ Use mathematical language to describe a variety of representations and mathematical ideas and situations.
	Performance Objective 2	☐ Explain the concept of equal (e.g., quantities on both sides of equation are the same) by using objects or giving examples.
	Performance Objective 3	☐ Construct and solve open number sentences that have variables representing numbers up to 20 (e.g., 20 = 6 + Í).
	Performance Objective 4	☐ Use objects, words, and symbols to explain the concept of addition.
Benchmark #3: Use mathematical models to represent and understand quantitative relationships	Performance Objective 1	☐ Model situations of addition and subtraction of whole numbers using objects, pictures, and symbols.
	Performance Objective 2	☐ Solve problems related to trading (e.g., coin trading, measurement trading).
	Performance Objective 3	☐ Solve additions and subtraction problems by using data from simple charts, picture graphs, and number sentences.
Benchmark #4: Analyze changes in various contexts	Performance Objective 1	☐ Describe quantitative change (e.g., a student growing two inches in one year, water heating up to a boil).

Standard #3: Geometry Definition: Students will understand geometric concepts and applications.		
Benchmark #1: Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships	Performance Objective 1	14. ☐ Identify and describe the attributes of common figures in a plane and common objects in space: ☐sort, describe, and analyze plane and solid geometric shapes (e.g., circle, triangle, square, rectangle, sphere, pyramid, cube, rectangular prism) based on various attributes (e.g., faces, edges, and corners) ☐put shapes together and take them apart to form other shapes (e.g., two congruent right triangles can be arranged to form a rectangle). ☐explore lines of symmetry in two-dimensional shapes
Benchmark #2: Specify locations and describe spatial relationships using coordinate geometry and other representational systems	Performance Objective 1	☐ Find and name locations with simple relationships like “near to” and apply ideas about relative position.
	Performance Objective 2	☐ Describe, name, and interpret direction in navigating space and apply ideas about direction and distance.
	Performance Objective 3	☐ Use maps to locate points and navigate through mazes or maps.
	Performance Objective 4	☐ Visualize, justify, and create paths using landmarks, space, shapes, and descriptive language.
	Performance Objective 5	☐ Make and draw rectangular arrays of squares.
Benchmark #3: Apply transformations and use symmetry to analyze mathematical situations	Performance Objective 1	☐ Use systematic thinking to solve geometric puzzles (e.g., pentominoes).
	Performance Objective 2	☐ Use materials to investigate rotational and line symmetry and create shapes that have symmetry..
Benchmark #4: Use visualization, spatial reasoning, and geometric modeling to solve problems	Performance Objective 1	☐ Demonstrate relationships of different attributes with concrete materials (e.g., change one characteristic of a shape while preserving others such as increasing number of sides while perimeter stays the same).
	Performance Objective 2	☐ Select and use visualization skills to create mental images of geometric shapes.
	Performance Objective 3	☐ Describe geometric shapes and structures from different perspectives.
	Performance Objective 4	☐Relate geometric ideas to numbers (e.g., seeing rows in array as a model of repeated addition).
	Performance Objective 5	☐Recognize geometric shapes and structures in the environment and specify their location.

Standard #4: Measurement Definition: Students will understand measurement systems and applications.		
Benchmark #1: Understand measurable attributes of objects and the units, systems, and process of measurement	Performance Objective 1	☐ Identify a unit of measure (e.g., nearest inch) and repeat that unit comparing it to the item being measured.
	Performance Objective 2	☐ Use direct comparison to compare and order objects according to length, mass, and area.
	Performance Objective 3	☐ Measure and compare common objects using standard and non-standard units of length.
	Performance Objective 4	☐ Find and represent the value of a collection of coins and dollars up to $5.00, using appropriate notation.
	Performance Objective 5	☐ Identify and use time intervals (e.g., hours, days, weeks, months).
	Performance Objective 6	☐ Select and use appropriate measurement tools (e.g., ruler, yardstick, meter stick).
	Performance Objective 7	☐ Tell time to the nearest quarter-hour.
Benchmark #2: Apply appropriate techniques, tools, and formulas to determine measurements	Performance Objective 1	☐ Develop common referents to make comparisons and estimates of length, volume, weight, area, and time.
	Performance Objective 2	☐ Develop an understanding that different measuring tools will yield different numerical measurements of the same object (e.g., ruler, yardstick, meterstick, paper clip).
	Performance Objective 3	☐ Estimate measurements and develop precision in measuring objects.

Standard #5: Data Analysis and Probability Definition: Students will understand how to formulate questions, analyze data, and determine probabilities.		
Benchmark #1: Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them	Performance Objective 1	☐ Collect numerical data systematically.
	Performance Objective 2	☐ Represent data by using concrete objects, pictures, tables, numbers, tallies, and graphs (e.g., pictographs).
	Performance Objective 3	☐ Pose questions about students' selves and their surroundings and gather data by interviewing, surveying, and making observations to answer the questions posed.
	Performance Objective 4	☐ Identify patterns and explain the relationships of the units in the pattern (e.g., the number of ears on one dog, two dogs, etc., or linear numerical patterns).
Benchmark #2: Select and use appropriate statistical methods to analyze data	Performance Objective 1	☐ Describe and interpret data by drawing conclusions and making conjectures based on the data collected
	Performance Objective 2	☐ Display data in a variety of formats.
Benchmark #3: Develop and evaluate inferences and predictions that are based on data	Performance Objective 1	☐ Discuss events related to students' experiences as "likely" or "unlikely" and "possible" or "certain".
	Performance Objective 2	☐ Recognize appropriate conclusions generated from the data collected.
	Performance Objective 3	☐ Recognize inappropriate descriptions of the data set.
Benchmark #4: Understand and apply basic concepts of probability	Performance Objective 1	☐ Investigate concepts of chance (e.g., outcomes of a simple experiment).
	Performance Objective 2	☐ Investigate whether outcomes of a simple event are equally likely to occur.