Grade 5 - Mathematics

Standard 1: Number Sense
Students compute with whole numbers, decimals, and fractions and understand the relationship among decimals, fractions, and percents. They understand the relative magnitudes of numbers. They understand prime and composite numbers.

5.1.1
Convert between numbers in words and numbers in figures, for numbers up to millions and decimals to thousandths.

5.1.2
Round whole numbers and decimals to any place value.

5.1.3
Arrange in numerical order and compare whole numbers or decimals to two decimal places by using the symbols for less than (<), equals (=), and greater than (>).

5.1.4
Interpret percents as a part of a hundred. Find decimal and percent equivalents for common fractions and explain why they represent the same value.

5.1.5
Explain different interpretations of fractions: as parts of a whole, parts of a set, and division of whole numbers by whole numbers.

5.1.6
Describe and identify prime and composite numbers.

5.1.7
Identify on a number line the relative position of simple positive fractions, positive mixed numbers, and positive decimals.

Standard 2: Computation
Students solve problems involving multiplication and division of whole numbers and solve problems involving addition, subtraction, and simple multiplication and division of fractions and decimals.

5.2.1
Solve problems involving multiplication and division of any whole numbers.

5.2.2
Add and subtract fractions (including mixed numbers) with different denominators.

5.2.3
Use models to show an understanding of multiplication and division of fractions.

5.2.4
Multiply and divide fractions to solve problems.

5.2.5
Add and subtract decimals and verify the reasonableness of the results.

5.2.6
Use estimation to decide whether answers are reasonable in addition, subtraction, multiplication, and division problems.

5.2.7
Use mental arithmetic to add or subtract simple decimals.

Standard 3: Algebra and Functions
Students use variables in simple expressions, compute the value of an expression for specific values of the variable, and plot and interpret the results. They use two-dimensional coordinate grids to represent points and graph lines.

5.3.1
Use a variable to represent an unknown number.

5.3.2
Write simple algebraic expressions in one or two variables and evaluate them by substitution.

5.3.3
Use the distributive property in numerical equations and expressions.

5.3.4
Identify and graph ordered pairs of positive numbers.

5.3.5
Find ordered pairs (positive numbers only) that fit a linear equation, graph the ordered pairs, and draw the line they determine.

5.3.6
Understand that the length of a horizontal line segment on a coordinate plane equals the difference between the *x*-coordinates and that the length of a vertical line segment on a coordinate plane equals the difference between the *y*-coordinates.

5.3.7
Use information taken from a graph or equation to answer questions about a problem situation.

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Standard 4: Geometry
Students identify, describe, and classify the properties of plane and solid geometric shapes and the relationships between them.

5.4.1
Measure, identify, and draw angles, perpendicular and parallel lines, rectangles, triangles, and circles by using appropriate tools (e.g., ruler, compass, protractor, appropriate technology, media tools).

5.4.2
Identify, describe, draw, and classify triangles as equilateral, isosceles, scalene, right, acute, obtuse, and equiangular.

5.4.3
Identify congruent triangles and justify your decisions by referring to sides and angles.

5.4.4
Identify, describe, draw, and classify polygons, such as pentagons and hexagons.

5.4.5
Identify and draw the radius and diameter of a circle and understand the relationship between the radius and diameter.

5.4.6
Identify shapes that have reflectional and rotational symmetry.

5.4.7
Understand that 90°, 180°, 270°, and 360° are associated with quarter, half, three-quarters, and full turns, respectively.

5.4.8
Construct prisms and pyramids using appropriate materials.

5.4.9
Given a picture of a three-dimensional object, build the object with blocks.

Standard 5: Measurement
Students understand and compute the areas and volumes of simple objects, as well as measuring weight, temperature, time, and money.

5.5.1
Understand and apply the formulas for the area of a triangle, parallelogram, and trapezoid.

5.5.2

Solve problems involving perimeters and areas of rectangles, triangles, parallelograms, and trapezoids, using appropriate units.

5.5.3
Use formulas for the areas of rectangles and triangles to find the area of complex shapes by dividing them into basic shapes.

5.5.4
Find the surface area and volume of rectangular solids using appropriate units.

5.5.5
Understand and use the smaller and larger units for measuring weight (ounce, gram, and ton) and their relationship to pounds and kilograms.

5.5.6
Compare temperatures in Celsius and Fahrenheit, knowing that the freezing point of water is 0°C and 32°F and that the boiling point is 100°C and 212°F.

5.5.7
Add and subtract with money in decimal notation.

Standard 6: Data Analysis and Probability
Students collect, display, analyze, compare, and interpret data sets. They use the results of probability experiments to predict future events.

5.6.1
Explain which types of displays are appropriate for various sets of data.

5.6.2
Find the mean, median, mode, and range of a set of data and describe what each does and does not tell about the data set.

5.6.3
Understand that probability can take any value between 0 and 1, events that are not going to occur have probability 0, events certain to occur have probability 1, and more likely events have a higher probability than less likely events.

5.6.4
Express outcomes of experimental probability situations verbally and numerically (e.g., 3 out of 4, $^{3}/_{4}$).

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Standard 7: Problem Solving
Students make decisions about how to approach problems and communicate their ideas.

5.7.1
Analyze problems by identifying relationships, telling relevant from irrelevant information, sequencing and prioritizing information, and observing patterns.

5.7.2
Decide when and how to break a problem into simpler parts.

5.7.3
Apply strategies and results from simpler problems to solve more complex problems.

5.7.4
Express solutions clearly and logically by using the appropriate mathematical terms and notation. Support solutions with evidence in both verbal and symbolic work.

5.7.5
Recognize the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.

5.7.6
Know and apply appropriate methods for estimating results of rational-number computations.

5.7.7
Make precise calculations and check the validity of the results in the context of the problem.

5.7.8
Decide whether a solution is reasonable in the context of the original situation.

5.7.9
Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.