

Mathematics Grade 6

Concepts and Principles of Measurement

1. Measure accurately units of time, length, temperature, weight, capacity, using correct tools and appropriate units.
2. Understand the concept of a constant such as π ; know the formulas for the circumference and area of a circle.
3. Know and use the formulas for the volume of rectangular solids, triangular prisms, and cylinders.
4. Convert one unit of measurement to another (feet to miles, etc).
5. Demonstrate an understanding that rate is a measure of one quantity per unit value of another quantity.

Data Analysis, Probability, and Statistics

1. Compute the range, mean, median, and mode of data sets
2. Know why a specific measure of central tendency provides the most useful information in a given context.
3. Identify different ways of selecting a sample, and which method makes a more representative sample for a population
4. Analyze data displays and explain how the questions and the display of results might influence conclusions reached.
5. Represent possible outcomes for compound events in an organized way and express the probability of each outcome.
6. Represent probabilities as ratios, proportions, decimals between 0 and 1, and percentages and verify that the probabilities computed are reasonable.
7. Understand the difference between independent and dependent events.

Number and Operation

1. Compare and order positive and negative fractions, decimals, and mixed numbers and place them on a number line.
2. Interpret and use ratios in different contexts.
3. Use proportions to solve problems. Use cross-multiplication as a method for solving such problems.
4. Calculate different percentages of quantities including discounts, interest, and tips earned.
5. Solve problems involving addition, subtraction, multiplication, and division of fractions
6. Solve addition, subtraction, multiplication, and division problems, including those arising in concrete situations that use positive and negative integers.
7. Determine the least common multiple and greatest common divisor of whole numbers and use them to solve fraction problems.

Concepts and Language of Algebra and Functions

1. Write and solve one step linear equations in one variable.
2. Apply algebraic order of operations and the commutative, associative, and distributive properties to evaluate expressions.
3. Solve problems involving rates, average speed, distance, and time.
4. Solve problems involving linear functions with integer values.
5. Use variables in expressions describing geometric quantities.

Concepts and Principles of Geometry

1. Students understand and compute the volumes and areas of simple objects.
2. Construct a cube and rectangular box from two-dimensional patterns and use these patterns to compute the surface area for these objects.
3. Understand the concept of volume and use the appropriate units in common measuring systems

Mathematical Reasoning (Not in Descartes)

1. Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.
2. Determine when and how to break a problem into simpler parts.
3. Use estimation to verify the reasonableness of calculated results
4. Apply strategies and results from simpler problems to more complex problems
5. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models to explain mathematical reasoning
6. Make precise calculations and check the validity of the results from the context of the problem
7. Evaluate the reasonableness of the solution in the context of the original situation
8. Note the method of deriving the solution and demonstrate a conceptual understanding of the derivation by solving similar problems
9. Develop generalizations of the results obtained and apply them in other circumstances