

Mathematics Grade 4

Concepts and Principles of Measurement

1. Measure the area of rectangular shapes by using appropriate units
2. Recognize that rectangles that have the same area can have different perimeters
3. Understand that rectangles that have the same perimeter can have different areas
4. Draw the points corresponding to linear relationships on graph paper
5. Understand that the length of a horizontal line segment equals the difference of the x coordinates and the length of a vertical line segment equals the difference of the y coordinates

Data Analysis, Probability, and Statistics

1. Formulate survey questions; collect and represent data on a number line; and coordinate graphs, tables, and charts
2. Identify the mode(s), median, and apparent outliers for numerical data sets
3. Represent all possible outcomes for a simple probability situation in an organized way
4. Express outcomes of experimental probability situations verbally and numerically

Number and Operation

1. Read and Write Whole Numbers to the millions
2. Order and compare whole numbers and decimals to two decimal places
3. Round whole numbers through the millions to the nearest ten, hundred, thousand, ten thousand, or hundred thousand
4. Write the fraction represented by a drawing of parts of a figure; represent a given fraction by using drawings; and relate a fraction to a simple decimal on a number line.
5. Use concepts of negative numbers
6. Identify on a number line the relative position of positive fractions, positive mixed numbers, and positive decimals to two decimal places.
7. Estimate and compute the sum or difference of whole numbers and positive decimals to two places
8. Round two place decimals to one decimal or the nearest whole number
9. Write tenths and hundredths in decimal and fraction notations and know the fraction and decimal equivalents for halves and fourths
10. Multiply a multi-digit number by a two digit number
11. Solve problems involving division of multi-digit numbers by one-digit numbers
12. Understand that many whole numbers break down in different ways
13. Know that numbers such as 2, 3, 5, 7 and 11 do not have any factors except 1 and themselves and that such numbers are called prime numbers

Concepts and Language of Algebra and Functions

1. Understand and use the concept of a variable
2. Interpret and evaluate mathematical expressions that use parentheses
3. Use parentheses to indicate which operation to perform first when writing expressions containing more than two terms and different operations.
4. Use and interpret formulas to answer questions about quantities and their relationships
5. Know and understand that equals added to equals are equal
6. Know and understand that equals multiplied by equals are equal

Concepts and Principles of Geometry

1. Understand and use formulas to solve problems involving perimeters and areas of rectangles and squares. Use those formulas to find the areas of more complex figures by dividing the figures into basic shapes.
2. Identify lines that are parallel and perpendicular
3. Identify the radius and diameter of a circle
4. Identify congruent figures
5. Identify figures that have bilateral and rotational symmetry
6. Know the definitions of a right angle, an acute angle, and an obtuse angle
7. Know the definitions of different triangles and identify their attributes
8. Visualize, describe, and make models of geometric solids
9. Know the definition of different quadrilaterals

Mathematical Reasoning (Not in Descartes)

1. Students make decisions about how to approach problems
2. Use estimation to verify the reasonableness of calculated results
3. Apply strategies and results from simpler problems to more complex problems
4. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models to explain mathematical reasoning
5. Make precise calculations and check the validity of the results from the context of the problem
6. Evaluate the reasonableness of the solution in the context of the original situation
7. Note the method of deriving the solution and demonstrate a conceptual understanding of the derivation by solving similar problems
8. Develop generalizations of the results obtained and apply them in other circumstances