

**Subject** Math  
**Student** Grayson Medina  
**Student ID** ID:GrMedinaGr8S1\_PD  
**Student Grade** 8  
**Diagnostic** Diagnostic 3 (06/15/21)  
**Comparison Diagnostic**

Grade 6

California Common Core State Standards for Mathematics

Standard	Standard Description	Diagnostic 3
<i>Ratios and Proportional Relationships</i> Understand ratio concepts and use ratio reasoning to solve problems.		
6.RP.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.	✓
6.RP.2	Understand the concept of a unit rate $a/b$ associated with a ratio $a:b$ with $b \neq 0$ , and use rate language in the context of a ratio relationship.	✓
<i>Ratios and Proportional Relationships</i> Understand ratio concepts and use ratio reasoning to solve problems. 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.RP.3.a	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables . . .	✓
6.RP.3.b	Solve unit rate problems including those involving unit pricing and constant speed.	✓
6.RP.3.c	. . . Solve problems involving finding the whole, given a part and the percent.	✗
6.RP.3.c	Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity) . . .	✗
6.RP.3.d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	✗
<i>The Number System</i> Apply and extend previous understandings of multiplication and division to divide fractions by fractions.		
6.NS.1	Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.	✗
6.NS.1	. . . Compute quotients of fractions . . .	✗
6.NS.1	. . . [S]olve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.	✗
<i>The Number System</i> Compute fluently with multi-digit numbers and find common factors and multiples.		

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6.NS.2	Fluently divide multi-digit numbers using the standard algorithm.	✓
6.NS.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	✓
6.NS.3	Fluently . . . divide multi-digit decimals using the standard algorithm . . .	✓
6.NS.3	Fluently . . . multiply . . . multi-digit decimals using the standard algorithm . . .	✓
6.NS.4	. . . Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor.	✓
6.NS.4	Find . . . the least common multiple of two whole numbers less than or equal to 12 . . .	✗
6.NS.4	Find the greatest common factor of two whole numbers less than or equal to 100 . . .	✗
<i>The Number System</i> Apply and extend previous understandings of numbers to the system of rational numbers.		
6.NS.5	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.	✓
<i>The Number System</i> Apply and extend previous understandings of numbers to the system of rational numbers. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.		
6.NS.6.a	Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; 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.	✓
6.NS.6.b	Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.	✓
6.NS.6.c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.	✓

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6.NS.6.c	. . . [P]osition pairs of integers and other rational numbers on a coordinate plane.	✓
<i>The Number System</i> Apply and extend previous understandings of numbers to the system of rational numbers. Understand ordering and absolute value of rational numbers.		
6.NS.7.a	Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.	✓
6.NS.7.b	Write, interpret, and explain statements of order for rational numbers in real-world contexts.	✓
6.NS.7.c	Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.	✗
6.NS.7.d	Distinguish comparisons of absolute value from statements about order.	✗
<i>The Number System</i> Apply and extend previous understandings of numbers to the system of rational numbers.		
6.NS.8	Solve . . . mathematical problems by graphing points in all four quadrants of the coordinate plane. . .	✓
<i>Expressions and Equations</i> Apply and extend previous understandings of arithmetic to algebraic expressions.		
6.EE.1	Write and evaluate numerical expressions involving whole-number exponents.	✓
<i>Expressions and Equations</i> Apply and extend previous understandings of arithmetic to algebraic expressions. Write, read, and evaluate expressions in which letters stand for numbers.		
6.EE.2.a	Write expressions that record operations with numbers and with letters standing for numbers.	✓
6.EE.2.b	Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.	✓
6.EE.2.c	. . . 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).	✗

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6.EE.2.c	Evaluate expressions at specific values of their variables . . .	✓
<i>Expressions and Equations</i> Apply and extend previous understandings of arithmetic to algebraic expressions.		
6.EE.3	Apply the properties of operations to generate equivalent expressions.	✗
6.EE.4	Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).	✗
<i>Expressions and Equations</i> Reason about and solve one-variable equations and inequalities.		
6.EE.5	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	✓
6.EE.5	. . . Use substitution to determine whether a given number in a specified set makes an . . . inequality true.	✗
6.EE.5	. . . Use substitution to determine whether a given number in a specified set makes an equation . . . true.	✓
6.EE.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	✓
6.EE.7	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.EE.7	. . . [W]riting . . . equations of the form $x + p = q$ and $px = q$ for cases in which $p$ , $q$ and $x$ are all nonnegative rational numbers.	✗
6.EE.8	. . . Represent solutions of such inequalities on number line diagrams.	✗
6.EE.8	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. . .	✗
<i>Expressions and Equations</i> Represent and analyze quantitative relationships between dependent and independent variables.		

