

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	<input type="checkbox"/> Understand the relationship between numbers, quantities, and place value in whole numbers up to 1,000 and develop flexible ways of thinking about numbers: <input type="checkbox"/> Use multiple models to explore place value and the base-ten number system <input type="checkbox"/> 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) <input type="checkbox"/> Identify whether a set of objects has an odd or even number of elements <input type="checkbox"/> Compare and order numbers using a variety of terms (e.g., tens, less than, odd numbers) <input type="checkbox"/> 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	<input type="checkbox"/> Apply counting skills and number sense through meaningful activities: <input type="checkbox"/> Count and recognize “how many” in sets of objects up to 1,000 <input type="checkbox"/> Count forward and backward from given numbers to 1,000 <input type="checkbox"/> 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) <input type="checkbox"/> Model how many parts make a whole using equal fractions parts (e.g., $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, and $\frac{1}{6}$ as equal parts of a whole)
Benchmark #2: Understand the meaning of operations and how they relate to each other	Performance Objective 1	<input type="checkbox"/> Find the sum of two whole numbers up to three digits long (e.g., $235 + 476 = 564$).
	Performance Objective 2	<input type="checkbox"/> Find the difference of two whole numbers up to three digits long.
	Performance Objective 3	<input type="checkbox"/> 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	<input type="checkbox"/> 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	<input type="checkbox"/> Use an explain strategies for addition and subtraction of multi-digit whole numbers.
	Performance Objective 2	<input type="checkbox"/> Model and solve problems representing adding and subtracting amounts of money using dollars and coins,
	Performance Objective 3	<input type="checkbox"/> 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 use it to turn 37 into 40; then add 40 and 22 to get 62)
	Performance Objective 4	<input type="checkbox"/> Select and use a variety of appropriate strategies methods to compute (e.g., objects, mental computation, estimation, paper and pencil)
	Performance Objective 5	<input type="checkbox"/> Skip-count by 2, 5, and 10 to develop multiplicative reasoning and notational representations (e.g., 5, 10, 15, 20; $4 \times 5 = 20$; four groups of 5 equals 20).

Standard #2: Algebra

Definition: Students will understand algebraic concepts and applications.

<u>Benchmark #1:</u> Understand patterns, relations, and functions	Performance Objective 1	<input type="checkbox"/> Recognize, reproduce, describe, extend, and create repeating and growing patterns, and translate from one representation to another.
	Performance Objective 2	<input type="checkbox"/> 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	<input type="checkbox"/> Construct and solve open sentences that have variables (e.g., $10 = 7 + \hat{1}$).
	Performance Objective 4	<input type="checkbox"/> 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?).
<u>Benchmark #2:</u> Represent and analyze mathematical situations and structures using algebraic symbols	Performance Objective 1	<input type="checkbox"/> Use mathematical language to describe a variety of representations and mathematical ideas and situations.
	Performance Objective 2	<input type="checkbox"/> 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	<input type="checkbox"/> Construct and solve open number sentences that have variables representing numbers up to 20 (e.g., $20 = 6 + \hat{1}$).
	Performance Objective 4	<input type="checkbox"/> Use objects, words, and symbols to explain the concept of addition.
<u>Benchmark #3:</u> Use mathematical models to represent and understand quantitative relationships	Performance Objective 1	<input type="checkbox"/> Model situations of addition and subtraction of whole numbers using objects, pictures, and symbols.
	Performance Objective 2	<input type="checkbox"/> Solve problems related to trading (e.g., coin trading, measurement trading).
	Performance Objective 3	<input type="checkbox"/> Solve additions and subtraction problems by using data from simple charts, picture graphs, and number sentences.
<u>Benchmark #4:</u> Analyze changes in various contexts	Performance Objective 1	<input type="checkbox"/> 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.

