

**Power Standards
Math – Sixth Grade**

STRAND A: NUMBER SENSE, CONCEPTS, AND OPERATIONS

Standard 1: The student understands the different ways numbers are represented and used in the real world.

MA.A.1.3.1: The student associates verbal names, written word names, and standard numerals with integers, fractions, decimals; numbers expressed as percents; numbers with exponents; numbers in scientific notation; radicals; absolute value; and ratios.

1. Knows word names and standard numerals for whole numbers, fractions, decimals (through hundred-thousandths), and percents.
2. Reads and writes whole numbers and decimals in expanded form.

MA.A.1.3.2: The student understands the relative size of integers, fractions, and decimals; numbers expressed as percents; numbers with exponents; numbers in scientific notation; radicals; absolute value; and ratios.

1. Compares and orders fractions and decimals using graphic models, number lines, and symbols.

MA.A.1.3.4: The student understands that numbers can be represented in a variety of equivalent forms, including integers, fractions, decimals, percents, scientific notation, exponents, radicals, and absolute value.

1. Knows the relationships among fractions, decimals, and percents.
2. Expresses a given quantity in a variety of ways, such as fractions, decimals, or numbers expressed as percents.

Standard 3: The student understands the effects of operations on numbers and the relationships among these operations, selects appropriate operations, and computes for problem solving.

MA.A.3.3.2 The student selects the appropriate operation to solve problems involving addition, subtraction, multiplication, and division of rational numbers, ratios, proportions, and percents, including the appropriate application of the algebraic order of operations.

3. Applies order of operations when solving problems (parentheses, multiplication, division, addition, and subtraction).

Standard 5: The student understands and applies theories related to numbers.

MA.A.5.3.1: The student uses concepts about numbers, including primes, factors, and multiples, to build number sequences.

2. Finds the greatest common factor and least common multiple of two or more numbers.

STRAND B: MEASUREMENT**Standard 1: The student measures quantities in the real world and uses the measures to solve problems.**

MA.B.1.3.1: The student uses concrete and graphic models to derive formulas for finding perimeter, area, surface area, circumference, and volume of two- and three-dimensional shapes, including rectangular solids and cylinders.

1. Uses concrete and graphic models to create formulas for finding the perimeter and area of plane figures and the volume of rectangular solids.

MA.B.1.3.2: The student uses concrete and graphic models to derive formulas for finding rates, distance, time, and angle measures.

3. Classifies triangles according to the measurement of their angles and according to the length of their sides.

MA.B.1.3.3: The student understands and describes how the change of a figure in such dimensions as length, width, height, or radius affects its other measurements such as perimeter, area, surface area, and volume.

1. Given a two-dimensional figure, creates a new figure by increasing or decreasing the original dimensions.
3. Solves real-world or mathematical problems involving perimeter or area and how these are affected by changes in the dimensions of the figure.

Standard 2: The student compares, contrasts, and converts within systems of measurement (both standard/nonstandard and metric/customary).

MA.B.2.3.2: The student solves problems involving units of measure and converts answers to a larger or smaller unit within either the metric or customary system.

1. Changes one customary or metric unit of measurement to another within the same system.

2. 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.

Standard 3: The student estimates measurements in real-world problem situations.

MA.B.3.3.1: The student solves real-world and mathematical problems involving estimates of measurements including length, time, weight/mass, temperature, money, perimeter, area, and volume, in either customary or metric units.

1. 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.
3. Estimates solutions to real-world problems by estimating the length, volume or capacity, weight or mass, perimeter, or area of objects or shapes in either customary or metric units.

STRAND C: GEOMETRY AND SPATIAL SENSE**Standard 1: The student describes, draws, identifies, and analyzes two- and three-dimensional shapes.**

MA.C.1.3.1: The student understands the basic properties of, and relationships pertaining to, regular and irregular geometric shapes in two- and three- dimensions.

1. 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).
3. 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).
4. Knows the attributes and properties of three-dimensional figures (including rectangular solids and cylinders).

Standard 3: The student uses coordinate geometry to locate objects in both two- and three-dimensions and to describe objects algebraically.

MA.C.3.3.1: The student represents and applies geometric properties and relationships to solve real-world and mathematical problems.

2. Applies known geometric properties (for example, symmetry, congruence) to solve real-world and mathematical problems.

STRAND D: ALGEBRAIC THINKING**Standard 1: The student describes, analyzes, and generalizes a wide variety of patterns, relations, and functions.**

MA.D.1.3.1: The student describes a wide variety of patterns, relationships, and functions through models, such as manipulatives, tables, graphs, expressions, equations, and inequalities.

1. Describes, predicts, and creates numerical and geometric patterns through models (for example, manipulatives, tables, graphs).
4. Finds patterns in real-world situations.
5. Describes relationships and patterns using words, tables, symbols, variables, expressions, or equations.
6. Given initial terms in a pattern, supplies a specific missing term in a pattern (for example, given first four terms, supplies sixth term).

Standard 2: The student uses expressions, equations, inequalities, graphs, and formulas to represent and interpret situations.

MA.D.2.3.1: The student represents and solves real-world problems graphically, with algebraic expressions, equations, and inequalities.

1. Uses variables to represent numbers and relationships.
3. Translates simple algebraic expressions, equations or formulas representing real-world relationships into verbal expressions or sentences.
4. Uses pictures, models, manipulatives or other strategies to solve simple one-step linear equations with rational solutions.

STRAND E: DATA ANALYSIS AND PROBABILITY**Standard 1: The student understands and uses the tools of data analysis for managing information.**

MA.E.1.3.1: The student collects, organizes, and displays data in a variety of forms, including tables, line graphs, charts, bar graphs, to determine how different ways of presenting data can lead to different interpretations.

1. Reads and analyzes data displayed in a variety of forms (charts, pictographs, stem-and-leaf plots).

2. Generates and collects data for analysis.
3. Chooses appropriate titles, scales, labels, keys, and intervals for displaying data in graphs.
4. Constructs, interprets, and explains displays of data, such as tables and graphs (single- and multiple-bar graphs and single- and multiple-line graphs).

MA.E.1.3.2: The student understands and applies the concepts of range and central tendency (mean, median, and mode).

2. Finds the range, mean, median and mode of a set of data.
3. Describes real-world data by applying and explaining appropriate procedures for finding measures of central tendency.

MA.E.1.3.3: The student analyzes real-world data by applying appropriate formulas for measures of central tendency and organizing data in a quality display, using appropriate technology, including calculators and computers.

2. Uses technology, such a graphing calculators and computer spreadsheets, to create graphs.

Standard 2: The student identifies patterns and makes predictions from an orderly display of data using concepts of probability and statistics.

MA.E.2.3.1: The student compares experimental results with mathematical expectations of probabilities.

2. Calculates simple mathematical probabilities.