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6.EE.9	. . . Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.	✗
6.EE.9	. . . 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 . . .	✓
<i>Geometry</i> Solve real-world and mathematical problems involving area, surface area, and volume.		
6.G.1	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.G.1	Find the area of . . . 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.G.2	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. 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.	✗
6.G.3	. . . Use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	✓
6.G.3	Draw polygons in the coordinate plane given coordinates for the vertices . . . Apply these techniques in the context of solving real-world and mathematical problems.	✗
6.G.4	Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	✓
6.G.4	. . . Use . . . nets to find the surface area of . . . figures . . .	✗
<i>Statistics and Probability</i> Develop understanding of statistical variability.		
6.SP.2	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.	✗

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6.SP.3	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.	✗
<i>Statistics and Probability</i> Summarize and describe distributions.		
6.SP.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	✗
6.SP.4	Display numerical data in plots on a number line, including . . . box plots.	✗
6.SP.4	Display numerical data in plots on a number line, including . . . histograms.	✗
<i>Statistics and Probability</i> Summarize and describe distributions. Summarize numerical data sets in relation to their context, such as by:		
6.SP.5.c	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.SP.5.c	Giving quantitative measures of . . . variability ( . . . 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.	✗

## Grade 7

Standard	Standard Description	Diagnostic 3
<i>Ratios and Proportional Relationships</i> Analyze proportional relationships and use them to solve real-world and mathematical problems.		
7.RP.1	Compute unit rates associated with ratios of fractions . . .	✓
<i>Ratios and Proportional Relationships</i> Analyze proportional relationships and use them to solve real-world and mathematical problems. Recognize and represent proportional relationships between quantities.		

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7.RP.2.a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	✗
7.RP.2.b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	✗
7.RP.2.c	Represent proportional relationships by equations.	✗
7.RP.2.d	Explain what a point $(x, y)$ on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where $r$ is the unit rate.	✗
<i>Ratios and Proportional Relationships</i> Analyze proportional relationships and use them to solve real-world and mathematical problems.		
7.RP.3	Use proportional relationships to solve multistep ratio and percent problems.	✓
<i>The Number System</i> Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.		
7.NS.1.a	Describe situations in which opposite quantities combine to make 0.	✗
7.NS.1.b	Understand $p + q$ as the number located a distance $ q $ from $p$ , in the positive or negative direction depending on whether $q$ is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.	✗
7.NS.1.c	Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$ . Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	✗
7.NS.1.d	Apply properties of operations as strategies to add and subtract rational numbers.	✗
<i>The Number System</i> Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.		

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7.NS.2.a	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	✗
7.NS.2.b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If $p$ and $q$ are integers, then $-(p/q) = (-p)/q = p/(-q)$ . Interpret quotients of rational numbers by describing real-world contexts.	✗
7.NS.2.c	Apply properties of operations as strategies to multiply and divide rational numbers.	✗
7.NS.2.d	Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	✗
<i>The Number System</i> Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.		
7.NS.3	Solve real-world and mathematical problems involving the four operations with rational numbers.	✓
7.NS.3	Solve . . . mathematical problems involving the four operations with rational numbers.	✗
<i>Expressions and Equations</i> Use properties of operations to generate equivalent expressions.		
7.EE.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	✗
7.EE.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.	✗
<i>Expressions and Equations</i> Solve real-life and mathematical problems using numerical and algebraic expressions and equations.		
7.EE.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.	✓
7.EE.3	Solve multi-step . . . mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals) . . .	✗

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7.EE.3	Solve multi-step real-life . . . problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals) . . .	✗
<p><i>Expressions and Equations</i>                      Solve real-life and mathematical problems using numerical and algebraic expressions and equations. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.</p>		
7.EE.4.a	Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$ , where $p$ , $q$ , and $r$ are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.	✓
7.EE.4.a	. . . Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.	✗
7.EE.4.a	Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$ , where $p$ , $q$ , and $r$ are specific rational numbers. Solve equations of these forms fluently . . .	✗
7.EE.4.b	Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$ , where $p$ , $q$ , and $r$ are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	✗
7.EE.4.b	Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$ , where $p$ , $q$ , and $r$ are specific rational numbers. Graph the solution set of the inequality . . .	✗
<p><i>Geometry</i>                      Draw, construct, and describe geometrical figures and describe the relationships between them.</p>		
7.G.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	✗
7.G.2	Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	✗
<p><i>Geometry</i>                      Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.</p>		
7.G.4	Know the formulas for the area and circumference of a circle and use them to solve problems . . .	✗

