For the Wyoming Department of Education

Comparison of the Common Core Standards to the Wyoming Mathematics Standards, High School

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	Mathematics Gap Analysis	
	The Common Core Standards Compared to the Wyoming Standards	
Common Core State Standards	**Alignment Rating with Comment**	**Wyoming Content Standards**
High School - Number and Quantity		
HS.N.RN. The Real Number System		
HS.N.RN.1. Understand that the laws of exponents for positive integer exponents follow from an understanding of exponents as indicating repeated multiplication, and from the associative law for multiplication.	Partial alignment (specificity): CC specifies which types of real numbers and how they should be applied. Partial alignment (specificity): CC specifies which properties of the real number system to be applied.	MA11.1.1 Students represent and apply real numbers in a variety of forms. MA11.1.2 Students apply the structure and properties of the real number system.
HS.N.RN.2. Understand that the definition of the meaning of zero, positive rational, and negative exponents follows from extending the laws of exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, since $(5^{1/3})^3 = 5^{(1/3)\cdot 3} = 5^1 = 5$, $5^{1/3}$ is a cube root of 5.	Partial alignment (specificity): CC specifies which types of real numbers and how they should be applied. Partial alignment (specificity): CC specifies which properties of the real number system to be applied.	MA11.1.1 Students represent and apply real numbers in a variety of forms. MA11.1.2 Students apply the structure and properties of the real number system.
HS.N.RN.3. Understand that sums and products of rational numbers are rational.	Partial alignment (specificity): CC specifies which types of real numbers and how they should be applied. Partial alignment (specificity): CC specifies which properties of the real number system to be applied.	MA11.1.1 Students represent and apply real numbers in a variety of forms. MA.11.1.2 Students apply the structure and properties of the real number system.

HS.N.RN.4. Understand that the sum of a rational number and an irrational number is irrational, and that the product of a nonzero rational number and an irrational number is irrational.	Partial alignment (specificity): CC specifies which types of real numbers and how they should be applied. Partial alignment (specificity): CC specifies which properties of the real number system to be applied.	MA11.1.1 Students represent and apply real numbers in a variety of forms. MA11.1.2 Students apply the structure and properties of the real number system.
HS.N.RN.5. Rewrite expressions using the laws of exponents. For example, $(5^{1/2})^3 = 5^{3/2}$ and $1/5 = 5^{-1}$	Partial alignment (specificity): CC specifies which types of real numbers and how they should be applied. Partial alignment (specificity): CC specifies which properties of the real number system to be applied.	MA11.1.1 Students represent and apply real numbers in a variety of forms. MA11.1.2 Students apply the structure and properties of the real number system.
HS.N.Q. Quantities		
HS.N.Q.1. Understand that the magnitude of a quantity is independent of the unit used to measure it. For example, the density of a liquid does not change when it is measured in another unit. Rather, its measure changes. The chosen unit "measures" the quantity by giving it a numerical value ("the density of lead is 11.3 times that of water").	Partial alignment (implicit): Content is similar, with some difference in emphasis. The WY content emphasizes the skill, while the CC content emphasizes the concept. In addition, the WY content includes estimation strategies to solve problems.	MA11.3.1 Students apply estimation and measurement using the appropriate methods and units to solve problems involving length, weight/mass, area, surface area, volume, and angle measure.
HS.N.Q.2. Use units as a way to understand problems and to guide the solution of multi-step problems, involving, e.g., acceleration, currency conversions, derived quantities such as person-hours and heating degree days, social science rates such as per-capita income, and rates in everyday life such as points scored per game.	Partial alignment (implicit): Content is similar, with some difference in emphasis. The CC content is about using unit analysis to understand problems and guide solutions, while the WY content is about using the appropriate units when solving problems.	MA11.3.1 Students apply estimation and measurement using the appropriate methods and units to solve problems involving length, weight/mass, area, surface area, volume, and angle measure.

HS.N.Q.3. Define metrics for the purpose of descriptive modeling. For example, find a good measure of overall highway safety; propose and debate measures such as fatalities per year, fatalities per year per driver, or fatalities per vehicle-mile traveled.	No match	
N.Q.4. Add, subtract, multiply, and divide numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	No match	
HS.N.Q.5. Use and interpret quantities and units correctly in algebraic formulas.	Weak alignment: WY and CC lack clarity about the scope.	MA11.4.1 Students use algebraic concepts, symbols, and skills to represent and solve real-world problems.
HS.N.Q.6. Use and interpret quantities and units correctly in graphs and data displays (function graphs, data tables, scatter plots, and other visual displays of quantitative information). Generate graphs and data displays using technology.	Partial alignment (specificity): CC specifies the way that data should be organized.	MA11.5.4 Students determine, collect, organize, and analyze relevant data needed to make conclusions.
HS.N.CN. The Complex Number System		
HS.N.CN.1. Understand that the relation $i^2 = –1$ and the commutative, associative, and distributive laws can be used to calculate with complex numbers.	No match	
HS.N.CN.6. Add, subtract, and multiply complex numbers.	No match	

HS.N.VM. Vector Quantities and Matrices		
High School—Algebra		
HS.A.SSE. Seeing Structure in Expressions		
HS.A.SSE.1. Understand that different forms of an expression may reveal different properties of the quantity in question; a purpose in transforming expressions is to find those properties. Examples: factoring a quadratic expression reveals the zeros of the function it defines, and putting the expression in vertex form reveals its maximum.	No match	
HS.A.SSE.2. Understand that complicated expressions can be interpreted by viewing one or more of their parts as single entities.	No match	
HS.A.SSE.3. Interpret an expression that represents a quantity in terms of the context. Include interpreting parts of an expression, such as terms, factors and coefficients.	Partial alignment (specificity): CC specifies how to interpret an expression as well as parts of an expression.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.SSE.4. Factor, expand, and complete the square in quadratic expressions.	Partial alignment (specificity): CC specifies factoring, expanding, and completing the square.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.SSE.5. See expressions in different ways that suggest ways of transforming them. For example, see $x^4 – y^4$ as $(x^2)^2 – (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 – y^2)(x^2 + y^2)$.	No match	
HS.A.SSE.6. Rewrite expressions using the laws of exponents. For example, $(x^{1/2})^3 = x^{3/2}$ and $1/x = x^{-1}$.	No match	
HS.A.SSE.7. Use the laws of exponents to interpret expressions for exponential functions, recognizing positive rational exponents as indicating roots of the base and negative exponents as indicating the reciprocal of a power. For example, identify the per unit percentage change in functions such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, and conclude whether it represents exponential	No match	

