

Grade 6 - Maths Overview



Fractions

- Compare and order fractions with different denominators
- Find the fraction of a set where the answer is a whole number or a mixed number
- Add/Subtract related fractions
- Add/Subtract unlike fractions
- Understand mixed numbers and improper fractions, convert between them, locate them on a number line
- Add/subtract mixed numbers
- Determine the least common multiple and the greatest common divisor of whole numbers and use them to solve problems involving fractions
- Multiply a fraction by a whole number
- Multiply a fraction by a fraction
- Divide a fraction by a whole number
- Divide a whole number or a fraction by a fraction
- Apply order of operations with or without parentheses to problems involving fractions

Perimeter, Area and Volume

- Find the volume of rectangular prisms
- Find the volume of triangular prisms and cylinders
- Find the volume of composite figures involving prisms and cylinders
- Solve multistep problems involving the volume of liquids and solids and displacement of liquids
- Identify the radius and diameter of a circle, find one given the other
- Derive the formula for circumference of a circle and find circumference when given the radius or diameter
- Derive the formula for area of a circle and find area when given the radius or diameter
- Find the perimeter and area of compound figures involving squares, rectangles, triangles, and half-circles or quarter-circles

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Geometry

- Describe and classify common 3-dimensional shapes according to number and shape of faces, edges, and vertices
- Identify acute, obtuse, and right angles and relate 90° , 180° , 270° , and 360° with quarter, half, three-quarter, and whole turn
- Identify angles as vertical, adjacent, complementary, or supplementary and provide descriptions of these terms
- Find unknown angles in figures based on identifying vertical, adjacent, complementary, or supplementary angles
- Know and use angle properties of intersecting lines, triangles, parallelograms, rhombuses, and trapezoids to solve problems involving finding unknown angles
- Construct triangles, parallelograms, and rhombuses with specified angles
- Construct trapezoids various quadrilaterals with specified angles and lengths of sides
- Visualize, describe, and draw geometric solids
- Identify nets of solids, or solids of nets

Percentage

- Solve problems involving percentage of a quantity
- Solve problems involving part of a whole as a percentage
- Solve problems involving one quantity as a percentage of another
- Solve percentage problems using a unitary method
- Calculate given percentages of quantities and solve problems involving discounts at sales, interest earned, percentage increase or decrease

Ratio/Average/Rate/Speed

- Use ratios to compare two quantities
- Use ratios to compare three quantities
- Find equivalent ratios and simplify ratios
- Use ratios to solve problems
- Relate ratios to fraction of a quantity

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- Solve problems involving changing ratios
- Relate ratios to proportions
- Solve problems involving proportions
- Understand rate as the measure of one quantity per unit value of another
- Solve problems involving rate
- Use a unitary approach to solve rate problems
- Solve discontinuous rate problems involving time
- Understand and use speed and average speed to solve problems

Word Problems

- Solve multi-step word problems involving all four operations on whole numbers, fractions, decimals, percentage and ratios
- Solve multi-step word problems involving average, rate and percentage
- Solve multi-step word problems involving speed and average speed
- Solve challenging word problems

Data Analysis and Probability

- Collect, organize and display data in pie charts
- Understand, find, and compare mean, median, and mode of a set of data
- Find the range of a set of data
- Understand how additional data added to data sets may affect measures of central tendency
- Understand how the inclusion or exclusion of outliers affects measures of central tendency
- Compare different samples of a population with the data from the entire population and identify situations in which it makes sense to use a sample
- Identify different ways of selecting a sample and which method makes the sample more representative of the population
- Know why a specific measure of central tendency provides the most useful information in a given context
- Analyze data displays and identify data that represent sampling errors

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- Identify claims based on statistical data and, in simple cases, evaluate the validity of the claims
- Represent all possible outcomes for simple probability experiments
- Express all possible outcome of experimental probability situations verbally and numerically and as fractions
- Use data to estimate the probability of future events
- Represent probabilities as ratios, proportions, decimals and percentages
- Find the probability of disjoint events and understand that the theoretical probability of disjoint events is the sum of the two individual probabilities
- Find the probability of combined events and understand that the theoretical probability of combined events is the product of the two probabilities
- Understand the difference between independent and dependent events

Algebra

- Use letters to stand for unknown numbers in equations and solve for the unknown numbers using properties of the four operations
- Represent unknown quantities with bar diagrams and solve word problems involving whole numbers using bar diagrams
- Use bar diagrams to solve word problems involving fractions
- Use bar diagrams to solve word problems involving decimals
- Use bar diagrams to solve word problems involving percentage
- Use bar diagrams to solve word problems involving ratio
- Solve word problems involving the functional relationship between two quantities
- Write simple equations involving related changes in quantities (e.g. $y = 3x + 5$) and solve for the dependent value when given the independent value
- Write and evaluate simple algebraic expressions in one variable using substitution
- Write and evaluate simple algebraic expressions for a given situation, using up to three variables
- Use the distributive property in expressions with variables
- Simplify algebraic expressions in one variable
- Use variables in expressions describing geometric quantities
- Solve simple algebraic equations in one variable

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- Solve problems involving simple linear functions with whole number values, write the equation and graph the resulting ordered pairs on a grid
- Compare and order positive and negative fractions, decimals, and mixed numbers and place them on a number line
- Add and subtract positive and negative integers
- Multiply and divide positive and negative integers
- Apply algebraic order of operations and the commutative, associative, and distributive properties to evaluate expressions that involve positive and negative integers
- Solve problems involving linear functions with integer values, write the equation and graph the resulting ordered pairs on a grid

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Data Analysis and Probability

- Ask and solve questions related to data representation, including finding the range and mode.
- Collect, organize, and analyze data using line plots.
- Collect, organize, and analyze data using line graphs.
- Collect, organize, and analyze data using coordinate graphs
- Identify the mode and median of categorical data.
- Identify ordered pairs of data from a graph.

Algebra

- Use letters to stand for unknown numbers in equations and solve for the unknown numbers using properties of the four operations.
- Represent unknown quantities with bar diagrams and solve word problems involving whole numbers using bar diagrams.
- Use bar diagrams to solve word problems involving fractions.
- Use bar diagrams to solve word problems involving decimals.
- Use bar diagrams to solve word problems involving percentage.
- Use bar diagrams to solve word problems involving ratio.

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- Solve word problems involving the functional relationship between two quantities.
 - Use and interpret formulas to answer questions about quantities and their relationships.
 - Write simple equations involving related changes in quantities (e.g. $y = 3x + 5$) and solve for the dependent value when given the independent value.
 - Write and evaluate simple algebraic expressions in one variable using substitution.
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- Use the distributive property in expressions with variables.
 - Simplify algebraic expressions in one variable.
 - Solve problems involving simple linear functions with whole numbers values, write the equation, and graph the resulting ordered pairs on a grid.
 - Understand and interpret negative numbers, locate negative numbers on a number line, compare and order integers.
 - Find the numerical value of negative numbers.
 - Add and subtract positive and negative integers.
 - Solve problems involving linear functions with integer values, write the equation, and graph the resulting ordered pairs on a grid.