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7.G.4	Know the formulas for the area and circumference of a circle and use them to solve problems; . . .	✗
7.G.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	✗
7.G.6	Solve real-world and mathematical problems involving . . . surface area of . . . three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	✗
7.G.6	Solve real-world and mathematical problems involving . . . volume . . . of . . . three-dimensional objects composed of . . . cubes . . . and right prisms.	✗
7.G.6	Solve real-world and mathematical problems involving area . . . of two- . . . dimensional objects composed of triangles, quadrilaterals, [and] polygons . . .	✗
<i>Statistics and Probability</i> Use random sampling to draw inferences about a population.		
7.SP.1	Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.	✗
7.SP.2	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest . . .	✗
<i>Statistics and Probability</i> Draw informal comparative inferences about two populations.		
7.SP.3	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.	✗
7.SP.4	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.	✗
<i>Statistics and Probability</i> Investigate chance processes and develop, use, and evaluate probability models.		

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7.SP.5	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	✗
7.SP.6	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.	✗
<i>Statistics and Probability</i> Investigate chance processes and develop, use, and evaluate probability models. Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.		
7.SP.7.a	Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.	✗
7.SP.7.b	Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.	✗
<i>Statistics and Probability</i> Investigate chance processes and develop, use, and evaluate probability models. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.		
7.SP.8.a	Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	✗
7.SP.8.b	Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.	✗
7.SP.8.b	Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. ...	✗
7.SP.8.c	... Use a simulation to generate frequencies for compound events.	✗

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<i>The Number System</i> Know that there are numbers that are not rational, and approximate them by rational numbers.		
8.NS.1	Know that numbers that are not rational are called irrational . . .	✗
8.NS.2	Use rational approximations of irrational numbers to compare the size of irrational numbers . . .	✗
<i>Expressions and Equations</i> Work with radicals and integer exponents.		
8.EE.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.	✗
8.EE.2	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$ , where $p$ is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	✗
8.EE.3	Use numbers expressed in the form of a single digit times an integer power of 10 . . . to express how many times as much one is than the other.	✗
8.EE.4	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. . . .	✗
<i>Expressions and Equations</i> Understand the connections between proportional relationships, lines, and linear equations.		
8.EE.5	. . . Compare two different proportional relationships represented in different ways.	✗
8.EE.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph . . .	✗
8.EE.6	Use similar triangles to explain why the slope $m$ is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at $b$ .	✗
<i>Expressions and Equations</i> Analyze and solve linear equations and pairs of simultaneous linear equations. Solve linear equations in one variable.		

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8.EE.7.a	Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$ , $a = a$ , or $a = b$ results (where $a$ and $b$ are different numbers).	✗
8.EE.7.b	Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	✗
<i>Expressions and Equations</i> Analyze and solve linear equations and pairs of simultaneous linear equations. Analyze and solve pairs of simultaneous linear equations.		
8.EE.8.a	Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.	✗
8.EE.8.b	Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection.	✗
8.EE.8.b	Solve systems of two linear equations in two variables algebraically . . .	✗
8.EE.8.c	Solve . . . mathematical problems leading to two linear equations in two variables.	✗
8.EE.8.c	Solve real-world . . . problems leading to two linear equations in two variables.	✗
<i>Functions</i> Define, evaluate, and compare functions.		
8.F.1	Understand that a function is a rule that assigns to each input exactly one output. . .	✗
8.F.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	✗
8.F.3	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.	✗
<i>Functions</i> Use functions to model relationships between quantities.		

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8.F.4	. . . Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. . .	✗
8.F.4	. . . Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	✗
8.F.4	Construct a function to model a linear relationship between two quantities. . .	✗
8.F.5	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	✗
<i>Geometry</i> Understand congruence and similarity using physical models, transparencies, or geometry software. Verify experimentally the properties of rotations, reflections, and translations:		
8.G.1.a	Verify experimentally the properties of rotations, reflections, and translations: Lines are taken to lines, and line segments to line segments of the same length.	✗
8.G.1.b	Verify experimentally the properties of rotations, reflections, and translations: Angles are taken to angles of the same measure.	✗
8.G.1.c	Verify experimentally the properties of rotations, reflections, and translations: Parallel lines are taken to parallel lines.	✗
<i>Geometry</i> Understand congruence and similarity using physical models, transparencies, or geometry software.		
8.G.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	✗
8.G.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	✗
8.G.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	✗

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Standard	Standard Description	Diagnostic 3
8.G.5	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.	✗
8.G.5	... establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, ...	✗
<i>Geometry</i> <i>Understand and apply the Pythagorean Theorem.</i>		
8.G.6	Explain a proof of the Pythagorean Theorem and its converse.	✗
8.G.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two . . . dimensions.	✗
8.G.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	✗
<i>Geometry</i> <i>Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.</i>		
8.G.9	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	✗
<i>Statistics and Probability</i> <i>Investigate patterns of association in bivariate data.</i>		
8.SP.1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	✗
8.SP.2	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	✗
8.SP.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.	✗