growth or decay. Recognize that any nonzero number raised to the zero power is 1, for example, $12(1.05)^0 = 12$. Avoid common errors such as confusing $6(1.05)^t$ with $(6 \cdot 1.05)^t$ and $5(0.03)^t$ with $5(1.03)^t$.		
HS.A.APR. Arithmetic with Polynomials and Rational Expressions		
HS.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.	No match	
HS.A.APR.2. Understand that polynomial identities become true statements no matter which real numbers are substituted. For example, the polynomial identity $(x^2 + y^2)^2 = (x^2 – y^2)^2 + (2xy)^2$ can be used to generate Pythagorean triples.	No match	
HS.A.APR.3. Understand the Remainder Theorem: For a polynomial p(x) and a number a, the remainder on division by x – a is p(a), so p(a) = 0 if and only if (x – a) is a factor of p(x).	No match	
HS.A.APR.6. Add, subtract and multiply polynomials.	No match	
HS.A.APR.7. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the polynomial.	No match	
HS.A.APR.8. Transform simple rational expressions using the commutative, associative, and distributive laws, and the inverse relationship between multiplication and division.	Partial alignment (specificity): CC specifies rational expressions and which properties should be used to evaluate these expressions. Partial alignment (specificity): CC specifies that students connect algebra with arithmetic operations using appropriate laws.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities. MA11.4.5 Students connect algebra with other mathematical topics.
HS.A.APR.9. Divide a polynomial p(x) by a divisor of the form x – a using long division.	No match	

HS.A.CED. Creating Equations That Describe Numbers or Relationships		
HS.A.CED.1. Understand that equations in one variable are often created to describe properties of a specific but unknown number.	Partial alignment (implicit): Content is similar, with some difference in emphasis. The WY content emphasizes the skill, while the CC content emphasizes the concept.	MA11.4.1 Students use algebraic concepts, symbols, and skills to represent and solve real-world problems. MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.CED.2. Understand that equations in two or more variables that represent a relationship between quantities can be built by experimenting with specific numbers in the relationship.	Partial alignment (implicit): Content is similar, with some difference in emphasis. The WY content emphasizes the skill, while the CC content emphasizes the concept.	MA11.4.1 Students use algebraic concepts, symbols, and skills to represent and solve real-world problems. MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.CED.3. Write equations and inequalities that specify an unknown quantity or to express a relationship between two or more quantities. Use the equations and inequalities to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.	Partial alignment (scope): The WY content does not include quadratic, rational, or exponential functions or inequalities. Partial alignment (specificity): CC specifies the types of functions (linear, rational, quadratic, exponential). Partial alignment (specificity): CC specifies the algebraic concepts and skills to be used to solve problems.	MA11.4.3 Students graph linear equations and interpret the results in solving algebraic problems. MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities. MA11.4.1 Students use algebraic concepts, symbols, and skills to represent and solve real world problems.

HS.A.CED.4. Rearrange formulas to highlight a quantity of interest. For example, transform Ohm's law V = IR to highlight resistance R; in motion with constant acceleration, transform $v_{f,x}^2 - v_{i,x}^2 = 2a_x(x_f - x_i)$ to highlight the change in position along the x-axis, $x_f - x_i$..	Partial alignment (specificity): CC specifies which skill to use (rearranging formulas).	MA11.4.1 Students use algebraic concepts, symbols, and skills to represent and solve real world problems.
HS.A.REI. Reasoning with Equations and Inequalities		
HS.A.REI.1. Understand that to solve an equation algebraically, one makes logical deductions from the equality asserted by the equation, often in steps that replace it with a simpler equation whose solutions include the solutions of the original one.	Partial alignment (specificity): CC specifies how to evaluate equations.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.REI.2. Understand that the method of completing the square can transform any quadratic equation in x into an equivalent equation of the form $(x - p)^2 = q$. This leads to the quadratic formula.	Partial alignment (specificity): CC specifies how to evaluate a quadratic equation.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.REI.3. Understand that given a system of two linear equations in two variables, adding a multiple of one equation to another produces a system with the same solutions. This principle, combined with principles already encountered with equations in one variable, allows for the simplification of systems.	Partial alignment (specificity): CC specifies one method of solving systems of equations.	MA11.4.4 Students solve, graph, or interpret systems of linear equations
HS.A.REI.4. Understand that the graph of an equation in two variables is the set of its solutions plotted in the coordinate plane, often forming a curve or a line.	Partial alignment (specificity): CC specifies one method of solving systems of equations.	MA11.4.4 Students solve, graph, or interpret systems of linear equations
HS.A.REI.5. Understand that solutions to two equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.	Partial alignment (specificity): CC specifies one method of solving systems of equations.	MA11.4.4 Students solve, graph, or interpret systems of linear equations

HS.A.REI.6. Understand that the solutions to a linear inequality in two variables can be graphed as a half-plane (excluding the boundary in the case of a strict inequality).	Partial alignment (specificity): CC specifies graphing and solving two variable equations.	MA11.4.4 Students solve, graph, or interpret systems of linear equations
HS.A.REI.7. Understand that solutions to several linear inequalities in two variables correspond to points in the intersection of the regions in the plane defined by the solutions to the inequalities.	Partial alignment (specificity): CC specifies graphing and solving two variable equations.	MA11.4.4 Students solve, graph, or interpret systems of linear equations
HS.A.REI.8. Understand that equations and inequalities can be viewed as constraints in a problem situation, e.g., inequalities describing nutritional and cost constraints on combinations of different foods.	Partial alignment (specificity): CC specifies which concepts students should use to solve real world problems.	MA11.4.1 Students use algebraic concepts, symbols, and skills to represent and solve real world problems.
HS.A.REI.10. Solve simple rational and radical equations in one variable, noting and explaining extraneous solutions.	Partial match (specificity): CC specifies which types of equations should be evaluated.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.REI.11. Solve linear equations in one variable, including equations with coefficients represented by letters.	Partial match (specificity): CC specifies which types of equations should be evaluated.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.REI.12. Solve quadratic equations in one variable. Include methods such as inspection (e.g. for $x^2 = 49$), square roots, completing the square, the quadratic formula and factoring. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.	Partial match (specificity): CC specifies which types of equations should be evaluated, and how they should be evaluated.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.REI.13. Solve equations $f(x) = g(x)$ approximately by finding the intersections of the graphs of f(x) and g(x), e.g. using technology to graph the functions. Include cases where f(x) and/or g(x) are linear, polynomial, rational, exponential, and logarithmic functions.	Partial match (specificity): CC specifies which types of equations should be evaluated, and how they should be evaluated.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.REI.14. Solve linear inequalities in one variable and graph the solution set on a number line.	Partial alignment (specificity): CC specifies solving and graphing the solution set of linear inequalities in one variable.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.

