

Grade Level Expectations for the Sunshine State Standards

Mathematics Sixth Grade



FLORIDA DEPARTMENT OF EDUCATION

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

The sixth grade student:

Number Sense, Concepts, and Operations

- knows word names and standard numerals for whole numbers, fractions, decimals (through hundred-thousandths), and percents.
- reads and writes whole numbers and decimals in expanded form.
- compares and orders fractions, decimals, and common percents using graphic models, number lines, and symbols.
- describes the meanings of positive rational numbers using part/whole relationships and relative size comparisons in real-world situations and constructs models to represent positive rational numbers.
- knows the relationships among fractions, decimals, and percents and expresses a given quantity in a variety of ways, such as fractions, decimals, or numbers expressed as percents.
- compares the decimal number system to systems that do not use place value (for example, Roman numeral, ancient Egyptian).
- knows, and uses models or pictures to show, the effects of the four basic operations on whole numbers, fractions, mixed numbers, and decimals.
- knows and applies the commutative, associative, and distributive properties in the addition and multiplication of rational numbers.
- uses concrete models and real-world examples to explore the inverse relationship of positive and negative numbers.
- knows the appropriate operations to solve real-world problems involving whole numbers, decimals, and fractions.
- solves real-world problems involving whole numbers, fractions, decimals, and common percents using one or two-step problems.
- applies order of operations when solving problems (parentheses, multiplication, division, addition, and subtraction).
- knows proportional relationships and describes such relationships in words, tables, or graphs.
- solves one- or two-step real-world problems involving whole numbers and decimals using appropriate methods of computation (for example, mental computation, paper and pencil, and calculator).
- justifies the choice of method for calculations, such as mental computation, concrete materials, algorithms, or calculators.
- knows an appropriate estimation technique for a given situation using whole numbers (for example, clustering, compatible number, front-end).
- estimates to predict results and to check reasonableness of results.

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- determines whether an exact answer is needed or an estimate would be sufficient.
- knows if numbers (less than or equal to 100) are prime or composite.
- finds the greatest common factor and least common multiple of two or more numbers.
- determines the prime factorization of a number less than or equal to 100.
- uses divisibility rules.

Measurement

- uses concrete and graphic models to create formulas for finding perimeter and area.
- uses concrete and graphic models to discover an approximation for π and creates a formula for finding circumference.
- measures angles using a protractor and names angles according to their measure (including acute, right, obtuse, straight).
- classifies triangles according to the measurement of their angles and according to the length of their sides.
- determines the measure of a missing angle using angle relationships.
- given a two-dimensional figure, creates a new figure by increasing or decreasing the original dimensions.
- knows the relationship between the area or perimeter of an original figure and that of a newly created figure.
- solves real-world or mathematical problems involving perimeter or area and how these are affected by changes in the dimensions of the figure.
- knows proportional relationships in scale drawings and uses scale drawings to solve real-world problems including distance (as in map reading).
- compares objects according to their length, weight or mass, and capacity using customary or metric units.
- measures length, weight or mass, and capacity using appropriate measuring instruments.
- changes one customary or metric unit of measurement to another within the same system.
- uses concrete manipulatives or constructs models of square units (such as square inch and square meter) for measuring area and cubic units (such as cubic centimeter or cubic yard) for measuring volume.
- estimates the measure (length, weight or mass, and capacity) of an object or figure and then compares the estimate with the actual measurement of the object or figure.
- knows whether an exact answer is needed or an estimate is sufficient.
- estimates solutions to real-world problems involving estimations of measurements.

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- selects the appropriate unit of measure for a given real-world situation.
- knows the approximate nature of measurement and measures to the specified degree of accuracy (for example, nearest centimeter or sixteenth of an inch).
- selects an appropriate measurement tool (for example, scales, rulers, thermometers, measuring cups, protractors, gauges).
- determines the interval of a scale and reads the scales on a variety of measuring instruments.

Geometry and Spatial Sense

- identifies, draws, and uses symbolic notation to denote the attributes of two-dimensional geometric figures (including points, parallel and perpendicular lines, planes, rays, and parts of a circle).
- knows and draws angles (including acute, obtuse, right, and straight).
- analyzes relationships among two-dimensional geometric figures (for example, the diagonal of a rectangle divides the rectangle into two congruent triangles each having one half the area of the rectangle).
- uses appropriate measuring devices (including ruler and protractor) as needed in analysis of figures.
- knows the attributes and properties of three-dimensional figures (including rectangular solids and cylinders).
- uses manipulatives and drawings to solve problems requiring spatial visualization.
- describes and applies the property of symmetry in figures.
- recognizes and draws congruent and similar figures.
- identifies and performs the various transformations (reflection, translation, rotation) of a given figure on a coordinate plane.
- observes, explains, and makes conjectures regarding geometric properties and relationships (among angles, triangles, squares, rectangles, parallelograms).
- applies known geometric properties (for example, symmetry, congruence) to solve real-world and mathematical problems.
- identifies the x and y axes in a coordinate plane, identifies the coordinates of a given point in the first quadrant, and plots specific points in the first quadrant of the Cartesian coordinate system.

Algebraic Thinking

- describes, predicts, and creates numerical and geometric patterns through models (for example, manipulatives, tables, graphs).
- states in words a rule for a pattern.

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- finds patterns in real-world situations.
- describes relationships and patterns using words, tables, symbols, variables, expressions, or equations.
- given initial terms in a pattern, supplies a specific missing term in the pattern (for example, given first four terms, supplies sixth term).
- interprets and creates function tables and graphs (first quadrant).
- substitutes values for variables in expressions and describes the results or patterns observed.
- graphs (first quadrant) functions from function tables to explain cause-and-effect relationships.
- uses variables to represent numbers and relationships and translates verbal expressions into algebraic expressions.
- translates simple algebraic expressions, equations or formulas representing real-world relationships into verbal expressions or sentences.
- uses pictures, models, manipulatives or other strategies to solve simple one-step linear equations with rational solutions.
- knows how to solve simple linear equations representing real-world situations, using pictures, models, manipulatives (such as algebra tiles), or other strategies.
- uses concrete materials to solve equations and explains reasoning orally or in writing.

Data Analysis and Probability

- reads and analyzes data displayed in a variety of forms (charts, pictographs, stem-and-leaf plots).
- generates and collects data for analysis.
- chooses appropriate titles, scales, labels, keys, and intervals for displaying data in graphs.
- constructs, interprets, and explains displays of data, such as tables and graphs (single- and multiple-bar graphs and single- and multiple-line graphs).
- finds the range, mean, median, and mode of a set of data.
- describes real-world data by applying and explaining appropriate procedures for finding measures of central tendency.
- uses technology, such as graphing calculators and computer spreadsheets, to create graphs.
- determines all possible outcomes of an event using a tree diagram or organized list.
- calculates simple mathematical probabilities.
- uses manipulatives to obtain experimental results, compares results to mathematical expectations, and discusses the validity of the experiment.

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- examines and describes situations that include finding the odds for and against a specified outcome.



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