Algebra I (Gr. 7-12)

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Standard	Standard Description	Diagnostic 3
<i>Number and Quantity</i> <i>The Real Number System</i> <i>Extend the properties of exponents to rational exponents.</i>		
N-RN.1	Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.	✗
N-RN.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.	✗
<i>Number and Quantity</i> <i>Quantities</i> <i>Reason quantitatively and use units to solve problems.</i>		
N-Q.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	✗
N-Q.2	Define appropriate quantities for the purpose of descriptive modeling.	✗
N-Q.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	✗
<i>Algebra</i> <i>Seeing Structure in Expressions</i> <i>Interpret the structure of expressions</i> <i>Interpret expressions that represent a quantity in terms of its context.</i>		
A-SSE.1.a	Interpret parts of an expression, such as terms, factors, and coefficients.	✗
A-SSE.1.b	Interpret complicated [quadratic and exponential] expressions by viewing one or more of their parts as a single entity.	✗
<i>Algebra</i> <i>Seeing Structure in Expressions</i> <i>Interpret the structure of expressions</i>		
A-SSE.2	Use the structure of an [quadratic and exponential] expression to identify ways to rewrite it.	✗
<i>Algebra</i> <i>Arithmetic with Polynomials and Rational Expressions</i> <i>Perform arithmetic operations on polynomials</i>		

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Standard	Standard Description	Diagnostic 3
A-APR.1	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	✗
<i>Algebra</i> <i>Creating Equations</i> <i>Create equations that describe numbers or relationships</i>		
A-CED.1	Create equations and inequalities in one variable including ones with absolute value and use them to solve problems.	✗
A-CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	✗
A-CED.2	Create [linear and simple exponential] equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	✗
A-CED.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.	✗
A-CED.3	Represent constraints by [linear] equations or inequalities, and by systems of [linear] equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.	✗
A-CED.4	Rearrange formulas [including simple roots] to highlight a quantity of interest, using the same reasoning as in solving equations.	✗
<i>Algebra</i> <i>Reasoning with Equations and Inequalities</i> <i>Understand solving equations as a process of reasoning and explain the reasoning</i>		
A-REI.1	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	✗
<i>Algebra</i> <i>Reasoning with Equations and Inequalities</i> <i>Solve equations and inequalities in one variable</i>		
A-REI.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	✗

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Standard	Standard Description	Diagnostic 3
A-REI.3.1	Solve one-variable equations and inequalities involving absolute value, graphing the solutions and interpreting them in context.	✗
<i>Algebra</i> <i>Reasoning with Equations and Inequalities</i> <i>Solve systems of equations</i>		
A-REI.5	Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	✗
A-REI.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	✗
A-REI.7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.	✗
<i>Algebra</i> <i>Reasoning with Equations and Inequalities</i> <i>Represent and solve equations and inequalities graphically</i>		
A-REI.10	Understand that the graph of an [linear and simple exponential] equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).	✗
A-REI.10	Understand that the graph of an [polynomial, rational, radical, absolute value and exponential] equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).	✗
A-REI.11	Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$ ; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.	✗
A-REI.12	Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	✗
<i>Functions</i> <i>Interpreting Functions</i> <i>Understand the concept of a function and use function notation</i>		

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Standard	Standard Description	Diagnostic 3
F-IF.1	Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If $f$ is a function and $x$ is an element of its domain, then $f(x)$ denotes the output of $f$ corresponding to the input $x$ . The graph of $f$ is the graph of the equation $y = f(x)$ .	×
F-IF.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	×
F-IF.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.	×
<i>Functions</i> <i>Interpreting Functions</i> <i>Interpret functions that arise in applications in terms of the context</i>		
F-IF.4	For a [quadratic] function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.	×
F-IF.5	Relate the domain of a [linear or exponential] function to its graph and, where applicable, to the quantitative relationship it describes.	×
F-IF.5	Relate the domain of a [quadratic] function to its graph and, where applicable, to the quantitative relationship it describes.	×
F-IF.6	Calculate and interpret the average rate of change of a [quadratic or exponential] function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	×
<i>Functions</i> <i>Interpreting Functions</i> <i>Analyze functions using different representations</i> <i>Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.</i>		
F-IF.7.a	Graph linear and quadratic functions and show intercepts, maxima, and minima.	×
F-IF.7.b	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	×
F-IF.7.e	Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	×