HS.A.REI.15. Solve systems of linear equations algebraically and graphically, focusing on pairs of linear equations in two variables.	Partial alignment (specificity): CC specifies solving pairs of linear equations in two variables.	MA11.4.4 Students solve, graph, or interpret systems of linear equations
HS.A.REI.16. Solve algebraically a simple system consisting of one linear equation and one quadratic equation in two variables; for example, find points of intersection between the line $y = –3x$ and the circle $x^2 + y^2 = 3$.	Partial alignment (specificity): CC specifies which two types of equations make up the system of equations to be solved.	MA11.4.4 Students solve, graph, or interpret systems of linear equations
HS.A.REI.17. Graph the solution set of a system of linear inequalities in two variables.	Weak alignment: Content is similar, but there is a significant difference in the emphasis. WY content is specific to systems of linear equations, while the CC standard is specific to systems of inequalities.	MA11.4.4 Students solve, graph, or interpret systems of linear equations
HS.A.REI.18. In modeling situations, represent constraints by systems of equations and/or inequalities, and interpret solutions of these systems as viable or non-viable options in the modeling context.	Partial alignment (specificity): CC specifies the modeling involved uses qualitative features. Partial alignment (specificity): CC specifies types of modeling situations.	MA11.4.4 Students solve, graph, or interpret systems of linear equations MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.REI.19. In the context of exponential models, solve equations of the form $a\,b^{ct} = d$ where a, c, and d are specific numbers and the base b is 2, 10, or e.	Partial alignment (specificity): CC specifies the type of equation.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
High School—Functions		
HS.A.IF. Interpreting Functions		
HS.A.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.	Partial alignment (implicit): Content is similar, with some difference in emphasis. The WY content emphasizes the skill, while the CC content emphasizes the concept.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.

HS.A.IF.2. Understand that functions of a single variable have key characteristics, including: zeros; extreme values; average rates of change (over intervals); intervals of increasing, decreasing and/or constant behavior; and end behavior.	Partial alignment (implicit): Content is similar, with some difference in emphasis. The WY content emphasizes the skill, while the CC content emphasizes the concept.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.IF.3. Understand that a function defined by an expression may be written in different but equivalent forms, which can reveal different properties of the function.	Partial alignment (implicit): Content is similar, with some difference in emphasis. The WY content emphasizes the skill, while the CC content emphasizes the concept.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.IF.4. Use function notation and evaluate functions for inputs in their domains.	Partial alignment (scope): WY includes evaluating expressions, equations, and inequalities.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.IF.5. Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, what its long-run behavior appears to be, and whether it appears to be periodic).	Partial alignment (scope): WY includes evaluating expressions, equations, and inequalities, and CC specifies a qualitative evaluation.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.IF.6. Sketch a graph that exhibits the qualitative features of a function that models a relationship between two quantities.	Partial alignment (specificity): CC specifies that the modeling to be done exhibits qualitative features, and that the modeling be of a function.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.IF.7. Compare properties of two functions represented in different ways (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, draw conclusions about the graph of a quadratic function from its algebraic expression.	No match	
HS.A.IF.8. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.	No match	

HS.A.IF.9. Describe the qualitative behavior of functions presented in graphs and tables. Identify: intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.	Partial alignment (specificity): CC specifies the form of the functions to be evaluated and what aspects are to be evaluated.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.IF.10. Use technology to exhibit the effects of parameter changes on the graphs of linear, power, quadratic, square root, cube root, and polynomial functions, and simple rational, exponential, logarithmic, sine, cosine, absolute value, and step functions.	Partial alignment (specificity): CC specifies what aspects of which functions to model and evaluate. WY content addresses using technology as a note that applies to all benchmarks under content standard 4 (Algebra).	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.IF.11. Transform quadratic polynomials algebraically to reveal different features of the function they define, such as zeros, extreme values, and symmetry of the graph.	Partial alignment (specificity): CC specifies that students write and evaluate quadratic functions.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.BF. Building Functions		
HS.A.BF.1. Understand that functions can be described by specifying an explicit expression, a recursive process or steps for calculation.	Weak alignment: WY content is similar, but there is a significant difference in the phrasing. The CC standard describes an understanding of different ways that functions can be represented.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.BF.2. Understand that sequences are functions whose domain is a subset of the nonnegative integers.	No match	
HS.A.BF.5. Write a function that describes a relationship between two quantities, for example by varying parameters in and combining standard function types (such as linear, quadratic or exponential functions). Use technology to experiment with parameters and to illustrate an explanation of the behavior of the function when parameters vary.	Partial alignment (scope): WY content includes modeling and evaluating expressions, equations, and inequalities.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.BF.6. Solve problems involving linear, quadratic, and exponential functions.	Partial alignment (specificity): CC specifies the types of functions that students are required to evaluate.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.

HS.A.BF.7. Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.	Partial alignment (specificity):CC specifies how to evaluate specific functions.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.BF.8. Generate an arithmetic or geometric sequence given a recursive rule for the sequence.	No match	
HS.A.BF.9. As a way to describe routine modeling situations, write arithmetic and geometric sequences both recursively and in closed form, and translate between the two forms.	No match	
HS.A.LQE. Linear, Quadratic, and Exponential Models		
HS.A.BF.1. Understand that a linear function, defined by f(x) = mx + b for some constants m and b, models a situation in which a quantity changes at a constant rate, m, relative to another.	Partial alignment (implicit): WY content is similar with some differences in emphasis. The WY content emphasizes the skill while the CC standard emphasizes the concept.	MA11.4.3 Students graph linear equations and interpret the results in solving algebraic problems.
HS.A.BF.2. Understand that quadratic functions have maximum or minimum values and can be used to model problems with optimum solutions.	Partial alignment (specificity): CC specifies understanding the characteristics of quadratic functions.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.BF.3. Understand that an exponential function, defined by f(x) = abx or by f(x) = a(1 + r)x for some constants a, b > 0 and r > –1, models a situation where a quantity grows or decays by a constant factor or a constant percentage change over each unit interval.	Partial alignment (specificity): CC specifies understanding the characteristics of exponential functions.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.
HS.A.BF.4. Understand that linear functions grow by equal differences over equal intervals; exponential functions grow by equal factors over equal intervals.	Partial alignment (implicit): WY content is similar with some differences in emphasis. The WY content emphasizes the skill while the CC standard emphasizes the concept.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities

