

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

## GOAL 6 Numbers Sense and Computation (30%)

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

### STANDARD A

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

#### Representing and Ordering (10%)

- \_\_\_\_\_ Read, write, recognize, and model equivalent representations of whole numbers and their place values up to 100,000,000. (*Introduce: whole numbers beyond 100,000,000*)
- \_\_\_\_\_ 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.
- \_\_\_\_\_ Recognize, translate between, and model multiple representations of decimals, fractions less than one (halves, quarters, fifths, and tenths), and percents (0%, 25%, 50%, 75%, and 100%). (*Introduce: all fractions, percents less than 100%, and mixed numbers – halves, quarters, fifths, and tenths*)
- \_\_\_\_\_ Read, write, recognize, and model decimals and their place values through thousandths. (*Introduce: equivalent representations*)
- \_\_\_\_\_ Represent multiplication as repeated addition. (*Introduce: Represent repeated factors using exponents.*)
- \_\_\_\_\_ Order and compare whole numbers up to 1,000,000. (*Introduce: whole numbers beyond 1,000,000*)
- \_\_\_\_\_ Order and compare decimals through hundredths. (*Introduce: thousandths*)
- \_\_\_\_\_ Order and compare fractions having like or unlike denominators with or without models. (*Introduce: mixed numbers*)
- \_\_\_\_\_ Identify and locate whole numbers, halves, fourths, and thirds on a number line. (*Introduce: decimals, fractions, and mixed numbers*)
- \_\_\_\_\_ Solve problems involving descriptions of numbers, including characteristics and relationships (e.g., odd/even, factors/multiples, greater than, less than, square numbers). (*Introduce: primes*)

### 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, calculations and computers.**

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

- \_\_\_\_\_ Solve problems and number sentences involving addition, subtraction, multiplication, and division using whole numbers.
- \_\_\_\_\_ Solve problems and number sentences involving addition and subtraction of decimals through hundredths (with and without monetary labels). (*Introduce: multiplication of decimals*)
- \_\_\_\_\_ Model situations involving addition and subtraction of fractions.
- \_\_\_\_\_ (*Introduce: Solve problems involving addition and subtraction of fractions and mixed numbers, and express answers in simplest form.*)
- \_\_\_\_\_ (*Introduce: Identify and apply order of operations to simplify numeric expressions involving whole numbers.*)
- \_\_\_\_\_ Solve problems involving the commutative, distributive, and identity properties of operations on whole numbers e.g.,  $37 \times 46 = 46 \times 37$ ,  $270 \times 5 = (200 \times 5) + (70 \times 5)$  (*Introduce: associative property*)
- \_\_\_\_\_ Make estimates appropriate to a given situation with whole numbers, fractions, and decimals. (*Introduce: analyze what effect the estimation method used has on the accuracy of results*)

### 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  $b$ ), and identify equivalent ratios. (*Introduce:  $a:b$ , identify equivalent ratios, and explain ratios that represent a given situation*)
- \_\_\_\_\_ Solve problems involving proportional relationships, including unit pricing (e.g., one apple costs 20¢, so four apples cost 80¢). (*Introduce: seven apples cost \$1.40, so nine apples cost \$1.80*)
- \_\_\_\_\_ Read, write, recognize, and model percents (0%, 25%, 50%, 75%, and 100%). (*Introduce: 0% - 100%*)
- \_\_\_\_\_ (*Introduce: Solve number sentences and problems involving percents.*)

## GOAL 7 Measurement (15%)

**Estimate, make and use measurements of objects, quantities and relationships and determine acceptable levels of accuracy.**

### STANDARD A STANDARD B STANDARD C

Measure and compare quantities using appropriate units, instruments, and methods.  
Estimate measurements and determine acceptable levels of accuracy.  
Select and use appropriate technology, instruments and formulas to solve problems, interpret results and communicate findings.

#### Units, Tools, Estimation, and Applications (15%)

- \_\_\_\_\_ Solve problems involving simple elapsed time in compound units.
- \_\_\_\_\_ Select and use appropriate standard units and tools to measure length (to nearest  $\frac{1}{4}$  inch or mm), mass/weight, capacity, and angles.
- \_\_\_\_\_ Solve problems involving perimeter and area of a triangle, rectangle or irregular shape using diagrams, models, and grids or by measuring or using given formulas (may include sketching a figure from its description). (*Introduce: parallelogram*)
- \_\_\_\_\_ Compare and estimate length (including perimeter), area, volume, weight/mass, and angles ( $0^\circ$  to  $180^\circ$ ) using referents.
- \_\_\_\_\_ Determine the volume of a right rectangular prism using an appropriate formula or strategy.
- \_\_\_\_\_ 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).
- \_\_\_\_\_ Solve problems involving map interpretation (e.g., one inch represents five miles, so two inches represent ten miles). (*Introduce: scale drawings*)