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Standard	Standard Description	Diagnostic 3
<i>Functions</i> <i>Interpreting Functions</i> Analyze functions using different representations Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.		
F-IF.8.a	Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.	✗
F-IF.8.b	Use the properties of exponents to interpret expressions for exponential functions.	✗
<i>Functions</i> <i>Linear, Quadratic, and Exponential Models</i> Interpret expressions for functions in terms of the situation they model		
F-LE.6	Apply quadratic functions to physical problems, such as the motion of an object under the force of gravity.	✗
<i>Statistics and Probability</i> <i>Interpreting Categorical and Quantitative Data</i> Summarize, represent, and interpret data on a single count or measurement variable		
S-ID.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).	✗
S-ID.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	✗
S-ID.3	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).	✗
<i>Statistics and Probability</i> <i>Interpreting Categorical and Quantitative Data</i> Summarize, represent, and interpret data on two categorical and quantitative variables		
S-ID.5	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.	✗

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Standard	Standard Description	Diagnostic 3
<i>Statistics and Probability</i> <i>Interpreting Categorical and Quantitative Data</i> <i>Summarize, represent, and interpret data on two categorical and quantitative variables</i> <i>Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.</i>		
S-ID.6.a	Fit a function to the data; use functions fitted to data to solve problems in the context of the data.	✗
S-ID.6.b	Informally assess the fit of a function by plotting and analyzing residuals.	✗
S-ID.6.c	Fit a linear function for a scatter plot that suggests a linear association.	✗
<i>Statistics and Probability</i> <i>Interpreting Categorical and Quantitative Data</i> <i>Interpret linear models</i>		
S-ID.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	✗
S-ID.8	Compute (using technology) and interpret the correlation coefficient of a linear fit.	✗
S-ID.9	Distinguish between correlation and causation.	✗
<i>Number and Quantity</i> <i>Quantities</i> <i>Reason quantitatively and use units to solve problems.</i>		
N-Q.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	✗
N-Q.2	Define appropriate quantities for the purpose of descriptive modeling.	✗
N-Q.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	✗
<i>Algebra</i> <i>Seeing Structure in Expressions</i> <i>Interpret the structure of expressions</i> <i>Interpret expressions that represent a quantity in terms of its context.</i>		
A-SSE.1.a	Interpret parts of an expression, such as terms, factors, and coefficients.	✗

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Standard	Standard Description	Diagnostic 3
A-SSE.1.b	Interpret complicated [quadratic and exponential] expressions by viewing one or more of their parts as a single entity.	✗
<i>Algebra</i> <i>Creating Equations</i> <i>Create equations that describe numbers or relationships</i>		
A-CED.1	Create equations and inequalities in one variable including ones with absolute value and use them to solve problems.	✗
A-CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	✗
A-CED.2	Create [linear and simple exponential] equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	✗
A-CED.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.	✗
A-CED.3	Represent constraints by [linear] equations or inequalities, and by systems of [linear] equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.	✗
A-CED.4	Rearrange formulas [including simple roots] to highlight a quantity of interest, using the same reasoning as in solving equations.	✗
<i>Algebra</i> <i>Reasoning with Equations and Inequalities</i> <i>Understand solving equations as a process of reasoning and explain the reasoning</i>		
A-REI.1	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	✗
<i>Algebra</i> <i>Reasoning with Equations and Inequalities</i> <i>Solve equations and inequalities in one variable</i>		
A-REI.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	✗

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<b>Diagnostic</b>	Diagnostic 3 (06/15/21)
<b>Comparison Diagnostic</b>	

Standard	Standard Description	Diagnostic 3
A-REI.3.1	Solve one-variable equations and inequalities involving absolute value, graphing the solutions and interpreting them in context.	×
<i>Algebra</i> <i>Reasoning with Equations and Inequalities</i> <i>Solve systems of equations</i>		
A-REI.5	Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	×
A-REI.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	×
<i>Algebra</i> <i>Reasoning with Equations and Inequalities</i> <i>Represent and solve equations and inequalities graphically</i>		
A-REI.10	Understand that the graph of an [linear and simple exponential] equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).	×
A-REI.10	Understand that the graph of an [polynomial, rational, radical, absolute value and exponential] equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).	×
A-REI.11	Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$ ; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.	×
A-REI.12	Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	×
<i>Functions</i> <i>Interpreting Functions</i> <i>Understand the concept of a function and use function notation</i>		
F-IF.1	Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If $f$ is a function and $x$ is an element of its domain, then $f(x)$ denotes the output of $f$ corresponding to the input $x$ . The graph of $f$ is the graph of the equation $y = f(x)$ .	×

