

Alignment of Common Core State Standards And 2007 SC Academic Standards

Ratios and Proportional Relationships The Number System Expressions and Equations Geometry Statistics and Probability

Color Key

- The standards have been grouped by related concept and placed in a sequence to help beginning/immerring teachers. The grouping and sequence is subjective and may be modified to meet individual teaching and student needs.
- **Blue - SC 2007 standards** Remember: In the notation for the SC 2007 Standards the first digit is the grade. For example 3-2.1 means this is a SC third grade standard.

6th Grade

Ratio and Proportional Relationships

- Understand ratio concepts and use ratio reasoning to solve problems.
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 - Understand the concept of ratio and use ratio language to describe a ratio relationship between two quantities. For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes." (6.RP1)
 - Understand the concept of a unit rate a/b associated with a ratio $a:b$ with b not equal to 0 and use rate language in the context of a ratio relationship. For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is a $\frac{3}{4}$ cup of flour for each cup of sugar." We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger." Limit expectations for unit rates in this grade to noncomplex fractions. (6.RP2)
 - Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. (6.RP3)
 - Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, AND plot the pairs of values on the coordinate plane. (6.RP3a)
 - Solve unit rate problems including unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed? (6.RP3b)

- 5-2.7 Generate strategies to find the greatest common factor and the least common multiple of two whole numbers.
- ✓ *Apply and extend previous understandings of numbers to the system of rational numbers.*
- Understand that positive and negative numbers are used together to describe quantities having opposite directions or values. (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. (6.NS5)
 - Understand a rational number as a point on the number line. (6.NS6)
 - Extend number line diagrams and coordinate axes from previous grades to represent points on the line and in the plane with negative number coordinates.
 - Recognize opposite signs of numbers as locations on opposite sides of zero (6.NS6a)
 - Recognize that the opposite of the opposite of a number is the number itself e.g., $-(-3) = 3$, and that 0 is its own opposite.
 - Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane (6.NS6b)
 - Recognize that when two ordered pairs differ only by signs the locations of the points are related by reflections across one or both axes.
 - Find and position integers and other rational numbers on a horizontal or vertical number line diagram(6NS6c)
 - Find and position pairs of integers and other rational numbers on a coordinate plane.
 - 6-4.1 Represent with ordered pairs of integers the location of points in a coordinate grid.
 - 7-2.2 Represent the location of rational numbers and square roots of perfect squares on a number line.
- Solve real-world and mathematical problems by graphing in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. (6.NS8)
- Understand ordering and absolute value of rational numbers. (6NS7)
 - 6-2.3 Compare rational numbers and whole-number percentages through 100 by using the symbols \leq , \geq , $<$, $>$, and $=$.
 - Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right. (6.NS7a)
 - Write, interpret, and explain statements of order for rational numbers real world context. For example, write -3 degrees C $>$ -7 degrees C to express the fact that -3 degrees C is warmer than -7 degrees C. (6.NS7b)
 - 6-2.2 Understand integers.

- Understand absolute value of a rational as its distance from zero on the number line. (6.NS7c)
 - **7-2.4 Understand the meaning of absolute value.**
 - Interpret absolute value as magnitude for a positive or negative quantity in a real world situation. For example, for an account balance of –30 dollars, write $|-30| = 30$ to describe the size of the debt in dollars.
- Distinguish comparisons of absolute value from statements about order. For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars. (6.NS7d)

Expressions and Equations

- *Apply and extend previous understandings of arithmetic to algebraic expressions.*
 - *Reason about and solve one-variable equations and inequalities.*
 - *Represent and analyze quantitative relationships between dependent and independent variables.*
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- ✓ *Apply and extend previous understandings of arithmetic to algebraic expressions.*
 - Write and evaluate numerical expressions involving whole-number exponents. (6.EE1)
 - **6-2.7 Apply strategies and procedures to determine values of powers of 10, up to 10^6 .**
 - **6-2.8 Represent the prime factorization of numbers by using exponents.**
 - **6-2.9 Represent whole numbers in exponential form.**
 - Write, read, and evaluate expressions in which letters stand for numbers. (6.EE2)
 - Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation “Subtract y from 5” as $5 - y$. (6.EE2a)
 - **6-3.3 Represent algebraic relationships with variables in expressions, simple equations, and simple inequalities.**
 - Identify parts of an expression using mathematical terms (*sum, term, product, factor, quotient, coefficient*) **AND** view one or more parts of an expression as a single entity. For example, describe the expression $2(8 + 7)$ as a product of two factors; view $(8 + 7)$ as both a single entity and a sum of two terms. (6.EE2b)
 - Evaluate expressions at specific values of their variables, include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (**Order of Operations**). For example, use the formulas $V = S^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $2 = \frac{1}{2}$. (6.EE2c)
 - **6-3.2 Apply order of operations to simply whole-number expressions.**

- Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression $3(2+x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x+3y)$; apply properties of operations to $y+y+y$ to produce the equivalent expression $3y$. (6.EE3)
 - [6-3.4 Use the commutative, associative, and distributive properties to show that two expressions are equivalent.](#)
 - Identify when two expressions are equivalent (e.g. when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions $y+y+y$ and $3y$ are equivalent because they name the same number regardless of which number y stands for. (6.EE4)
- ✓ *Reason about and solve one-variable equations and inequalities.*
- Understand solving an equation or inequality as a process of answering the question: Which values from a specified set, if any, make the equation or inequality true? (6.EE5)
 - Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
 - Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; (6.EE6)
 - Understand that a variable can represent an unknown number, or, depending on the purpose, any number in a specified set
 - Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers. (6.EE7)
 - [6-3.5 Use inverse operations to solve one-step equations that have whole-number solutions and variables with whole-number coefficients.](#)
 - Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. (6.EE8)
 - Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions;
 - Represent solutions of such inequalities on number line diagrams.
- ✓ *Represent and analyze quantitative relationships between dependent and independent variables.*
- Use variables to represent two quantities in a real-world problem that change in relationship to one another (6.EE9)
 - Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable.
 - Analyze the relationship between the dependent and independent variables using graphs and tables and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

Geometry

- Solve real-world and mathematical problems involving area, surface area, and volume.