## GOAL 8 Algebra (20%)

**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 (8%)

- \_\_\_\_\_ Determine a missing term in a sequence, extend a sequence, and identify errors in a sequence when given a description or sequence.
- \_\_\_\_\_ Construct and identify a rule that can generate the terms of a given sequence. (*Introduce: e.g., 3, 6, 9 .. is explained by the rule  $3n$ , for  $n \geq 1$* )
- \_\_\_\_\_ Write an expression using variables to represent unknown quantities.
- \_\_\_\_\_ Evaluate algebraic expressions with a whole number variable value (e.g., evaluate  $m + m + 3$  when  $m = 4$ ). (*Introduce: e.g. evaluate  $3m+n+3$  when  $m=4$  and  $n=2$* )

### STANDARD B

Interpret and describe numerical relationships using tables, graphs, and symbols.

#### Connections Using Tables, Graphs, and Symbols (5%)

- \_\_\_\_\_ Demonstrate, in simple situations, how a change in one quantity results in a change in another quantity (e.g., input-output tables).
- \_\_\_\_\_ (*Introduce: Determine a rule having two operations from an input-output table e.g., multiply by 3 and add 2*)
- \_\_\_\_\_ (*Introduce: Select a table of values that satisfies a linear equation, and recognize the ordered pairs on a rectangular coordinate system.*)
- \_\_\_\_\_ Translate between different representations (table, written, or pictorial) of whole number relationships.
- \_\_\_\_\_ (*Introduce: Identify graphs of inequalities on a number line.*)

### STANDARD C STANDARD D

Solve problems using systems of numbers and their properties.  
Use algebraic concepts and procedures to represent and solve problems.

#### Writing, Interpreting, and Solving Equations (7%)

- \_\_\_\_\_ Represent problems with equations and inequalities.
- \_\_\_\_\_ Solve for the unknown in an equation with one operation (e.g.,  $2 + n = 20$ ,  $n \div 2 = 6$ ). (*Introduce: e.g.,  $8x=24$ ,  $m \div 2 = 25$* )
- \_\_\_\_\_ 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 points, 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 two-dimensional shapes (triangles, quadrilaterals, pentagons, hexagons, and octagons) according to the number of sides, length of sides, number of vertices, and interior angles (right, acute, obtuse). (*Introduce: irregular shapes and interior angles – no limits*)
- \_\_\_\_\_ Identify and describe three-dimensional shapes (cubes, spheres, cones, cylinders, prisms, and pyramids) according to their characteristics (faces, edges, vertices).
- \_\_\_\_\_ Solve problems using properties of triangles (e.g., sum of interior angles of a triangle is  $180^\circ$ ). (*Introduce: quadrilaterals e.g., sum of interior angles of a quadrilateral is  $360^\circ$* )
- \_\_\_\_\_ Identify, describe, and sketch circles, including radius and diameter. (*Introduce: chord*)
- \_\_\_\_\_ Graph, locate, identify points, and describe paths using ordered pairs (first quadrant). (*Introduce: plot figures*)
- \_\_\_\_\_ Identify whether or not a figure has one or more lines of symmetry, and sketch or identify all lines of symmetry.
- \_\_\_\_\_ Identify, describe, and predict results of reflections, translations, or rotations of two-dimensional shapes.
- \_\_\_\_\_ Identify and sketch parallel, perpendicular, and intersecting lines and acute, right, and obtuse angles.

### STANDARD B

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

#### Relationships Between and Among Multiple Figures (10%)

- \_\_\_\_\_ Identify the two-dimensional components of a three-dimensional object.
- \_\_\_\_\_ Identify a three-dimensional object from its net.
- \_\_\_\_\_ Predict the result of composing or decomposing shapes or figures. (*Introduce: 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.
- \_\_\_\_\_ 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 in whole numbers. (*Introduce: non-whole numbers*)

## 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 pictograph, bar graph, line (dot) plot, Venn diagram (with two circles), chart/table, line graph, or circle graph.  
(*Introduce: Compare different representations of the same data.*)
- \_\_\_\_\_ Create a pictograph, bar graph, chart/table, or line graph for a given set of data. (*Introduce: circle graph with common referents –  $\frac{1}{4}$ , 50%, .75*)
- \_\_\_\_\_ Determine the mode, range, median (with an odd number of data points), and mean, given a set of data or a graph. (*Introduce: median with even number of data points*)

### STANDARD C

**Determine, describe and apply for probabilities of events.**

#### Probability (5%)

- \_\_\_\_\_ Solve problems involving the probability of a simple event, including representing the probability as a fraction between zero and one. (*Introduce: representing probability as a decimal or percent*)
- \_\_\_\_\_ Apply the fundamental counting principle in a simple problem (e.g., How many different combinations of one-scoop ice cream cones can be made with 3 flavors and 2 types of cones?). (*Introduce: e.g., How many different 3-digit numbers can be made with the digits 1, 2, and 2?*)