

At the end of the school year, students will be able to... (Calculators Allowed)

GOAL 6 Numbers Sense and Computation (25%)

Demonstrate and apply a knowledge and sense of numbers, including numeration and operations (addition, subtraction, multiplication, division), patterns, ratios and proportions.

STANDARD A

Demonstrate a knowledge and use of numbers and their relations and representations in a broad range of theoretical and practical settings.

Representing and Ordering (5%)

- ___ Read, write, recognize, and model equivalent representations of whole numbers and their place values. (*Introduce positive powers of 10*)
- ___ Read, write, recognize, model, and interpret numerical expressions from a given description or situation.
- ___ Read, write, recognize, and model equivalent representations of fractions including improper fractions and mixed numbers. (*Introduce: Read, write, recognize, model, and interpret integers, including translating numerical expressions.*)
- ___ Recognize, translate between, and apply multiple representations of decimals, fractions, and percents (less than 100%), and mixed numbers (*halves, quarters, fifths, and tenths*).
- ___ Read, write, recognize, and model equivalent representations of decimals and their place values through thousandths.
- ___ Represent repeated factors using exponents.
- ___ Order and compare whole numbers. (*Introduce: integers, terminating decimals, fractions, and mixed numbers*)
- ___ Order and compare decimals through thousandths.
- ___ Order and compare fractions and mixed numbers having like or unlike denominators.
- ___ Identify and locate decimals, fractions, and mixed numbers on a number line. (*Introduce: integers and estimate the locations of square roots*)
- ___ Solve problems involving descriptions of numbers, including characteristics and relationships (e.g., odd/even, factors/multiples, greater than, less than, square numbers, primes). (*Introduce: composites, prime factorization, greatest common factor, least common multiple*)

STANDARD B

Investigate, represent and solve problems using number facts, operations (addition, subtraction, multiplication and division) and their properties, algorithms, and relationships.

STANDARD C

Compute and estimate using mental mathematics, paper-and-pencil methods, calculators and computers.

Computation, Operations, Estimation, and Properties (15%)

- ___ Solve problems and number sentences involving addition, subtraction, multiplication, and division using whole numbers. (*Introduce: integers*)
- ___ Solve problems and number sentences involving addition, subtraction, and multiplication of decimals. (*Introduce: division*)
- ___ Solve problems involving addition and subtraction of fractions and mixed numbers, and express answers in simplest form. (*Introduce: multiplication and division of fractions*)
- ___ Identify and apply order of operations to simplify numeric expressions involving whole numbers. (*Introduce: exponents, fractions, and decimals*)
- ___ Solve problems involving the commutative, distributive, and associative properties of operations on whole numbers e.g., $(5 \times 7) \times 2 = 5 \times (7 \times 2)$.
- ___ (*Introduce: Identify and apply the following properties of operations with rational numbers: commutative and associative properties for addition and multiplication; distributive property; additive and multiplicative identity properties; the additive and multiplicative inverse properties; and , multiplicative property of zero.*)
- ___ (*Introduce: Demonstrate and apply the relationships between addition/subtraction and multiplication/division with rational numbers.*)
- ___ Make estimates appropriate to a given situation, and analyze what effect the estimation method used has on the accuracy of results.
- ___ (*Introduce: Estimate the square root of a number less than 1,000 between two whole numbers e.g., $\sqrt{41}$ is between 6 and 7.*)

STANDARD D**Solve problems using comparisons of quantities, ratios, proportions and percents.****Ratios, Proportions, and Percents (5%)**

- ___ Identify and express ratios using appropriate notation (i.e., a/b , a to b , $a:b$), identify equivalent ratios, and explain ratios that represent a given situation. (*Introduce: create ratios*)
- ___ Solve problems involving proportional relationships, including unit pricing (e.g., seven apples cost \$1.40, so nine apples cost \$1.80). (*Introduce: Use proportional reasoning to model and solve problems.*)
- ___ Read, write, recognize, and model percents from 0% to 100%. (*Introduce: interpret*)
- ___ Solve number sentences and problems involving percents. (*Introduce: fractions, decimals, and percents, e.g., 50% of 10 is the same as $\frac{1}{2}$ of 10 is the same as 0.5×10 , sales tax, tips, interest, discounts*)