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Standard	Standard Description	Diagnostic 3
F-IF.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	✗
F-IF.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.	✗
<i>Functions</i> <i>Interpreting Functions</i> <i>Interpret functions that arise in applications in terms of the context</i>		
F-IF.4	For a [quadratic] function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.	✗
F-IF.5	Relate the domain of a [linear or exponential] function to its graph and, where applicable, to the quantitative relationship it describes.	✗
F-IF.5	Relate the domain of a [quadratic] function to its graph and, where applicable, to the quantitative relationship it describes.	✗
F-IF.6	Calculate and interpret the average rate of change of a [quadratic or exponential] function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	✗
<i>Functions</i> <i>Interpreting Functions</i> <i>Analyze functions using different representations</i> <i>Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.</i>		
F-IF.7.a	Graph linear and quadratic functions and show intercepts, maxima, and minima.	✗
F-IF.7.e	Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	✗
<i>Geometry</i> <i>Congruence</i> <i>Experiment with transformations in the plane</i>		
G-CO.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	✗

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Standard	Standard Description	Diagnostic 3
G-CO.2	Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).	×
G-CO.3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	×
G-CO.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	×
G-CO.5	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	×
<i>Geometry</i> <i>Congruence</i> <i>Understand congruence in terms of rigid motions</i>		
G-CO.6	Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	×
G-CO.7	Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.	×
G-CO.8	Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.	×
<i>Geometry</i> <i>Expressing Geometric Properties with Equations</i> <i>Use coordinates to prove simple geometric theorems algebraically</i>		
G-GPE.4	Use coordinates to prove simple geometric theorems algebraically.	×
<i>Statistics and Probability</i> <i>Interpreting Categorical and Quantitative Data</i> <i>Summarize, represent, and interpret data on a single count or measurement variable</i>		
S-ID.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).	×

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Standard	Standard Description	Diagnostic 3
S-ID.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	✗
S-ID.3	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).	✗
<i>Statistics and Probability</i> <i>Interpreting Categorical and Quantitative Data</i> <i>Summarize, represent, and interpret data on two categorical and quantitative variables</i>		
S-ID.5	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.	✗
<i>Statistics and Probability</i> <i>Interpreting Categorical and Quantitative Data</i> <i>Summarize, represent, and interpret data on two categorical and quantitative variables</i> <i>Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.</i>		
S-ID.6.a	Fit a function to the data; use functions fitted to data to solve problems in the context of the data.	✗
S-ID.6.b	Informally assess the fit of a function by plotting and analyzing residuals.	✗
S-ID.6.c	Fit a linear function for a scatter plot that suggests a linear association.	✗
<i>Statistics and Probability</i> <i>Interpreting Categorical and Quantitative Data</i> <i>Interpret linear models</i>		
S-ID.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	✗
S-ID.8	Compute (using technology) and interpret the correlation coefficient of a linear fit.	✗
S-ID.9	Distinguish between correlation and causation.	✗

Geometry (Gr. 8-12)

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Standard	Standard Description	Diagnostic 3
<i>Geometry Congruence Experiment with transformations in the plane</i>		
G-CO.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	×
G-CO.2	Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).	×
G-CO.3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	×
G-CO.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	×
G-CO.5	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	×
<i>Geometry Congruence Understand congruence in terms of rigid motions</i>		
G-CO.6	Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	×
G-CO.7	Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.	×
G-CO.8	Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.	×
<i>Geometry Congruence Prove geometric theorems</i>		
G-CO.9	Prove theorems about lines and angles.	×

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Standard	Standard Description	Diagnostic 3
<i>Geometry</i> <i>Similarity, Right Triangles, and Trigonometry</i> <i>Understand similarity in terms of similarity transformations</i> <i>Verify experimentally the properties of dilations given by a center and a scale factor:</i>		
G-SRT.1.a	A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.	✗
G-SRT.1.b	The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	✗
<i>Geometry</i> <i>Similarity, Right Triangles, and Trigonometry</i> <i>Understand similarity in terms of similarity transformations</i>		
G-SRT.2	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.	✗
G-SRT.3	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.	✗
<i>Geometry</i> <i>Similarity, Right Triangles, and Trigonometry</i> <i>Prove theorems involving similarity</i>		
G-SRT.4	Prove theorems about triangles.	✗
G-SRT.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	✗
<i>Geometry</i> <i>Similarity, Right Triangles, and Trigonometry</i> <i>Define trigonometric ratios and solve problems involving right triangles</i>		
G-SRT.6	Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	✗
G-SRT.7	Explain and use the relationship between the sine and cosine of complementary angles.	✗
G-SRT.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	✗

