

MATH: GRADE 3



Data Analysis, Statistics, and Probability

Students will be able to:

- Formulate questions, collect and organize data using observations, measurements, surveys, or experiments, and identify appropriate ways to display the data.
- Interpret and pose questions about data collected.
- Construct, draw conclusions and make predictions from various representations of data sets, including tables, bar graphs, pictographs, line plots, and tallies.
- Describe the shape of the data and analyze it for patterns.
- Examine a set of data to determine what is typical.
- Represent data on a line plot.
- Classify outcomes as likely or unlikely.
- Predict the likelihood of outcomes.

Geometry

Students will be able to:

- Compare and analyze attributes and other features of 2-D and 3-D shapes.
- Analyze how shapes are the same and how they are different.
- Visualize how components of shapes are put together to form whole shapes.
- Describe, compare, and represent 2-D shapes.
- Compare the areas of two shapes.
- Explore relationships among shapes.
- Estimate and measure the perimeters of various figures.
- Describe, model, compare and classify 2-D and 3-D shapes.
- Understand that shapes can be oriented in space without losing their properties.
- Estimate and measure turn.
- Understand turn as a change in orientations.
- Identify common measurement for turns—degrees—and understand that there are 360 degrees in one full turn, 180 degrees in a half-turn and 90 degrees in a quarter turn.
- Name turns, or angles, as acute, right, or obtuse.
- Describe paths.
- Describe a path using mathematical ideas and language e.g., intersecting, parallel and perpendicular lines.
- Describe and apply techniques such as reflections, rotations, and translations for determining if two shapes are congruent.
- Describe physical motions precisely as a series of slides, flips, and turns.

- Compare shapes to determine congruence through motions such as rotations (turns) and reflections (flips).
- Relate geometric ideas to number.
- Measure area by covering a flat surface with square units.
- Compare areas of rectangles that have different dimensions.
- Understand the structure of a rectangular prism as arrays of cubes.
- Design patterns for boxes that will hold a given number of cubes.
- Identify symmetry in 2-D shapes.

Measurement

Students will be able to:

- Demonstrate an understanding of such attributes as length, area, weight, and volume, and select the appropriate type of unit for measuring each attribute.
- Use a nonstandard unit to measure distance.
- Compare the effects of measurement using different sizes.
- Measure weight using a pan balance.
- Determine volume of rectangular prisms.
- Carry out simple unit conversions within a system of measurement.
- Understand and use important equivalencies of time, money, and linear measurement.
- Identify time...compute elapsed time and use a calendar.
- Use the calendar as a tool for problem solving.
- Estimate and find area and perimeter of a rectangle, triangle, or irregular shape, models, grids or by measuring.
- Measure area by covering a flat surface with square units.
- Compare area of rectangles that have different dimensions.
- Compare the area of two shapes and explore the relationship between them.
- Find the area of complex shapes by identifying smaller units of area (e.g. square and half units)
- Estimate and measure the perimeters of various figures.
- Identify and use appropriate metric and English units and tools to estimate, measure, and solve problems involving length and area.
- Use standard measures in complex situations.

Number Sense and Operations

Students will be able to:

- Exhibit an understanding of the base ten number system.
- Mentally add or subtract 10 or 20 from a number.
- Know factors of 100.
- Use knowledge of the factors of 100 to understand the structure of multiples.
- Use knowledge of factors of 100 to understand the structure of 1000.
- Estimate quantities up to 1000.
- Use landmark numbers to calculate “distances” within 1000.
- Read and write numbers in the hundreds and thousands.

- Represent, order, and compare numbers.
- Use landmark numbers to combine and compare quantities.
- Combine and compare 3-digit numbers and totals to 1000.
- Demonstrate an understanding of fractions as parts of wholes.
- Describe in simple terms the relationships among commonly used factors and their multiples.
- Know that fractional parts must be equal.
- Understand the relationship between fractions and division.
- Select, use, and explain models to relate common fractions and mixed numbers, find equivalent fractions, and order fractions.
- Use conventional fraction words and notation.
- Group unit fractions that have a numerator of 1.
- Know common equivalents, especially relationships among halves, thirds, and sixths.
- Relate notation for common fractions ($\frac{1}{2}, \frac{1}{4}, \frac{3}{4}, \frac{1}{5}, \frac{1}{10}$) to notation for decimals on the calculator (0.5, 0.25, 0.75, 0.2, 0.1).
- Recognize classes to which a number may belong, and identify the numbers in those classes; use these in the solution of problems.
- Explore numbers that can be divided evenly.
- Select, use, and explain the various meanings and models of multiplication and division of whole numbers. Understand and use the inverse relationship between the two operations.
- Understand that the operation of multiplication is adding equal groups.
- Recognize the connection between skip counting, grouping, and multiplication.
- Find factors of numbers using factor pairs.
- Demonstrate understanding of the relationship between multiplication and division.
- Identify whether word problems can be solved by using multiplication or division.
- Use knowledge of factors and multiples to solve multiplications and division problems.
- Select, use, and explain the commutative, associative, and identity properties of operations in whole number problem situations.
- Examine how parts and wholes are related in addition and subtraction.
- Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those involving money.
- Solve addition problems that have multiple addends.
- Have more than one way to solve a computation problem and use one method to check another.
- Know multiplication facts through 9×9 .
- Add, subtract and multiply accurately and efficiently.
- Solve combining and comparing problems with numerical strategies and record solutions using standard addition and subtraction notation.
- Use different notations for the same problem.

Discussion, Presentation and Composition

Students will be able to:

- Use agreed upon rules to participate in large and small group discussions.
- Express ideas in an organized way.
- Explain their mathematical thinking in writing.
- Maintain a system for collecting, referring to, and sharing their work.