GOAL 7 Measurement (15%)**Estimate, make and use measurement of objects, quantities and relationships and determine acceptable levels of accuracy.****STANDARD A****Measure length, distance, weight, volume, and temperature using customary and metric units.****STANDARD B****Estimate measurements and determine acceptable levels of accuracy.****STANDARD C****Select and use appropriate technology, instruments and formulas to solve problems, interpret results and communicate findings.****Units, Tools, Estimation, and Applications (15%)**

- ___ Select and use appropriate standard units and tools to measure length, mass/weight, capacity, and angles. (*Introduce: Sketch, with given specifications, line segments, angles, triangles, and quadrilaterals.*)
- ___ Solve problems involving perimeter and area of a triangle, parallelogram, or irregular shape using diagrams, models, and grids or by measuring or using given formulas (may include sketching a figure from its description). (*Introduce: area of polygon or composite figures*)
- ___ Compare and estimate length (including perimeter), area, volume, weight/mass, and angles (0° to 180°) using referents.
- ___ Determine the volume of a right rectangular prism using an appropriate formula or strategy. (*Introduce: surface area*)
- ___ Solve problems involving simple unit conversions within the same measurement system for time, length, and weight/mass, including compound units (e.g., 5ft 5in, 2lbs 2oz). (*Introduce: capacity and square units, e.g., $1 \text{ ft}^2 = 144 \text{ in}^2$*)
- ___ Solve problems involving scale drawings and maps.

GOAL 8 Algebra (25%)**Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.****STANDARD A****Describe numerical relationships using variables and patterns.****Representations, Patterns, and Expressions (10%)**

- ___ Determine a missing term in a sequence, extend a sequence, and construct and identify a rule that can generate the terms of a given sequence, (e.g., 3, 6, 9... is explained by the rule $3n$ for $n \geq 1$). (*Introduce: arithmetic and geometric sequences*)
- ___ Write an expression using variables to represent unknown quantities.
- ___ (*Introduce: Simplify algebraic expressions by identifying and combining like terms.*)
- ___ (*Introduce: Recognize equivalent forms of algebraic expressions.*)
- ___ Evaluate algebraic expressions with up to two whole number variable values, (e.g., evaluate $3m + n + 3$ when $m = 4$ and $n = 2$). (*Introduce: Evaluate or simplify algebraic expressions with one or more integer variable values, (e.g., $a^2 + b$ for $a = 3$ and $b = -4$.)*)

STANDARD B**Interpret and describe numerical relationships using tables, graphs and symbols.****Connections Using Tables, Graphs, and Symbols (7%)**

- ___ Determine a rule having two operations from an input-output table (e.g., multiply by 3 and add 2.)
- ___ (*Introduce: Determine how a change in one variable relates to a change in a second variable.*)
- ___ Select a table of values that satisfies a linear equation, and recognize the ordered pairs on a rectangular coordinate system.
- ___ (*Introduce: Represent linear equations and quantitative relationships on a rectangular coordinate system, and interpret the meaning of a specific part of a graph.*)
- ___ Translate between different representations (table, written, or pictorial) of whole number relationships. (*Introduce: graphical representations and linear expressions*)
- ___ Identify graphs of inequalities on a number line. (*Introduce: interpret inequalities on a number line*)

STANDARD C**Solve problems using systems of numbers and their properties.****STANDARD D****Use algebraic concepts and procedures to represent and solve problems.****Writing, Interpreting, and Solving Equations (8%)**

- ___ Represent problems with equations and inequalities. (*Introduce: Represent and analyze problems with linear equations and inequalities.*)
- ___ Solve for the unknown in an equation with one operation, (e.g., $8x = 24$, $m \div 2 = 25$.) [*Introduce: Solve linear equations in one variable, (e.g., $2x + 3 = 13$) and inequalities involving $<$ or $>$, (e.g., $2x < 6$, $x + 7 > 10$.)*]
- ___ Solve word problems involving unknown quantities (may include more than one step).

