

GSD Parents' Guide for 5th 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 fifth grade mathematics:

Operations and Algebraic Thinking

- Evaluate numerical expressions containing grouping symbols.
- Write and interpret simple numerical expressions. *For example, add 8 and 7, then multiply by 2 is $2 \times (8 + 7)$. Recognize that $3 \times (18,932 + 921)$ is three times as large as $18,932 + 921$.*
- Create two numerical patterns using given rules. Identify relationships between corresponding terms. Form ordered pairs from the corresponding terms and graph the ordered pairs on a coordinate plane.

Number and Operations in Base Ten

- Recognize that in a multi-digit number, a digit in one place is 10 times as much as it is in the place to its right and $\frac{1}{10}$ of what it is in the place to its left.
- Explain patterns in the number of zeros in the product when multiplying by a power of 10. Explain patterns of decimal point placement when multiplying or dividing by a power of 10. Use whole number exponents to represent powers of 10.
- Read and write decimals to thousandths using base-ten numerals, number names, and expanded form.
- Compare two decimals to thousandths.
- Round decimals to any place.
- Fluently multiply multi-digit whole numbers using the standard algorithm.
- Divide up to four-digit dividends by two-digit divisors to find whole-number quotients.
- Add, subtract, multiply, and divide decimals to hundredths.

Number and Operations – Fractions

- Add and subtract fractions with unlike denominators (including mixed numbers) by replacing fractions with equivalent fractions with like denominators.
- Solve word problems involving addition and subtraction of fractions.
- Interpret a fraction as division of the numerator by the denominator. Solve word problems leading to answers in the form of fractions or mixed numbers.
- Interpret the product of $(a/b) \times q$ as a parts of a partition of q into b equal parts. Interpret the product of $(a/b) \times (c/d) = ac/bd$.
- Find the area of a rectangle with fractional side lengths by tiling it with unit squares. Show that the area is the same as would be found by multiplying the side lengths.
- Compare the size of a product to the size of one factor on the basis of the size of the other factor.
- Explain why multiplying a number by a fraction greater than 1 results in a product greater than the given number. Explain why multiplying a number by a fraction less than 1 results in a product smaller than the given number. Understand that multiplying the numerator and denominator of a fraction by the same number, to obtain an equivalent fraction, is the same as multiplying by 1.
- Solve real world problems using multiplication of fractions and mixed numbers.
- Divide a unit fraction by a non-zero whole number.
- Divide a whole number by a unit fraction.
- Solve real world problems using division of unit fractions by non-zero whole numbers and whole numbers by unit fractions.

Measurement and Data

- Convert units within the metric and customary measurement systems when solving multi-step, real world problems.
- Make line plots to display data sets of measurements in fractions of a unit. Solve fraction problems using the information in the line plots.
- Recognize that volume is an attribute of solid figures, and solid figures can be packed with unit cubes to measure volume in cubic units.
- Measure volume by counting unit cubes.
- Find the volume of a right rectangular prism by packing it with unit cubes. Show that the volume is the same as would be found by multiplying the edge lengths.
- Apply the formulas $V = l \times w \times h$ and $V = b \times h$ to find the volume of right rectangular prisms when solving real world and mathematical problems.
- Find the volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the two parts when solving real world problems.

Geometry

- Define the parts of a coordinate plane system (x -axis, y -axis, origin). Understand that an ordered pair of numbers (x,y) locates a point on a coordinate plane.
- Represent and interpret real world and mathematical problems by graphing points in the first quadrant of the coordinate plane.
- Understand that attributes belonging to a category of two-dimensional figures belongs to all subcategories of that category.
- Classify two-dimensional figures in a hierarchy based on properties.