

Grade Level Expectations for the Sunshine State Standards

Mathematics Fourth Grade



F L O R I D A

Department
of Education

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**Sunshine State Standards
Grade Level Expectations
Mathematics
Fourth Grade**

The fourth grade student:

Number Sense, Concepts, and Operations

- reads, writes, and identifies whole numbers through millions or more.
- reads, writes, and identifies fractions and mixed numbers with denominators including 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 100, and 1000.
- reads, writes, and identifies decimals through hundredths.
- uses language and symbols ($>$, $<$, $=$) to compare numbers in the same form and in two different forms such as $\frac{1}{2} < 1$.
- compares and orders whole numbers through millions or more, using concrete materials, drawings, and numerals.
- compares and orders commonly used fractions and decimals to hundredths using concrete materials, drawings, and numerals.
- locates whole numbers, fractions, mixed numbers, and decimals on a number line.
- translates problem situations into diagrams and models using whole numbers, fractions, mixed numbers and decimals to hundredths including money notation.
- uses concrete materials to model equivalent forms of whole numbers, fractions, and decimals.
- knows that two numbers in different forms are equivalent or non-equivalent, using whole numbers, decimals, fractions, and mixed numbers.
- knows the value of a given digit in numbers from hundredths to millions, including writing and interpreting expanded forms of numbers.
- uses concrete materials and symbolic notation to represent numbers in bases other than base ten, such as base five.
- reads, writes, and compares the decimal number system to the Roman numeral system using the Roman numerals I, V, X, L, C, D, and M.
- recalls (from memory) basic multiplication facts and related division facts.
- knows the inverse relationship of multiplication and division and demonstrates that relationship by writing related fact families.
- explains and demonstrates the multiplication and division of whole numbers using manipulatives, drawings, and algorithms.
- explains and demonstrates the addition and subtraction of common fractions using concrete materials, drawings, story problems, and algorithms.
- explains and demonstrates the addition and subtraction of decimals (to hundredths) using concrete materials, drawings, story problems, and algorithms.

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- knows the properties of numbers including the following:
 - the identity, commutative, and associative properties of addition
 - the zero and identity properties of multiplication
 - the commutative, associative, and distributive properties of multiplication.
- predicts the relative size of solutions in:
 - addition, subtraction, multiplication, and division of whole numbers.
 - addition and subtraction of common fractions.
 - addition and subtraction of decimals to hundredths.
- uses problem-solving strategies to determine the operation(s) needed to solve one- and two-step problems involving addition, subtraction, multiplication, and division of whole numbers, and addition and subtraction of decimals and fractions.
- solves real-world problems involving addition, subtraction, multiplication, and division of whole numbers, and addition and subtraction of decimals and fractions using an appropriate method (for example, mental math, pencil and paper, calculator).
- explains the reason for choosing a particular computing method for a particular problem.
- solves real-world multiplication problems with whole numbers (three digits by one digit) using concrete materials, drawings, and pencil and paper.
- solves real-world division problems having divisors of one digit and dividends of three digits, with and without remainders.
- solves real-world problems involving the addition or subtraction of decimals (to hundredths) or common fractions with like and unlike denominators.
- chooses, describes and explains estimation strategies used to determine the reasonableness of solutions to real-world problems.
- estimates quantities of objects to 500 or more and justifies and explains the reasoning for the estimates (for example, using compatible numbers, benchmark numbers, unitizing).
- multiplies by multiples of 10, 100 and 1,000 recognizing and demonstrating patterns.
- knows rules of divisibility for 2, 3, 5, 9, and 10.
- uses models to identify perfect squares to 100.

Measurement

- knows measurement concepts and uses oral and written language to communicate them.
- uses a wide variety of models (for example, manipulatives, diagrams) and applies counting procedures to investigate measurements of length, area, volume, and perimeter.
- knows about varied time intervals, including decades, hours, minutes, and seconds.

