

GRADE FIVE

Number and Numeration

Goal 1: Read and write whole numbers and decimals; identify places in such numbers and the values of the digits in those places; use expanded notation to represent whole numbers and decimals.

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

Goal 3: Identify prime and composite numbers; factor numbers; find prime factorizations.

Goal 4: Use numerical expressions involving one or more of the basic four arithmetic operations, grouping symbols, and exponents to give equivalent names for whole numbers; convert between base 10, exponential, and repeated-factor notations.

Goal 5: Use numerical expressions to find and represent equivalent names for fractions, decimals, and percents; use and explain multiplication and division rules to find equivalent fractions and fractions in simplest form; convert between fractions and mixed numbers; convert between fractions, decimals, and percents.

Goal 6: Compare and order rational numbers; use area models, benchmark fractions, and analyses of numerators and denominators to compare and order fractions and mixed numbers; describe strategies used to compare fractions and mixed numbers.

Operations and Computation

Goal 1: Use manipulatives, 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: Demonstrate automaticity with multiplication and division fact extensions.

Goal 3: Use manipulatives, mental arithmetic, paper and pencil algorithms and models, and calculators to solve problems involving the multiplication of whole numbers and decimals and the division of multidigit whole numbers and decimals by whole numbers; express remainders as whole numbers or fractions as appropriate; 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 addition and subtraction of fractions and mixed numbers; describe the strategies used and explain how they work.

Goal 5: Use area models, mental arithmetic, paper and pencil algorithms and models, and calculators to solve problems involving the multiplication of fractions and mixed numbers; use visual models, paper and pencil methods, and calculators to solve problems involving the division of fractions; describe the strategies used.

Goal 6: Make reasonable estimates for whole number and decimal addition, subtraction, multiplication, and division problems and fraction and mixed number addition and subtraction problems; explain how the estimate were obtained.

Goal 7: Use repeated addition, arrays, area, and scaling to model multiplication and division; use ratios expressed as words, fractions, percents, and with colons; solve problems involving rations of parts of a set to the whole set.

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 the maximum, minimum, range, median, mode, and mean and graphs to ask and answer questions, draw conclusions, and make predictions.

Goal 3: Describe events using certain, very likely, likely, unlikely, very unlikely, impossible and other basic probability terms; use more likely, equally likely, same chance, 50-50, less likely, and other basic probability terms to compare events; explain the choice of language.

Goal 4: Predict the outcomes of experiments, test the predictions using manipulatives, and summarize the results; compare predictions based on theoretical probability with experimental results; use summaries and comparisons to predict future events; express the probability of an event as a fraction, decimal, or percent.

Measurement and Reference Frames

Goal 1: Estimate length with and without tools; measure length with tools to the nearest $\frac{1}{8}$ inch and millimeter; estimate the measure of angles with and without tools; use tools to draw angles with given measures.

Goal 2: Describe and use strategies to find the perimeter of polygons and the area of circles; choose and use appropriate methods, including formulas, to find the area of rectangles, parallelograms, and triangles, and the volume of a prism; define pi as the ratio of a circle's circumference to its diameter.

Goal 3: Describe relationships among U.S. customary units of measure and among metric units of measure.

Goal 4: Use ordered pairs of numbers to name, locate, and plot points in all four quadrants of a coordinate grid.

Geometry

Goal 1: identify, describe, compare, name, and draw right, acute, obtuse, straight, and reflex angles; determine angle measures in vertical and supplementary angles and by applying properties of sums of angle measures in triangles and quadrangles.

Goal 2: Describe, compare, and classify plane and solid figures using appropriate geometric terms; identify congruent figures and describe their properties.

Goal 3: Identify, describe, and sketch examples of reflections, translations, and rotations.

Patterns, Functions, and Algebra

Goal 1: Extend, describe, and create numeric patterns; describe rules for patterns and use them to solve problems; write rules for functions involving the four basic arithmetic operations; represent functions using words, symbols, tables, and graphs and use those representations to solve problems.

Goal 2: Determine whether number sentences are true or false; solve open number sentences and explain the solution; use a letter variable to write an open sentence to model a number story; use a pan-balance model to solve linear equations in one unknown.

Goal 3: Evaluate numeric expressions containing grouping symbols and nested grouping symbols; insert grouping symbols and nested grouping symbols to make number sentences true; describe and use the precedence of multiplication and division over addition and subtraction.

Goal 4: Describe and apply properties of arithmetic.