HS.A.BF.5. Understand that in an arithmetic sequence, differences between consecutive terms form a constant sequence, and second differences are zero. Conversely, if the second differences are zero, the sequence is arithmetic. Arithmetic sequences can be seen as linear functions.	No match	
HS.A.BF.6. Understand that in a sequence that increases quadratically (e.g., an = $3n^2$ + 2n + 1), differences between consecutive terms form an arithmetic sequence, and second differences form a constant sequence. Conversely, if the second differences form a constant sequence with nonzero value, the sequence increases quadratically.	No match	
HS.A.BF.7. Understand that in a geometric sequence, ratios of consecutive terms are all the same.	No match	
HS.A.BF.8. Understand that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	Partial alignment (implicit): WY content is similar with some differences in emphasis. The WY content emphasizes the skill while the CC standard emphasizes the concept.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities
HS.A.BF.9. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	Partial alignment (specificity): CC specifies how to evaluate functions	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities
HS.A.BF.10. Construct a function to describe a linear relationship between two quantities. Determine the rate of change and constant term of a linear function from a graph, a description of a relationship, or from two (x, y) values (include reading these from a table).	Partial alignment (specificity): CC specifies what type of function should be created.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities
HS.A.BF.11. Use quadratic functions to model problems, e.g., in situations with optimum solutions.	Partial alignment (specificity): CC specifies what type of function should be modeled.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities

HS.A.BF.12. Construct an exponential function in the form f(x) = a(1 + r)x or f(x) = abx to describe a relationship in which one quantity grows with respect to another at a constant percent growth rate or a with a constant growth factor.	Partial alignment (specificity): CC specifies what type of function should be created.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities
HS.A.BF.13. Interpret the rate of change and constant term of a linear function or sequence in terms of the situation it models, and in terms of its graph or a table of values.	Partial alignment (scope): WY content includes evaluating functions, equations, and inequalities, and does not include sequences.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities
HS.A.BF.14. Calculate and interpret the growth factor for an exponential function (presented symbolically or as a table) given a fixed interval. Estimate the growth factor from a graph.	Partial alignment (specificity): CC specifies what a part of an exponential function should be calculated.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities
HS.A.BF.15. Recognize a quantitative relationship as linear, exponential, or neither from description of a situation.	Partial alignment (specificity): CC specifies identifying if a relationship is linear, exponential, or neither. Partial alignment (specificity): CC content specifies identifying if a relationship is linear, exponential, or neither.	MA11.4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities MA11.4.1 Students use algebraic concepts, symbols, and skills to represent and solve real world problems.
HS.A.BF.16. Compare quantities increasing exponentially to quantities increasing linearly or as a polynomial function.	No match	
High School—Statistics and Probability		
HS.S.SI. Summarizing Categorical and Quantitative Data		
HS.S.SI.1. Understand that statistical methods take variability into account to support making informed decisions based on data collected to answer specific questions.	Partial alignment (implicit): WY content is similar with some differences in emphasis. The WY content emphasizes the skill while the CC standard emphasizes the concept.	MA11.5.2 Students draw reasonable inferences from statistical data and/or correlation/best fit line to predict outcomes.
HS.S.SI.2. Understand that visual displays and summary statistics condense the information in data sets into usable knowledge.	Partial alignment (implicit): WY content is similar with some differences in emphasis. The WY content emphasizes the skill while the CC standard emphasizes the concept.	MA11.5.4 Students determine, collect, organize, and analyze relevant data needed to make conclusions.

HS.S.SI.3. Understand that patterns of association or relationships between variables may emerge through careful analysis of multi-variable data.	Partial alignment (implicit): WY content is similar with some differences in emphasis. The WY content emphasizes the skill while the CC standard emphasizes the concept.	MA11.5.2 Students draw reasonable inferences from statistical data and/or correlation/best fit line to predict outcomes.
HS.S.SI.4. Summarize comparative or bivariate categorical data in two-way frequency tables. Interpret joint, marginal and conditional relative frequencies in the context of the data, recognizing possible associations and trends in bivariate categorical data.	No match	
HS.S.SI.5. Compare data on two or more count or measurement variables by using plots on the real number line (dot plots, histograms, and box plots). Use statistics appropriate to the shape of the data distribution to summarize center (median, mean) and spread (interquartile range, standard deviation) of the data sets. Interpret changes in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).	Partial alignment (specificity): CC specifies which statistical data should be used, how to evaluate the data, and what format the data should be in. Partial alignment (specificity): CC specifies which statistical data should be used, how to evaluate the data, and what format the data should be in.	MA11.5.1 Students apply knowledge of mean, median, mode, and range to interpret and evaluate information and data. MA11.5.2 Students draw reasonable inferences from statistical data and/or correlation/best fit line to predict outcomes.
HS.S.SI.6. Represent bivariate quantitative data on a scatter plot and describe how the variables are related.	Partial alignment (specificity): CC specifies bivariate quantitative data.	MA.11.5.4 Students determine, collect, organize, and analyze relevant data needed to make conclusions.
HS.S.SI.7. Fit a linear function for scatter plots that suggest a linear association. Informally assess the fit of the model function by plotting and analyzing residuals.	Strong alignment	MA11.5.2 Students draw reasonable inferences from statistical data and/or correlation/best fit line to predict outcomes.
HS.S.SI.8. Use a model function fitted to the data to solve problems in the context of the data, interpreting the slope (rate of change) and the intercept (constant term).	No match	