<u>Benchmark #1:</u> Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships	Performance Objective 1	14. <input type="checkbox"/> Identify and describe the attributes of common figures in a plane and common objects in space: <input type="checkbox"/> 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) <input type="checkbox"/> put shapes together and take them apart to form other shapes (e.g., two congruent right triangles can be arranged to form a rectangle). <input type="checkbox"/> explore lines of symmetry in two-dimensional shapes
<u>Benchmark #2:</u> Specify locations and describe spatial relationships using coordinate geometry and other representational systems	Performance Objective 1	<input type="checkbox"/> Find and name locations with simple relationships like “near to” and apply ideas about relative position.
	Performance Objective 2	<input type="checkbox"/> Describe, name, and interpret direction in navigating space and apply ideas about direction and distance.
	Performance Objective 3	<input type="checkbox"/> Use maps to locate points and navigate through mazes or maps.
	Performance Objective 4	<input type="checkbox"/> Visualize, justify, and create paths using landmarks, space, shapes, and descriptive language.
	Performance Objective 5	<input type="checkbox"/> Make and draw rectangular arrays of squares.
<u>Benchmark #3:</u> Apply transformations and use symmetry to analyze mathematical situations	Performance Objective 1	<input type="checkbox"/> Use systematic thinking to solve geometric puzzles (e.g., pentominoes).
	Performance Objective 2	<input type="checkbox"/> Use materials to investigate rotational and line symmetry and create shapes that have symmetry..
<u>Benchmark #4:</u> Use visualization, spatial reasoning, and geometric modeling to solve problems	Performance Objective 1	<input type="checkbox"/> 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	<input type="checkbox"/> Select and use visualization skills to create mental images of geometric shapes.
	Performance Objective 3	<input type="checkbox"/> Describe geometric shapes and structures from different perspectives.
	Performance Objective 4	<input type="checkbox"/> Relate geometric ideas to numbers (e.g., seeing rows in array as a model of repeated addition).
	Performance Objective 5	<input type="checkbox"/> Recognize geometric shapes and structures in the environment and specify their location.

Standard #4: Measurement

Definition: Students will understand measurement systems and applications.

<u>Benchmark #1:</u> Understand measurable attributes of objects and the units, systems, and process of measurement	Performance Objective 1	<input type="checkbox"/> Identify a unit of measure (e.g., nearest inch) and repeat that unit comparing it to the item being measured.
	Performance Objective 2	<input type="checkbox"/> Use direct comparison to compare and order objects according to length, mass, and area.
	Performance Objective 3	<input type="checkbox"/> Measure and compare common objects using standard and non-standard units of length.
	Performance Objective 4	<input type="checkbox"/> Find and represent the value of a collection of coins and dollars up to \$5.00, using appropriate notation.
	Performance Objective 5	<input type="checkbox"/> Identify and use time intervals (e.g., hours, days, weeks, months).
	Performance Objective 6	<input type="checkbox"/> Select and use appropriate measurement tools (e.g., ruler, yardstick, meter stick).
	Performance Objective 7	<input type="checkbox"/> Tell time to the nearest quarter-hour.
<u>Benchmark #2:</u> Apply appropriate techniques, tools, and formulas to determine measurements	Performance Objective 1	<input type="checkbox"/> Develop common referents to make comparisons and estimates of length, volume, weight, area, and time.
	Performance Objective 2	<input type="checkbox"/> 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	<input type="checkbox"/> 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.

<u>Benchmark #1:</u> Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them	Performance Objective 1	<input type="checkbox"/> Collect numerical data systematically.
	Performance Objective 2	<input type="checkbox"/> Represent data by using concrete objects, pictures, tables, numbers, tallies, and graphs (e.g., pictographs).
	Performance Objective 3	<input type="checkbox"/> 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	<input type="checkbox"/> 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).
<u>Benchmark #2:</u> Select and use appropriate statistical methods to analyze data	Performance Objective 1	<input type="checkbox"/> Describe and interpret data by drawing conclusions and making conjectures based on the data collected
	Performance Objective 2	<input type="checkbox"/> Display data in a variety of formats.
<u>Benchmark #3:</u> Develop and evaluate inferences and predictions that are based on data	Performance Objective 1	<input type="checkbox"/> Discuss events related to students' experiences as "likely" or "unlikely" and "possible" or "certain".
	Performance Objective 2	<input type="checkbox"/> Recognize appropriate conclusions generated from the data collected.
	Performance Objective 3	<input type="checkbox"/> Recognize inappropriate descriptions of the data set.
<u>Benchmark #4:</u> Understand and apply basic concepts of probability	Performance Objective 1	<input type="checkbox"/> Investigate concepts of chance (e.g., outcomes of a simple experiment).
	Performance Objective 2	<input type="checkbox"/> Investigate whether outcomes of a simple event are equally likely to occur.