

GSD Parents' Guide for 4th Grade

Utah Core State Standards for Mathematics

The Utah Core State Standards for Mathematics addresses *Standards for Mathematical Practice* and *Standards for Mathematical Content*. The standards stress not only procedural skill but also conceptual understanding, to make sure students are learning the critical information they need to succeed at higher levels.

By using the *Standards for Mathematical Practice*, students make sense of problems, persevere in solving them, and attend to precision. They look for and make use of structure and express regularity in repeated reasoning. They reason abstractly and quantitatively, and they construct viable arguments and critique the reasoning of others. Students model with mathematics and use appropriate tools strategically.

The following *Standards for Mathematical Content* define what students should understand and be able to do in their study of fourth grade mathematics:

Operations and Algebraic Thinking

- Interpret a multiplication equation as a comparison. *For example, interpret $35 = 5 \times 7$ as 35 is 5 times as many as 7 and 7 times as many as 5.* Represent verbal statements of multiplicative comparisons as equations.
- Multiply or divide to solve word problems involving multiplicative comparisons.
- Solve multi-step word problems with whole numbers and having whole number answers using the four operations. Interpret remainders in division problems. Write equations for the problems using a letter to represent the unknown quantity. Decide if answers are reasonable using mental computation and estimation strategies including rounding.
- Find all factor pairs for whole numbers 1-100. Determine whether a whole number 1-100 is a multiple of a given one-digit number. Determine whether a whole number 1-100 is prime or composite.
- Generate a number or shape pattern that follows a given rule.

Number and Operations in Base Ten

- Recognize that in a multi-digit whole number, a digit in one place is 10 times as much as it is in the place to its right.
- Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers.
- Use place value understanding to round multi-digit whole numbers to any place.
- Fluently add and subtract multi-digit whole numbers using the standard algorithm.
- Multiply a whole number of up to four digits by a one-digit whole number. Multiply two two-digit numbers.
- Divide up to four-digit dividends by one-digit divisors to find whole-number quotients and remainders.

Number and Operations – Fractions

- Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models. Generate equivalent fractions using this principle.
- Compare two fractions with different numerators and different denominators.
- Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
- Decompose a fraction into a sum of fractions with the same denominator in more than one way. *For example, $3/8 = 1/8 + 1/8 + 1/8$ and $3/8 = 2/8 + 1/8$.*
- Add and subtract mixed numbers with like denominators.
- Solve word problems involving addition and subtraction of fractions having like denominators.
- Understand a fraction a/b as a multiple of $1/b$. *For example, $5/4 = 5 \times (1/4)$.*
- Understand a multiple of a/b as a multiple of $1/b$ to multiply a fraction by a whole number. *For example, $3 \times (2/5)$ is the same as $6 \times (1/5) = 6/5$.*
- Solve word problems involving multiplication of a fraction by a whole number.
- Express a fraction with a denominator of 10 as an equivalent fraction with a denominator of 100. Use this to add two fractions with denominators of 10 and 100. *For example, express $3/10$ as $30/100$, and add $3/10 + 4/100 = 34/100$.*
- Write fractions with denominators of 10 or 100 as decimals.
- Compare two decimals to hundredths.

Measurement and Data

- Know relative sizes of measurement units within one system. Within one system of measurement, convert a larger unit to a smaller unit. Record measurement equivalents in a two-column table.
- Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money. Include problems using simple fractions or decimals and converting measurements of a larger unit to a smaller unit.
- Apply the area and perimeter formulas for rectangles in real world and mathematical problems.
- Make line plots to display data sets of measurements in fractions of a unit. Solve addition and subtraction fraction problems using the information in the line plots.
- Recognize that angles are formed by two rays sharing a common endpoint.
- Understand that an angle is measured with reference to a circle. An angle is a fraction of the circular arc between the points where the two rays intersect a circle. A “one-degree angle” is $1/360$ of a circle and can be used to measure angles.
- Measure angles in whole number degrees using a protractor. Sketch angles of given measures.
- Decompose an angle into a sum of angles. *For example, $90^\circ = 65^\circ + 25^\circ$.* Solve addition and subtraction problems to find unknown angles in real world and mathematical problems.

Geometry

- Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
- Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of specific angles. Identify right triangles.
- Recognize a line of symmetry for two-dimensional figures. Identify line-symmetric figures and draw lines of symmetry.