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G-SRT.8.1	Derive and use the trigonometric ratios for special right triangles ( $30^\circ, 60^\circ, 90^\circ$ and $45^\circ, 45^\circ, 90^\circ$ ).	✗
<i>Geometry</i> <i>Circles</i> <i>Understand and apply theorems about circles</i>		
G-C.1	Prove that all circles are similar.	✗
G-C.2	Identify and describe relationships among inscribed angles, radii, and chords.	✗
G-C.3	Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	✗
G-C.4	Construct a tangent line from a point outside a given circle to the circle.	✗
<i>Geometry</i> <i>Circles</i> <i>Find arc lengths and areas of sectors of circles</i>		
G-C.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector. Convert between degrees and radians.	✗
<i>Geometry</i> <i>Expressing Geometric Properties with Equations</i> <i>Use coordinates to prove simple geometric theorems algebraically</i>		
G-GPE.4	Use coordinates to prove simple geometric theorems algebraically.	✗
<i>Geometry</i> <i>Geometric Measurement and Dimension</i> <i>Explain volume formulas and use them to solve problems</i>		
G-GMD.1	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone.	✗
G-GMD.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.	✗

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Standard	Standard Description	Diagnostic 3
<i>Geometry</i> <i>Geometric Measurement and Dimension</i> <i>Visualize relationships between two-dimensional and three-dimensional objects</i>		
G-GMD.5	Know that the effect of a scale factor $k$ greater than zero on length, area, and volume is to multiply each by $k$ , $k^2$ , and $k^3$ , respectively; determine length, area and volume measures using scale factors.	✗
<i>Statistics and Probability</i> <i>Conditional Probability and the Rules of Probability</i> <i>Understand independence and conditional probability and use them to interpret data</i>		
S-CP.3	Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$ , and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.	✗
S-CP.4	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.	✗
S-CP.5	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.	✗
<i>Statistics and Probability</i> <i>Conditional Probability and the Rules of Probability</i> <i>Use the rules of probability to compute probabilities of compound events in a uniform probability model</i>		
S-CP.6	Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.	✗
S-CP.7	Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ , and interpret the answer in terms of the model.	✗
<i>Statistics and Probability</i> <i>Using Probability to Make Decisions</i> <i>Use probability to evaluate outcomes of decisions</i>		
S-MD.6	Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	✗
S-MD.7	Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).	✗

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Standard	Standard Description	Diagnostic 3
<i>Number and Quantity</i> <i>The Real Number System</i> <i>Extend the properties of exponents to rational exponents.</i>		
N-RN.1	Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.	✗
N-RN.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.	✗
<i>Number and Quantity</i> <i>The Complex Number System</i> <i>Perform arithmetic operations with complex numbers.</i>		
N-CN.1	Know there is a complex number $i$ such that $i^2 = -1$ , and every complex number has the form $a + bi$ with $a$ and $b$ real.	✗
N-CN.2	Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	✗
<i>Number and Quantity</i> <i>The Complex Number System</i> <i>Use complex numbers in polynomial identities and equations.</i>		
N-CN.7	Solve quadratic equations with real coefficients that have complex solutions.	✗
N-CN.8	Extend polynomial identities to the complex numbers.	✗
N-CN.9	Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	✗
<i>Algebra</i> <i>Seeing Structure in Expressions</i> <i>Interpret the structure of expressions</i> <i>Interpret expressions that represent a quantity in terms of its context.</i>		
A-SSE.1.a	Interpret parts of an expression, such as terms, factors, and coefficients.	✗
A-SSE.1.b	Interpret complicated [quadratic and exponential] expressions by viewing one or more of their parts as a single entity.	✗

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Standard	Standard Description	Diagnostic 3
<i>Algebra</i> <i>Seeing Structure in Expressions</i>		
<i>Interpret the structure of expressions</i>		
A-SSE.2	Use the structure of an [quadratic and exponential] expression to identify ways to rewrite it.	×
<i>Algebra</i> <i>Arithmetic with Polynomials and Rational Expressions</i> <i>Perform arithmetic operations on polynomials</i>		
A-APR.1	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	×
<i>Algebra</i> <i>Creating Equations</i> <i>Create equations that describe numbers or relationships</i>		
A-CED.1	Create equations and inequalities in one variable including ones with absolute value and use them to solve problems.	×
A-CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	×
A-CED.2	Create [linear and simple exponential] equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	×
A-CED.4	Rearrange formulas [including simple roots] to highlight a quantity of interest, using the same reasoning as in solving equations.	×
<i>Algebra</i> <i>Reasoning with Equations and Inequalities</i> <i>Solve systems of equations</i>		

