

GRADE SIX

Number and Numeration

Goal 1: Read and Write whole numbers and decimal; identify places in such numbers and the values of the digits in those places; use expanded notation, number and word notation, exponential notation, and scientific notation to represent whole numbers and decimals.

Goal 2: Solve problems involving percents and discounts; explain strategies used; identify the unit whole in situations involving fractions, decimals, and percents.

Goal 3: Use GCFs, LCMs, and divisibility rules to manipulate fractions.

Goal 4: Apply the order of operations to numerical expressions to give equivalent names for rational numbers.

Goal 5: Find equivalent fractions and fractions in simplest form by applying multiplication and division rules and concepts from number theory; convert between fractions, mixed numbers, decimals, and percents.

Goal 6: Choose and apply strategies for comparing and ordering rational numbers; explain those choices and strategies.

Operations and Computation

Goal 1: Use mental arithmetic, paper and pencil algorithms and models, and calculators to solve problems involving the addition and subtraction of whole numbers, decimals, and signed numbers; describe the strategies used and explain how they work.

Goal 2: Use mental arithmetic, paper and pencil algorithms and models, and calculators to solve problems involving the multiplication and division of whole numbers, decimals, and signed numbers; describe the strategies used and explain how they work.

Goal 3: Use mental arithmetic, paper and pencil algorithms and models, and calculators to solve problems involving the addition and subtraction of fractions and mixed numbers; describe the strategies used and explain how they work.

Goal 4: Use mental arithmetic, paper and pencil algorithms and models, and calculators to solve problems involving the multiplication and division of fractions and mixed numbers; describe the strategies used and explain how they work.

Goal 5: Make reasonable estimates for whole number, decimal, fraction, and mixed number addition, subtraction, multiplication, and division problems; explain how the estimates were obtained.

Goal 6: Use ratios and scaling to model size changes and to solve size-change problems; represent ratios as fractions, percents, and decimals, and using a colon; model and solve problems involving part-to-whole and part-to-part ratios; model rate and ratio number stories with proportions; use and explain cross multiplication and other strategies to solve proportions.

Data and Chance

Goal 1: Collect and organize data or use given data to create graphic displays with reasonable titles, labels, keys, and intervals.

Goal 2: Use data landmarks, measures of spread, and graphs to ask and answer questions, draw conclusions, and make predictions; compare and contrast the median and mean of a data set.

Goal 3: Use the Multiplication Counting Principle, tree diagrams, and other counting strategies to identify all possible outcomes for a situation; predict results of experiments, test the predictions using manipulatives, and summarize the finding; compare predictions based theoretical probability with experimental results; calculate probabilities and express them as fractions, decimals, and percents; explain how sample size affects results; use the results to predict future events.

Measurement and Reference Frames

Goal 1: Estimate length with and without tools; measure length with tools to the nearest $\frac{1}{16}$ inch and millimeter; estimate the measure of angles with and without tools; use tools to draw angles with given measures.

Goal 2: Choose and use appropriate formulas to calculate the circumference of circles and to solve area, perimeter, and volume problems.

Goal 3: Use ordered pairs of numbers to name, locate, and plot points in all four quadrants of a coordinate grid.

Geometry

Goal 1: Identify, describe, classify, name and draw angles; determine angle measures by applying properties of orientations of angles and of sums of angle measures in triangles and quadrangles.

Goal 2: Identify and describe similar and congruent figures and describe their properties; construct a figure that is congruent to another figure using a compass and straightedge.

Goal 3: Identify, describe, and sketch (including plotting on the coordinate plane) instance of reflections, and rotations.

Patterns, Functions, and Algebra

Goal 1: Extend, describe, and create numeric patterns; describe rules for patterns and use them to solve problems; represent patterns and rules using algebraic notation; represent functions using words, algebraic notation, tables, and graphs; translate from one representation to another and use representations to solve problems involving functions.

Goal 2: Determine whether equalities and inequalities are true or false; solve open number sentences and explain the solutions; use a

pan-balance model to solve linear equations in one or two unknowns; use trial-and-error and equivalent equations strategies to solve linear equations in one unknown.

Goal 3: Describe and apply the conventional order of operations.

Goal 4: Describe and apply properties of arithmetic and multiplicative and additive inverses.