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- investigates angle measures using models and manipulatives for the common angles of 45° , 90° , and 180° (straight angle) and uses these angles as reference points for measures of other angles.
- solves real-world problems involving measurement of the following:
 - length (for example, millimeter, quarter-inch, foot, yard, meter)
 - weight (for example, pounds, ounces, kilograms, grams)
 - capacity (for example, cup, milliliters)
 - temperature (Fahrenheit and Celsius)
 - angles (right and straight)
- solves real-world problems involving perimeter, area, and volume using concrete, graphic, or pictorial models.
- uses schedules, calendars, and elapsed time to solve real-world problems.
- devises nonstandard, indirect ways to compare lengths (for example, compare the height of a cylinder to the distance around it).
- uses customary and metric units to compare length, weight, and capacity or volume.
- uses multiplication or division to convert units of measure within either the customary or metric system (for example: $100\text{ cm} = 1\text{ m}$).
- knows an appropriate unit of measure to determine the dimension(s) of a given object (for example, standard - student chooses feet or inches instead of yards to measure a classroom desk; nonstandard - student chooses a pencil or his or her hand to measure a classroom desk).
- knows an appropriate unit of measure (standard or nonstandard) to measure weight, temperature, and capacity.
- knows how to determine whether an accurate or estimated measurement is needed for a solution.
- using real-world settings, objects, graph paper, or charts, solves problems involving estimated measurements, including the following:
 - length to nearest half-inch, centimeter
 - weight to nearest ounce, gram
 - time to nearest five-minute interval
 - temperature to nearest five-degree interval
 - money to nearest \$1.00 (combination of coin and currency)
- knows how to estimate the area and perimeter of regular and irregular polygons using graph paper, geoboard, or other objects and how to estimate the volume of a rectangular prism, using manipulatives or graphic representation.
- selects an appropriate measurement unit for labeling the solution to real-world problems.
- selects and uses the appropriate tool for situational measures (for example, measuring sticks, scales and balances, thermometers, measuring cups, gauges).

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Geometry and Spatial Sense

- uses appropriate geometric vocabulary to describe properties and attributes of two- and three-dimensional figures (for example, faces, edges, vertices, diameter).
- draws and classifies two-dimensional figures having up to eight or more sides.
- uses manipulatives to solve problems requiring spatial visualization.
- knows symmetry, congruency, and reflections in geometric figures using drawings and concrete materials (for example, pattern blocks, mirrors).
- knows and creates congruent and similar figures.
- Knows the effects of flips, slides, and turns (90° , 180°) using concrete and graphic materials (for example, pattern blocks, geoboards, grid paper).
- explores tessellations.
- compares the concepts of area and perimeter using concrete materials (for example, color tiles, grid paper) and real-world situations (for example, carpeting a floor, fencing a yard).
- applies the concepts of area and perimeter to solve real-world and mathematical problems.
- knows how area and perimeter are affected when geometric figures are combined.
- knows how to identify, locate, and plot ordered pairs of whole numbers on a graph or on the first quadrant of a coordinate system

Algebraic Thinking

- describes, extends, and creates numerical and geometric patterns using a variety of models (for example, lists, tables, charts).
- poses, solves, and explains problems by identifying a predictable visual or numerical pattern such as:

Input	1	2	3	7
Output	\$3	\$6	\$9	?
- knows mathematical relationships in patterns (for example, the second shape is the first shape turned 90°).
- analyzes number patterns and states rules for relationships (for example, 2, 4, 7, 9, 12, ...; the rule: +2, +3, +2, +3, ...).
- discusses, explains, and analyzes the rule that applies to the pattern.

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- applies the appropriate rule to complete a table or a chart such as:

Input	Output
2	8
9	36
?	16
7	28

- solves problems involving equations or simple inequalities using manipulatives, diagrams, or models, symbolic expressions, or written phrases.
- uses a variable to represent a given verbal expression (for example, seven times a number is $7n$).
- translates problem-solving situations into expressions and equations using a variable for the unknown.
- uses physical or pictorial models and graphs (for example, cubes, number lines) to solve equations or inequalities

Data Analysis and Probability

- knows the purpose of different parts of a graph (for example, titles, labels, intervals, key).
- chooses reasonable titles and labels for graphs.
- interprets and compares information from different types of graphs including graphs from content-area materials and periodicals.
- generates questions, collects responses, and displays data on a pictograph, circle graph, bar, double bar, or line graph.
- interprets and completes circle graphs using common fractions.
- analyzes and explains orally or in writing the implications of data displays.
- identifies the mean, median and mode from a set of data.
- identifies the range on a line graph.
- uses a calculator to determine the range and mean of a set of data.
- uses computer applications to examine and evaluate data and to construct graphs.
- determines the number of possible combinations of given items and displays them in an organized way.
- represents all possible outcomes for a simple probability situation or event using models such as organized lists, charts, or tree diagrams.
- calculates the probability of a particular event occurring from a set of all possible outcomes.

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- identifies and records, using common fractions, the possible outcomes of simple experiments using concrete materials (for example, spinners, number cubes, coin toss).
- conducts experiments to test predictions.
- designs a class survey to collect data.
- creates an appropriate graph to display data (for example, pictographs, bar graphs, line graphs, circle graphs).
- determines appropriate statistical measures for data (range, mean, median, and mode).
- explains the results using statistics (range and measures of central tendency)
- uses statistical data to identify trends, and to make and justify generalizations.



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