GOAL 9 Geometry (20%)

Use geometric methods to analyze, categorize and draw conclusions about point, lines, planes and space.

STANDARD A

Demonstrate and apply geometric concepts involving points, lines, planes and space.

Properties of Single Figures and Coordinate Geometry (10%)

- ___ Classify, describe, and sketch regular and irregular two-dimensional shapes according to the number of sides, length of sides, number of vertices, and interior angles.
- ___ Identify and describe three-dimensional shapes (cubes, spheres, cones, cylinders, prisms, and pyramids) according to their characteristics (faces, edges, vertices). (*Introduce: Solve problems involving two- and three-dimensional shapes.*)
- ___ Solve problems using properties of triangles and quadrilaterals (e.g., sum of interior angles of a quadrilateral is 360°). (*Introduce: e.g., opposite sides of a parallelogram are congruent*)
- ___ Identify, describe, and sketch circles, including radius, diameter, and chord. (*Introduce: determine the radius and diameter of a circle*)
- ___ Graph, locate, identify points, describe paths, and plot figures using ordered pairs (first quadrant). (*Introduce: all four quadrants*)
- ___ (*Introduce: Represent and identify geometric figures using coordinate geometry.*)
- ___ Identify, describe, and predict results of reflections, translations, or rotations of two-dimensional shapes. (*Introduce: Analyze the results of a combination of transformations.*)
- ___ Identify and sketch parallel, perpendicular, and intersecting lines and acute, right, and obtuse angles.
- ___ (*Introduce: Identify or analyze relationships of angles formed by intersecting lines.*)
- ___ (*Introduce: Solve problems involving complementary and supplementary angles.*)

STANDARD B

Identify, describe, classify and compare relationships using points, lines, planes and solids.

Relationships Between and Among Multiple Figures (10%)

- ___ Identify a three-dimensional object from its net.
- ___ Recognize which attributes (such as shape, perimeter, and area) change or don't change when plane figures are composed, decomposed, or rearranged.
- ___ Identify congruent and similar figures by visual inspection. (*Introduce: Describe the difference between congruence and similarity.*)
- ___ Determine if figures are similar, and identify relationships between corresponding parts of similar figures.
- ___ Determine the distance between two points on a horizontal or vertical number line.

GOAL 10 Data Collection and Statistical Analysis (15%)

Collect, organize and analyze data using statistical methods; predict results; and interpret uncertainty using concepts of probability.

STANDARD A

Organize, describe, and make predictions from existing data.

STANDARD B

Formulate questions, design data collection methods, gather and analyze data and communicate findings.

Data Analysis and Statistics (10%)

- ___ Read, interpret, and make predictions from data represented in a bar graph, line (dot) plot, Venn diagram (with two circles), chart/table, line graph, or circle graph. (*Introduce: scatterplot and histogram*)
- ___ Compare different representations of the same data.
- ___ Create a bar graph, chart/table, line graph, or circle graph with common referents - $\frac{1}{4}$, 50%, .75 for a given set of data. (*Introduce: circle graph without common referents*)
- ___ (*Introduce: Identify a reasonable approximation of the line of best fit from a set of data or a scatter plot.*)
- ___ Determine the mode, range, median, and mean, given a set of data or a graph. (*Introduce: Use mode, range, median, and mean to interpret data*)

STANDARD C

Determine, describe and apply the probabilities of events.

Probability (5%)

- ___ Solve problems involving the probability of a simple event, including representing the probability as a fraction, decimal, or percent. (*Introduce: compound events*)
- ___ Apply the fundamental counting principle in a simple problem, (e.g., How many different 3-digit numbers can be made with the digits 1, 2, and 2?)
- ___ (*Introduce: Represent all possible outcomes for simple events.*)
- ___ (*Introduce: Solve simple problems involving the number of ways objects can be arranged – permutations and combinations.*)