HS.S.SI.9. Compute (using technology) and interpret the correlation coefficient for a linear relationship between variables.	Strong alignment	MA11.5.2 Students draw reasonable inferences from statistical data and/or correlation/best fit line to predict outcomes.
HS.S.SI.10. Distinguish between correlation and causation.	No match	
HS.S.PM. Probability Models		
HS.S.PM.1. Understand that in a probability model, individual outcomes have probabilities that sum to 1. When outcomes are categorized, the probability of a given type of outcome is the sum of the probabilities of all the individual outcomes of that type.	Partial alignment (implicit): The WY content emphasizes the skill, while the CC content emphasizes the concept.	MA11.5.3 Students communicate about the likelihood of events using concepts from probability. • sample space • evaluate simple probabilities • evaluate experimental vs. theoretical
HS.S.PM.2. Understand that uniform probability models are useful models for processes such as (i) the selection of a person from a population; (ii) the selection of a number in a lottery; (iii) any physical situation in which symmetry suggests that different individual outcomes are equally likely	Partial alignment (implicit): The WY content emphasizes the skill, while the CC content emphasizes the concept.	MA11.5.3 Students communicate about the likelihood of events using concepts from probability. • sample space • evaluate simple probabilities • evaluate experimental vs. theoretical
HS.S.PM.3. Understand that two different empirical probability models for the same process will rarely assign exactly the same probability to a given type of outcome. But if the data sets are large and the methods used to collect the data for the two data sets are consistent, the agreement between the models is likely to be reasonably good.	Partial alignment (implicit): The WY content emphasizes the skill, while the CC content emphasizes the concept.	MA11.5.3 Students communicate about the likelihood of events using concepts from probability. • sample space • evaluate simple probabilities • evaluate experimental vs. theoretical

HS.S.PM.4. Understand that a (theoretical) uniform probability model may be judged by comparing it to an empirical probability model for the same process. If the theoretical assumptions are appropriate and the data set is large, then the two models should agree approximately. If the agreement is not good, then it may be necessary to modify the assumptions underlying the theoretical model or look for factors that might have affected the data used to create the empirical model.	Partial alignment (implicit): WY content is similar with some differences in emphasis. The WY content emphasizes the skill while the CC standard emphasizes the concept.	MA11.5.3 Students communicate about the likelihood of events using concepts from probability. • sample space • evaluate simple probabilities • evaluate experimental vs. theoretical
HS.S.PM.5. Use a uniform probability model to compute probabilities for a process involving uncertainty, including the random selection of a person from a population and physical situations where symmetry suggests that different individual outcomes are equally likely. a. List the individual outcomes to create a sample space. b. Label the individual outcomes in the sample space to reflect important characteristics or quantities associated with them. c. Determine probabilities of individual outcomes, and determine the probability of a type or category of outcome as the fraction of individual outcomes it includes.	Partial alignment (specificity): WY content is less specific than the CC content. The CC content describes the entire process of computing probabilities using a probability model.	MA11.5.3 Students communicate about the likelihood of events using concepts from probability. • sample space • evaluate simple probabilities • evaluate experimental vs. theoretical
HS.S.PM.6. Generate data by sampling, repeated experimental trials, and simulations. Record and appropriately label such data, and use them to construct an empirical probability model. Compute probabilities in such models.	Partial alignment (scope): WY content does not include the generation of data.	MA11.5.4 Students determine, collect, organize, and analyze relevant data needed to make conclusions. .

HS.S.PM.7. Compare probabilities from a theoretical model to probabilities from a corresponding empirical model for the same situation. If the agreement is not good, explain possible sources of the discrepancies.	Strong alignment	MA11.5.3 Students communicate about the likelihood of events using concepts from probability. • sample space • evaluate simple probabilities • evaluate experimental vs. theoretical
HS.S.IPM. Independently Combined Probability Models		
HS.S.IPM.1. Understand that to describe a pair of random processes (such as tossing a coin and rolling a number cube), or one random process repeated twice (such as randomly selecting a student in the class on two different days), two probability models can be combined into a single model. a. The sample space for the combined model is formed by listing all possible ordered pairs that combine an individual outcome from the first model with an individual outcome from the second. Each ordered pair is an individual outcome in the combined model. b. The total number of individual outcomes (ordered pairs) in the combined model is the product of the number of individual outcomes in each of the two original models.	No match	
HS.S.IPM.2. Understand that when two probability models are combined independently, the probability that one type of outcome in the first model occurs together with another type of outcome in the second model is the product of the two corresponding probabilities in the original models (the Multiplication Rule)	No match	

HS.S.IPM.3. Combine two uniform models independently to compute probabilities for a pair of random processes (e.g., flipping a coin twice, selecting one person from each of two classes). a. Use organized lists, tables and tree diagrams to represent the combined sample space. b. Determine probabilities of ordered pairs in the combined model, and determine the probability of a particular type or category of outcomes in the combined model, as the fraction of ordered pairs corresponding to it.	No match	
HS.S.IPM.4. For two independently combined uniform models, use the Multiplication Rule to determine probabilities.	No match	
HS.S.IC. Making Inferences and Justifying Conclusions		
HS.S.IC.1. Understand that statistics is a process for making inferences about population parameters based on a sample from that population; randomness is the foundation for statistical inference.	Partial alignment (implicit): WY content is similar with some differences in emphasis. The WY content emphasizes the skill while the CC standard emphasizes the concept.	MA11.5.2 Students draw reasonable inferences from statistical data and/or correlation/best fit line to predict outcomes.
HS.S.IC.2. Understand that the design of an experiment or sample survey is of critical importance to analyzing the data and drawing conclusions.	Weak alignment: WY content is similar, but there is a significant difference in emphasis. The WY content emphasizes the processes involved in an experiment, while the CC emphasizes the importance of experimental design.	MA11.5.4 Students determine, collect, organize, and analyze relevant data needed to make conclusions.
HS.S.IC.3. Understand that simulation-based techniques are powerful tools for making inferences and justifying conclusions from data.	No match	

HS.S.IC.4. Use probabilistic reasoning to decide if a specified model is consistent with results from a given data-generating process. (For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?)	Strong alignment	MA11.5.3 Students communicate about the likelihood of events using concepts from probability. • sample space • evaluate simple probabilities • evaluate experimental vs. theoretical
HS.S.IC.5. Recognize the purposes of and differences among sample surveys, experiments and observational studies; explain how randomization relates to each.	Partial alignment (scope): WY does not include randomization.	MA11.5.3 Students communicate about the likelihood of events using concepts from probability. • sample space • evaluate simple probabilities • evaluate experimental vs. theoretical
HS.S.IC.6. Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.	Partial match (specificity): CC specifies what type of data to organize and analyze, and specifies that students develop a margin of error.	MA11.5.4 Students determine, collect, organize, and analyze relevant data needed to make conclusions. MA11.5.1 Students apply knowledge of mean, median, mode, and range to interpret and evaluate information and data.
HS.S.IC.7. Use data from a randomized experiment to compare two treatments; justify significant differences between parameters through the use of simulation models for random assignment.	No match	
HS.S.IC.8. Evaluate reports based on data.	Strong alignment	MA11.5.4 Students determine, collect, organize, and analyze relevant data needed to make conclusions.
HS.S.CP. Conditional Probability and the Laws of Probability		
HS.S.CP.1. Understand that events are subsets of a sample space; often, events of interest are defined by using characteristics (or categories) of the sample points, or as unions, intersections, or complements thereof (“and,” “or,” “not”). A sample point may belong to	No match	

