

NUMBER AND OPERATIONS

22% of CRCT

M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.

- Find square roots of perfect squares.
 - Recognize the (positive) square root of a number as a length of a side of a square with a given area.
 - Recognize square roots as points and as lengths on a number line.
 - Understand that the square root of 0 is 0 and that every positive number has two square roots that are opposite in sign.
 - Recognize and use the radical symbol to denote the positive square root of a positive number.
 - Estimate square roots of positive numbers.
 - Simplify, add, subtract, multiply, and divide expressions containing square roots.
 - Distinguish between rational and irrational numbers.
 - Simplify expressions containing integer exponents.
 - Express and use numbers in scientific notation.
 - Use appropriate technologies to solve problems involving square roots, exponents, and scientific notation.
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GEOMETRY

11% of CRCT

M8G1. Students will understand and apply the properties of parallel and perpendicular lines and understand the meaning of congruence.

- Investigate characteristics of parallel and perpendicular lines both algebraically and geometrically.
- Apply properties of angle pairs formed by parallel lines cut by a transversal.
- Understand the properties of the ratio of segments of parallel lines cut by one or more transversals.
- Understand the meaning of congruence: that all corresponding angles are congruent and all corresponding sides are congruent.

M8G2. Students will understand and use the Pythagorean theorem.

- Apply properties of right triangles, including the Pythagorean theorem.
 - Recognize and interpret the Pythagorean theorem as a statement about areas of squares on the sides of a right triangle.
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ALGEBRA

50% of CRCT

M8A1. Students will use algebra to represent, analyze, and solve problems.

- Represent a given situation using algebraic expressions or equations in one variable.
- Simplify and evaluate algebraic expressions.
- Solve algebraic equations in one variable, including equations involving absolute values.
- Solve equations involving several variables for one variable in terms of the others.
- Interpret solutions in problem contexts.

M8A2. Students will understand and graph inequalities in one variable.

- Represent a given situation using an inequality in one variable.
- Use the properties of inequality to solve inequalities.
- Graph the solution of an inequality on a number line.
- Interpret solutions in problem contexts.

M8A3. Students will understand relations and linear functions.

- Recognize a relation as a correspondence between varying quantities.
- Recognize a function as a correspondence between inputs and outputs where the output for each input must be unique.
- Distinguish between relations that are functions and those that are not functions.
- Recognize functions in a variety of representations and a variety of contexts.
- Use tables to describe sequences recursively and with a formula in closed form.
- Understand and recognize arithmetic sequences as linear functions with whole number input values.
- Interpret the constant difference in an arithmetic sequence as the slope of the associated linear function.

- Identify relations and functions as linear or nonlinear.
- Translate among verbal, tabular, graphic, and algebraic representations of functions.

M8A4. Students will graph and analyze graphs of linear equations and inequalities.

- Interpret slope as a rate of change.
- Determine the meaning of the slope and y-intercept in a given situation.
- Graph equations of the form $y = mx + b$.
- Graph equations of the form $ax + by = c$.
- Graph the solution set of a linear inequality, identifying whether the solution set is an open or a closed half-plane.
- Determine the equation of a line given a graph, numerical information that defines the line or a context involving a linear relationship.
- Solve problems involving linear relationships.

M8A5. Students will understand systems of linear equations and inequalities and use them to solve problems.

- Given a problem context, write an appropriate system of linear equations or inequalities.
- Solve systems of equations graphically and algebraically, using technology as appropriate.
- Graph the solution set of a system of linear inequalities in two variables.
- Interpret solutions in problem contexts.

DATA ANALYSIS AND PROBABILITY

17% of CRCT

M8D1. Students will apply basic concepts of set theory.

- Demonstrate relationships among sets through use of Venn diagrams.
- Determine subsets, complements, intersection, and union of sets.
- Use set notation to denote elements of a set.

M8D2. Students will determine the number of outcomes related to a given event.

- Use tree diagrams to find the number of outcomes.
- Apply the addition and multiplication principles of counting.

M8D3. Students will use the basic laws of probability.

- Find the probability of simple independent events.
- Find the probability of compound independent events.

M8D4. Students will organize, interpret, and make inferences from statistical data

- Gather data that can be modeled with a linear function.
- Estimate and determine a line of best fit from a scatter plot.

TERMS AND SYMBOLS

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|---|---|---|
| <input type="checkbox"/> square root | <input type="checkbox"/> slope | <input type="checkbox"/> Pythagorean theorem |
| <input type="checkbox"/> radical | <input type="checkbox"/> intercept | <input type="checkbox"/> legs |
| <input type="checkbox"/> $\sqrt{\quad}$ | <input type="checkbox"/> linear equation | <input type="checkbox"/> hypotenuse |
| <input type="checkbox"/> rational | <input type="checkbox"/> linear inequality | <input type="checkbox"/> set |
| <input type="checkbox"/> irrational | <input type="checkbox"/> like terms | <input type="checkbox"/> { } |
| <input type="checkbox"/> exponent | <input type="checkbox"/> system of linear equations | <input type="checkbox"/> element (symbol) |
| <input type="checkbox"/> additive inverse | <input type="checkbox"/> transversal | <input type="checkbox"/> subset (symbol) |
| <input type="checkbox"/> multiplicative inverse | <input type="checkbox"/> vertical angles | <input type="checkbox"/> complement of a set |
| <input type="checkbox"/> scientific notation | <input type="checkbox"/> complementary angles | <input type="checkbox"/> intersection (symbol) |
| <input type="checkbox"/> significant digits | <input type="checkbox"/> supplementary angles | <input type="checkbox"/> Union |
| <input type="checkbox"/> inequality | <input type="checkbox"/> alternate interior angles | <input type="checkbox"/> Venn diagram |
| <input type="checkbox"/> sequence | <input type="checkbox"/> alternate exterior angles | <input type="checkbox"/> tree diagram |
| <input type="checkbox"/> arithmetic sequence | <input type="checkbox"/> corresponding angles | <input type="checkbox"/> multiplication principle |
| <input type="checkbox"/> recursive | <input type="checkbox"/> corresponding angles | <input type="checkbox"/> addition principle |
| <input type="checkbox"/> linear function | | <input type="checkbox"/> line of best fit |
| <input type="checkbox"/> function | | |
| <input type="checkbox"/> relation | | |
| <input type="checkbox"/> rate of change | | |