Minnesota Mathematics

Grade 5

Adopted 2008

Number & Operation

1. **Divide multi-digit numbers; solve real-world and mathematical problems using arithmetic.** 5.1.1
    1. Divide multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms. Recognize that quotients can be represented in a variety of ways, including a whole number with a remainder, a fraction or mixed number, or a decimal. 5.1.1.1
    2. Consider the context in which a problem is situated to select the most useful form of the quotient for the solution and use the context to interpret the quotient appropriately. 5.1.1.2
    3. Estimate solutions to arithmetic problems in order to assess the reasonableness of results. 5.1.1.3
    4. Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results. 5.1.1.4

2. **Read, write, represent and compare fractions and decimals; recognize and write equivalent fractions; convert between fractions and decimals; use fractions and decimals in real-world and mathematical situations.** 5.1.2
    1. Read and write decimals using place value to describe decimals in terms of groups from millionths to millions. 5.1.2.1
    2. Find 0.1 more than a number and 0.1 less than a number. Find 0.01 more than a number and 0.01 less than a number. Find 0.001 more than a number and 0.001 less than a number. 5.1.2.2
    3. Order fractions and decimals, including mixed numbers and improper fractions, and locate on a number line. 5.1.2.3
    4. Recognize and generate equivalent decimals, fractions, mixed numbers and improper fractions in various contexts. 5.1.2.4
    5. Round numbers to the nearest 0.1, 0.01 and 0.001. 5.1.2.5

3. **Add and subtract fractions, mixed numbers and decimals to solve real-world and mathematical problems.** 5.1.3
    1. Add and subtract decimals and fractions, using efficient and generalizable procedures, including standard algorithms. 5.1.3.1

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2. Model addition and subtraction of fractions and decimals using a variety of representations. 5.1.3.2
3. Estimate sums and differences of decimals and fractions to assess the reasonableness of results. 5.1.3.3
4. Solve real-world and mathematical problems requiring addition and subtraction of decimals, fractions and mixed numbers, including those involving measurement, geometry and data. 5.1.3.4

Algebra

1. **Recognize and represent patterns of change; use patterns, tables, graphs and rules to solve real-world and mathematical problems.** 5.2.1
    1. Create and use rules, tables, spreadsheets and graphs to describe patterns of change and solve problems. 5.2.1.1
    2. Use a rule or table to represent ordered pairs of positive integers and graph these ordered pairs on a coordinate system. 5.2.1.2
2. **Use properties of arithmetic to generate equivalent numerical expressions and evaluate expressions involving whole numbers.** 5.2.2
    1. Apply the commutative, associative and distributive properties and order of operations to generate equivalent numerical expressions and to solve problems involving whole numbers. 5.2.2.1
3. **Understand and interpret equations and inequalities involving variables and whole numbers, and use them to represent and solve real-world and mathematical problems.** 5.2.3
    1. Determine whether an equation or inequality involving a variable is true or false for a given value of the variable. 5.2.3.1
    2. Represent real-world situations using equations and inequalities involving variables. Create real-world situations corresponding to equations and inequalities. 5.2.3.2
    3. Evaluate expressions and solve equations involving variables when values for the variables are given. 5.2.3.3

Geometry & Measurement

1. **Describe, classify, and draw representations of three-dimensional figures.** 5.3.1
    1. Describe and classify three-dimensional figures including cubes, prisms and pyramids by the number of edges, faces or vertices as well as the types of faces. 5.3.1.1
    2. Recognize and draw a net for a three-dimensional figure. 5.3.1.2
2. **Determine the area of triangles and quadrilaterals; determine the surface area and volume of rectangular prisms in various contexts.** 5.3.2
    1. Develop and use formulas to determine the area of triangles, parallelograms and figures that can be decomposed into triangles. 5.3.2.1

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2. Use various tools and strategies to measure the volume and surface area of objects that are shaped like rectangular prisms. 5.3.2.2
3. Understand that the volume of a three-dimensional figure can be found by counting the total number of same-sized cubic units that fill a shape without gaps or overlaps. Use cubic units to label volume measurements. 5.3.2.3
4. Develop and use the formulas V = lwh and V = Bh to determine the volume of rectangular prisms. Justify why base area B and height h are multiplied to find the volume of a rectangular prism by breaking the prism into layers of unit cubes. 5.3.2.4

Data Analysis

1. **Display and interpret data; determine mean, median and range.** 5.4.1
    1. Know and use the definitions of the mean, median and range of a set of data. Know how to use a spreadsheet to find the mean, median and range of a data set. Understand that the mean is a "leveling out" of data. 5.4.1.1
    2. Create and analyze double-bar graphs and line graphs by applying understanding of whole numbers, fractions and decimals. Know how to create spreadsheet tables and graphs to display data. 5.4.1.2