several events (categories).		
HS.S.CP.2. Understand that if A and B are two events, then in a uniform model the conditional probability of A given B, denoted by P(AIB), is the fraction of B‘s sample points that also lie in A.	No match	
HS.S.CP.3. Understand that the laws of probability allow one to use known probabilities to determine other probabilities of interest.	No match	
HS.S.CP.4. Compute probabilities by constructing and analyzing sample spaces, representing them by tree diagrams, systematic lists, and Venn diagrams.	No match	
HS.S.CP.5. Use the laws of probability to compute probabilities.	Weak alignment: Content is similar, but there is a significant difference in the emphasis. WY emphasizes communicating the concepts of probability, while CC emphasizes using the laws of probability.	MA11.5.3 Students communicate about the likelihood of events using concepts from probability. • sample space • evaluate simple probabilities • evaluate experimental vs. theoretical
HS.S.CP.6. Apply concepts such as intersections, unions and complements of events, and conditional probability and independence to define or analyze events, calculate probabilities and solve problems.	No match	
HS.S.CP.7. Construct and interpret two-way tables to show probabilities when two characteristics (or categories) are associated with each sample point. Use a two-way table to determine conditional probabilities.	No match	
HS.S.CP.8. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.	No match	
HS.S.CP.9. Use permutations and combinations to compute probabilities of compound events and solve problems.	No match	

HS.S.ES. Experimenting and Simulating to Model Probabilities		
HS.S.ES.1. Understand that sets of data obtained from surveys, simulations or other means can be used as probability models, by treating the data set itself as a sample space, in which the sample points are the individual pieces of data.	Weak alignment: WY content places emphasis on the skill and the CC content places emphasis on the concept. The CC content is also more specific to using surveys and simulations as probability models.	MA11.5.3 Students communicate about the likelihood of events using concepts from probability. • sample space • evaluate simple probabilities • evaluate experimental vs. theoretical
HS.S.ES.2. Understand that the probability of an outcome can be interpreted as an assertion about the long-run proportion of the outcome‘s occurrence if the random experiment is repeated a large number of times.	No match	
HS.S.ES.3. Calculate experimental probabilities by performing simulations or experiments involving a probability model and using relative frequencies of outcomes.	Weak alignment: Content is similar, but there is a significant difference in the emphasis. WY content is about the communication of concepts of probability including experimental probabilities, while the CC content is about the calculation of experimental probabilities.	MA11.5.3 Students communicate about the likelihood of events using concepts from probability. • sample space • evaluate simple probabilities • evaluate experimental vs. theoretical
HS.S.ES.4. Compare the results of simulations with predicted probabilities. When there are substantial discrepancies between predicted and observed probabilities, explain them.	Weak alignment: Content is similar, but there is a significant difference in the phrasing or emphasis. WY content is about the communication of concepts of probability including experimental probabilities, while the CC content is about comparing simulated to predicted probabilities.	MA11.5.3 Students communicate about the likelihood of events using concepts from probability. • sample space • evaluate simple probabilities • evaluate experimental vs. theoretical
HS.S.ES.5. Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets and tables to estimate areas under the normal curve.	Partial alignment (specificity): CC specifies the type of technological tools needed to interpret and evaluate data.	MA11.5.1 Students apply knowledge of mean, median, mode, and range to interpret and evaluate information and data.

HS.S.MD. Using Probability to Make Decisions		
HS.S.MD.1. Understand that the expected value of a random variable is the weighted average of its possible values, with weights given by their respective probabilities.	No match	
HS.S.MD.2. Understand that when the possible outcomes of a decision can be assigned probabilities and payoff values, the decision can be analyzed as a random variable with an expected value, e.g., of an investment.	No match	
HS.S.MD.3. Calculate expected value, e.g. to determine the fair price of an investment.	No match	
HS.S.MD.4. Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	Partial alignment (specificity): CC specifies probabilities to make fair decisions (conclusions).	MA11.5.4 Students determine, collect, organize, and analyze relevant data needed to make conclusions.
	Partial alignment (implicit): Content is similar, with some difference in emphasis. CC emphasizes making fair decisions based on probability, while WY emphasizes communicating the likelihood of events based on probability.	MA11.5.3 Students communicate about the likelihood of events using concepts from probability. • sample space • evaluate simple probabilities • evaluate experimental vs. theoretical
HS.S.MD.5. Evaluate and compare two investments or strategies with the same expected value, where one investment or strategy is safer than the other.	No match	
HS.S.MD.6. Evaluate and compare two investments or strategies, where one investment or strategy is safer but has lower expected value. Include large and small investments, and situations with serious consequences.	Partial alignment (specificity): CC specifies evaluating investment strategies.	HS.S.MD.6. Evaluate and compare two investments or strategies, where one investment or strategy is safer but has lower expected value. Include large and small investments, and situations with serious consequences.

HS.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).	Partial alignment (specificity): CC specifies analyzing decisions and strategies using probabilities.	MA11.5.3 Students communicate about the likelihood of events using concepts from probability. • sample space • evaluate simple probabilities • evaluate experimental vs. theoretical
	Partial alignment (specificity): CC specifies analyzing decisions and strategies using probabilities.	MA11.1.3 Students explain their choice of estimation and problem solving strategies and justify results of solutions in problem-solving situations involving real numbers.
High School—Geometry		
HS.G.CO. Congruence		
HS.G.CO.1. Understand that two geometric figures are congruent if there is a sequence of rigid motions (rotations, reflections, translations) that carries one onto the other. This is the principle of superposition.	Partial alignment (implicit): WY content is similar with some differences in emphasis. The WY content emphasizes the skill while the CC standard emphasizes the concept.	MA11.2.1 Students use transformations, congruency, symmetry, similarity, perpendicularity, parallelism, and the Pythagorean Theorem to solve problems.
HS.G.CO.2. Understand that criteria for triangle congruence are ways to specify enough measures in a triangle to ensure that all triangles drawn with those measures are congruent.	Weak alignment: CC uses the principles of triangle congruence to construct congruent triangles. Partial alignment (scope): WY content includes the use of transformation, symmetry, similarity, perpendicularity, parallelism, and the Pythagorean Theorem.	MA11.2.2 Students communicate, using mathematical language, to: • Interpret, represent, or create geometric figures; • Draw or build figures from a mathematical description • Analyze properties and determine attributes of 2- and 3- dimensional objects. MA11.2.1 Students use transformations, congruency, symmetry, similarity, perpendicularity, parallelism, and the Pythagorean Theorem to solve problems.
HS.G.CO.3. Understand that criteria for triangle congruence (ASA, SAS, and SSS) can be established using rigid motions.	No match	