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- Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. (6.G1)
- [6-5.4 Apply strategies and procedures to estimate the perimeters and areas of irregular shapes. \(Loose Fit\)](#)
- [6-5.5 Apply strategies and procedures of combining and subdividing to find the perimeters and areas of irregular shapes.](#)
- Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. (6.G2)
 - Apply the formulas $V = l w h$ and $V = b h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
- Draw polygons in the coordinate plane given coordinates for the vertices; (6.G3)
 - use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate.
 - [6-4.2 Apply strategies and procedures to find the coordinates of the missing vertex of a square, rectangle, or right triangle when given the coordinates of the polygon's other vertices.](#)
 - Apply these techniques in the context of solving real-world and mathematical problems.
- Represent three-dimensional figures using nets made up of rectangles and triangles, (6.G4)
 - use the nets to find the surface area of these figures.
 - Apply these techniques in the context of solving real-world and mathematical problems.
 - [4-4.2 Analyze the relationship between three-dimensional geometric shapes in the form of cubes, rectangular prisms, and cylinders and their two-dimensional nets.](#)
 - [5-4.4 Translate between two-dimensional representations and three-dimensional objects.](#)
 - [6-5.3 Generate strategies to determine the surface area of a rectangular prism and a cylinder.](#)
 - [7-5.2 Apply strategies and formulas to determine the surface area and volume of the three-dimensional shapes prism, pyramid, and cylinder.](#)

Statistics and Probability

- Develop understanding of statistical variability.
- Summarize and describe distributions.

- ✓ Develop understanding of statistical variability.
 - Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages. (6.SP1)
 - [5-6.1 Design a mathematical investigation to address a question.](#)
 - Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. (6.SP2)
 - [5-6.4 Interpret the meaning and application of the measures of central tendency.](#)
 - Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. (6.SP.3)

- ✓ Summarize and describe distributions.
 - Display numerical data in plots on a number line, including dot plots, histograms, and box plots. (6.SP4)
 - [3-6.2 Organize data in tables, bar graphs, and dot plots.](#)
 - [6-6.2 Organize data in frequency tables, histograms, or stem-and-leaf plots as appropriate.](#)
 - [7-6.2 Organize data in box plots or circle graphs as appropriate.](#)
 - Summarize numerical data sets in relation to their context, such as by: (6.SP5)
 - Reporting the number of observations. (6.SP5a)
 - Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. (6.SP5b)
 - Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. (6.SP5c)
 - [7-6.3 Apply procedures to calculate the interquartile range.](#)
 - [7-6.4 Interpret the interquartile range for data.](#)
 - Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered. (6.SP5d)
 - [6-6.3 Analyze which measure of central tendency \(means, median, or mode\) is the most appropriate for a given purpose.](#)

SC 2007 Academic Standards not specifically aligned to Common Core State Standards at this grade.

Number and Operations

6-2.4 Apply an algorithm to add and subtract fractions. Moved to 5.NF1

6-2.5 Generate strategies to multiply and divide fractions and decimals.

(Actually aligns with 5.NF7b (fractions) and 5.NBT7 (decimals) due to “Generate strategies”. However, could align with 6.NS3 for decimals.

Algebra

6-3.1 Analyze numeric and algebraic patterns and pattern relationships.

Moved to 8.F5

Geometry

6-4.3 Generalize the relationship between line symmetry and rotational symmetry for two-dimensional shapes.

6-4.4 Construct two-dimensional shapes with line or rotational symmetry.

6-4.5 Identify the transformation(s) used to move a polygon from one location to another in the coordinate plane.

6-4.6 Explain how transformations affect the location of the original polygon in the coordinate plane. Moved to 8.G3

6-4.7 Compare the angles, side lengths, and perimeters of similar shapes. Moved to 8.G1

6-4.8 Classify shapes as similar. Moved to 8.G4

6-4.9 Classify pairs of angles as either complementary or supplementary. Moved to 7.G5

Measurement

6-5.1 Explain the relationships among the circumference, diameter, and radius of a circle. Moved to 7.G4

6-5.2 Apply strategies and formulas with an approximation of π (3.14, or $\frac{22}{7}$) to find the circumference and area of a circle. Moved to 7.G4

6-5.6 Use proportions to determine unit rates. Moved to 7.RP1

Data Analysis and Probability

6-6.1 Predict the characteristics of one population based on the analysis of sample data. Moved to 7.SP2

6-6.4 Use theoretical probability to determine the sample space and probability for one- and two-stage events such as tree diagrams, models, lists, charts, and pictures. Moved to 7.SP8

6-6.5 Apply procedures to calculate the probability of complementary events.