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A-REI.7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.	✗
<i>Functions</i> <i>Interpreting Functions</i> <i>Interpret functions that arise in applications in terms of the context</i>		
F-IF.4	For a [quadratic] function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.	✗
F-IF.5	Relate the domain of a [linear or exponential] function to its graph and, where applicable, to the quantitative relationship it describes.	✗
F-IF.5	Relate the domain of a [quadratic] function to its graph and, where applicable, to the quantitative relationship it describes.	✗
F-IF.6	Calculate and interpret the average rate of change of a [quadratic or exponential] function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	✗
<i>Functions</i> <i>Interpreting Functions</i> <i>Analyze functions using different representations</i> <i>Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.</i>		
F-IF.7.a	Graph linear and quadratic functions and show intercepts, maxima, and minima.	✗
F-IF.7.b	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	✗
<i>Functions</i> <i>Interpreting Functions</i> <i>Analyze functions using different representations</i> <i>Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.</i>		
F-IF.8.a	Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.	✗
F-IF.8.b	Use the properties of exponents to interpret expressions for exponential functions.	✗

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Standard	Standard Description	Diagnostic 3
<i>Functions</i> <i>Linear, Quadratic, and Exponential Models</i> <i>Interpret expressions for functions in terms of the situation they model</i>		
F-LE.6	Apply quadratic functions to physical problems, such as the motion of an object under the force of gravity.	×
<i>Geometry</i> <i>Congruence</i> <i>Prove geometric theorems</i>		
G-CO.9	Prove theorems about lines and angles.	×
<i>Geometry</i> <i>Similarity, Right Triangles, and Trigonometry</i> <i>Understand similarity in terms of similarity transformations</i> <i>Verify experimentally the properties of dilations given by a center and a scale factor:</i>		
G-SRT.1.a	A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.	×
G-SRT.1.b	The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	×
<i>Geometry</i> <i>Similarity, Right Triangles, and Trigonometry</i> <i>Understand similarity in terms of similarity transformations</i>		
G-SRT.2	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.	×
G-SRT.3	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.	×
<i>Geometry</i> <i>Similarity, Right Triangles, and Trigonometry</i> <i>Prove theorems involving similarity</i>		
G-SRT.4	Prove theorems about triangles.	×
G-SRT.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	×

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Standard	Standard Description	Diagnostic 3
<p><i>Geometry</i>  <i>Similarity, Right Triangles, and Trigonometry</i>  <i>Define trigonometric ratios and solve problems involving right triangles</i></p>		
G-SRT.6	Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	×
G-SRT.7	Explain and use the relationship between the sine and cosine of complementary angles.	×
G-SRT.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	×
G-SRT.8.1	Derive and use the trigonometric ratios for special right triangles ( $30^\circ, 60^\circ, 90^\circ$ and $45^\circ, 45^\circ, 90^\circ$ ).	×
<p><i>Geometry</i>  <i>Circles</i>  <i>Understand and apply theorems about circles</i></p>		
G-C.1	Prove that all circles are similar.	×
G-C.2	Identify and describe relationships among inscribed angles, radii, and chords.	×
G-C.3	Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	×
G-C.4	Construct a tangent line from a point outside a given circle to the circle.	×
<p><i>Geometry</i>  <i>Circles</i>  <i>Find arc lengths and areas of sectors of circles</i></p>		

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Standard	Standard Description	Diagnostic 3
G-C.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector. Convert between degrees and radians.	×
<i>Geometry</i> <i>Expressing Geometric Properties with Equations</i> <i>Use coordinates to prove simple geometric theorems algebraically</i>		
G-GPE.4	Use coordinates to prove simple geometric theorems algebraically.	×
<i>Geometry</i> <i>Geometric Measurement and Dimension</i> <i>Explain volume formulas and use them to solve problems</i>		
G-GMD.1	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone.	×
G-GMD.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.	×
G-GMD.5	Know that the effect of a scale factor $k$ greater than zero on length, area, and volume is to multiply each by $k$ , $k^2$ , and $k^3$ , respectively; determine length, area and volume measures using scale factors.	×
<i>Statistics and Probability</i> <i>Conditional Probability and the Rules of Probability</i> <i>Understand independence and conditional probability and use them to interpret data</i>		
S-CP.3	Understand the conditional probability of $A$ given $B$ as $P(A \text{ and } B)/P(B)$ , and interpret independence of $A$ and $B$ as saying that the conditional probability of $A$ given $B$ is the same as the probability of $A$ , and the conditional probability of $B$ given $A$ is the same as the probability of $B$ .	×
S-CP.4	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.	×
S-CP.5	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.	×
<i>Statistics and Probability</i> <i>Conditional Probability and the Rules of Probability</i> <i>Use the rules of probability to compute probabilities of compound events in a uniform probability model</i>		

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Standard	Standard Description	Diagnostic 3
S-CP.6	Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.	×
S-CP.7	Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ , and interpret the answer in terms of the model.	×
<i>Statistics and Probability</i> <i>Using Probability to Make Decisions</i> <i>Use probability to evaluate outcomes of decisions</i>		
S-MD.6	Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	×
S-MD.7	Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).	×