HS.G.CO.4. Understand that geometric diagrams can be used to test conjectures and identify logical errors in fallacious proofs.	Partial alignment (specificity): CC specifies how to communicate about student's analyses, including testing conjectures and identifying logical errors in proofs.	MA11.2.2 Students communicate, using mathematical language, to: • Interpret, represent, or create geometric figures; • Draw or build figures from a mathematical description • Analyze properties and determine attributes of 2- and 3- dimensional objects.
HS.G.CO.5. Know and use (in reasoning and problem solving) definitions of angles, polygons, parallel, and perpendicular lines, rigid motions, parallelograms and rectangles.	Partial alignment (specificity): CC specifies what mathematical language to know and use. Partial alignment (scope): WY content does not include knowing definitions of angles polygons, parallel, and perpendicular lines, rigid motions, parallelograms, and rectangles in order to reason and solve problems.	MA11.2.2 Students communicate, using mathematical language, to: • Interpret, represent, or create geometric figures; • Draw or build figures from a mathematical description • Analyze properties and determine attributes of 2- and 3- dimensional objects. MA11.3.4 Students solve problems of angle measure including those involving polygons or parallel lines cut by a transversal.
HS.G.CO.6. Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; two lines parallel to a third are parallel to each other; points on a perpendicular bisector of a segment are exactly those equidistant from the segment's endpoints.	Partial alignment (implicit): Content is similar, with some difference in phrasing/emphasis. Both WY and CC are about communicating using mathematical language, but the CC emphasis is on proofs of specific theorems, while the WY emphasis is on communication of reasoning in problem-solving situations.	MA11.2.2 Students communicate, using mathematical language, to: • Interpret, represent, or create geometric figures; • Draw or build figures from a mathematical description • Analyze properties and determine attributes of 2- and 3- dimensional objects.

	Partial alignment (implicit): Content is similar, with some difference in phrasing/emphasis. Both WY and CC are about communicating reasoning about geometric relationships, but the CC emphasis is on proofs of specific theorems, while the WY emphasis is on communication of reasoning in problem-solving situations.	MA11.2.3 Students communicate the reasoning used in identifying geometric relationships in problem-solving situations.
HS.G.CO.7. Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180°, base angles of isosceles triangles are congruent, the triangle inequality, the longest side of a triangle faces the angle with the greatest measure and vice-versa, the exterior-angle inequality, and the segment joining midpoints of two sides of a triangle parallel to the third side and half the length.	Partial alignment (implicit): Content is similar, with some difference in phrasing/emphasis. Both WY and CC are about communicating using mathematical language, but the CC emphasis is on proofs about triangles, while the WY emphasis is on communication of reasoning in problem-solving situations. Partial alignment (implicit): Content is similar, with some difference in phrasing/emphasis. Both WY and CC are about communicating reasoning about geometric relationships, but the CC emphasis is on proofs about triangles, while the WY emphasis is on communication of reasoning in problem-solving situations.	MA11.2.2 Students communicate, using mathematical language, to: • Interpret, represent, or create geometric figures; • Draw or build figures from a mathematical description • Analyze properties and determine attributes of 2- and 3- dimensional objects. MA11.2.3 Students communicate the reasoning used in identifying geometric relationships in problem-solving situations.
HS.G.CO.8. Use and prove properties of and relationships among special quadrilaterals: parallelogram, rectangle, rhombus, square, trapezoid and kite.	Partial alignment (implicit): Content is similar, with some difference in phrasing/emphasis. Both WY and CC are about communicating using mathematical language, but the CC emphasis is on proofs about special quadrilaterals, while the WY emphasis is on communication of reasoning in problem-solving situations.	MA11.2.2 Students communicate, using mathematical language, to: • Interpret, represent, or create geometric figures; • Draw or build figures from a mathematical description • Analyze properties and determine attributes of 2- and 3- dimensional objects.

	Partial alignment (implicit): Content is similar, with some difference in phrasing/emphasis. Both WY and CC are about communicating reasoning about geometric relationships, but the CC emphasis is on proofs about special quadrilaterals, while the WY emphasis is on communication of reasoning in problem-solving situations.	MA11.2.3 Students communicate the reasoning used in identifying geometric relationships in problem-solving situations.
HS.G.CO.9. Characterize parallelograms in terms of equality of opposite sides, in terms of equality of opposite angles, and in terms of bisection of diagonals; characterize rectangles as parallelograms with equal diagonals.	Partial alignment (specificity): CC specifies characterizing parallelograms. Partial alignment (implicit): Content is similar, with some differences in emphasis. CC content is prerequisite to WY content. Students should be able to characterize parallelograms in order to solve problems related to angle measures. Weak alignment: CC content varies in scope and is more specific than WY content. WY content does not include proving the Pythagorean Theorem using triangle similarity. CC specifies using triangle similarity to solve problems of angle measure.	MA11.2.2 Students communicate, using mathematical language, to: • Interpret, represent, or create geometric figures; • Draw or build figures from a mathematical description • Analyze properties and determine attributes of 2- and 3- dimensional objects. MA11.3.4 Students solve problems of angle measure including those involving polygons or parallel lines cut by a transversal. MA11.3.4 Students solve problems of angle measure including those involving polygons or parallel lines cut by a transversal.

HS.G.CO.10. Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.	Partial alignment (specificity): CC specifies the details of the construction process while drawing or building figures.	MA11.2.2 Students communicate, using mathematical language, to: • Interpret, represent, or create geometric figures; • Draw or build figures from a mathematical description • Analyze properties and determine attributes of 2- and 3- dimensional objects.
HS.G.CO.11. Construct an equilateral triangle, a square and a regular hexagon inscribed in a circle.	Partial alignment (specificity): CC specifies the construction of specific shapes while drawing or building figures.	MA11.2.2 Students communicate, using mathematical language, to: • Interpret, represent, or create geometric figures; • Draw or build figures from a mathematical description • Analyze properties and determine attributes of 2- and 3- dimensional objects.
HS.G.CO.12. Use two-dimensional representations to transform figures and to predict the effect of translations, rotations, and reflections.	Partial alignment (specificity): CC specifies predicting the effect of types of transformations.	MA11.2.1 Students use transformations, congruency, symmetry, similarity, perpendicularity, parallelism, and the Pythagorean Theorem to solve problems.
HS.G.CO.13. Use two-dimensional representations to transform figures and to predict the effect of dilations.	Partial alignment (specificity): CC specifies predicting the effect of types of transformations.	MA11.2.1 Students use transformations, congruency, symmetry, similarity, perpendicularity, parallelism, and the Pythagorean Theorem to solve problems
HS.G.SRT. Similarity, Right Triangles, and Trigonometry		
HS.G.SRT.1. Understand that dilating a line produces a line parallel to the original. (In particular, lines passing through the center of the dilation remain unchanged.)	Partial alignment (implicit): WY content is similar with some differences in emphasis. The WY content emphasizes the skill while the CC standard emphasizes the concept.	MA11.2.1 Students use transformations, congruency, symmetry, similarity, perpendicularity, parallelism, and the Pythagorean Theorem to solve problems

HS.G.SRT.2. Understand that the dilation of a given segment is parallel to the given segment and longer or shorter in the ratio given by the scale factor. A dilation leaves a segment unchanged if and only if the scale factor is 1.	Weak alignment: Content is similar, but there is a significant difference in the emphasis. Both CC and WY include the concept of transformations, but CC emphasizes definitions of dilation and scale factor, while WY emphasizes using transformations to solve problems. Weak alignment: WY content is larger in scope, and has a different emphasis than the CC content. WY content includes all ratios and proportions, while the CC content is specifically about understanding ratios related to dilations.	MA11.2.1 Students use transformations, congruency, symmetry, similarity, perpendicularity, parallelism, and the Pythagorean Theorem to solve problems MTH.11.3.3 Students identify and apply scale, ratios, and proportions in solving measurement problems.
HS.G.SRT.3. Understand that the assumed properties of dilations can be used to establish the AA, SAS, and SSS criteria for similarity of triangles.	Weak alignment: Content is similar, but there is a significant difference in the emphasis. Both WY and CC include the concept of similarity, but CC emphasizes an understanding of the reasoning behind theorems, while WY emphasizes using similarity to solve problems.	MA11.2.1 Students use transformations, congruency, symmetry, similarity, perpendicularity, parallelism, and the Pythagorean Theorem to solve problems
HS.G.SRT.4. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of sine, cosine, and tangent.	No match	
HS.G.SRT.5. Understand that a line parallel to one side of a triangle divides the other two proportionally, and conversely.	Weak alignment: WY content includes multiple concepts beyond parallelism that are not found in the CC benchmark, and while WY addresses the use of parallelism, the CC content specifies which aspects of parallelism students are expected to understand.	MA11.2.1 Students use transformations, congruency, symmetry, similarity, perpendicularity, parallelism, and the Pythagorean Theorem to solve problems
HS.G.SRT.6. Use triangle similarity criteria to solve problems and to prove relationships in geometric figures. Include a proof of the Pythagorean theorem using triangle similarity.	Partial alignment (scope): WY content includes transformations, congruency, symmetry, perpendicularity, and parallelism, and CC includes proofs. Partial alignment (scope): CC content includes proofs. Weak alignment: CC content varies in scope	MA11.2.1 Students use transformations, congruency, symmetry, similarity, perpendicularity, parallelism, and the Pythagorean Theorem to solve problems MTH.11.3.5 Students solve indirect measurement problems. MA11.3.4 Students solve problems of angle

	and is more specific than WY content. WY content does not include proving the Pythagorean Theorem using triangle similarity. CC specifies using triangle similarity to solve problems of angle measure.	measure including those involving polygons or parallel lines cut by a transversal.
HS.G.SRT.7. Use and explain the relationship between the sine and cosine of complementary angles.	No match	
HS.G.SRT.8. Use sine, cosine, tangent, and the Pythagorean Theorem to solve right triangles in applied problems.	Partial alignment (scope): WY content does not include using trigonometric functions.	MA11.2.1 Students use transformations, congruency, symmetry, similarity, perpendicularity, parallelism, and the Pythagorean Theorem to solve problems
HS.G.C. Circles		
HS.G.C.1. Understand that dilations can be used to show that all circles are similar.	Partial alignment (specificity): CC specifies using similarity to predict the effect of dilating a circle.	MA11.2.1 Students use transformations, congruency, symmetry, similarity, perpendicularity, parallelism, and the Pythagorean Theorem to solve problems
HS.G.C.2. Understand that there is a unique circle through three non-collinear points, and four circles tangent to three non-concurrent lines.	No match	
HS.G.C.3. Identify and define radius, diameter, chord, tangent, secant, and circumference.	Weak alignment: The WY content is in 8th grade and is less specific. CC specifies what aspects of circles should be described (radius, diameter, chord, secant, circumference).	MA8.2.1 Students classify and describe one-, two-, and three-dimensional geometric objects, including: • lines, rays, segments, and angles; • parallel and perpendicular relationships; • circles and spheres; • regular polygon types; • right prisms, cylinders, cones, and pyramids.
HS.G.C.4. Identify and describe relationships among angles, radii, and chords. Include the relationship between central, inscribed and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.	Weak alignment: The WY content is in 8th grade and is less specific.CC specifies what aspects of circles should be described.	MA8.2.1 Students classify and describe one-, two-, and three-dimensional geometric objects, including: • lines, rays, segments, and angles; • parallel and perpendicular relationships; • circles and spheres; • regular polygon types; • right prisms, cylinders, cones, and pyramids.

HS.G.C.5. Determine the arc lengths and the areas of sectors of circles, using proportions.	Partial alignment (specificity): CC specifies using proportional reasoning to determine the arc lengths and areas of sectors of circles.	MA11.1.4 Students use proportional reasoning to solve problems.
HS.G.GPE. Expressing Geometric Properties with Equations		
HS.G.GPE.1. Understand that two lines with well-defined slopes are perpendicular if and only if the product of their slopes is equal to –1.	Partial alignment (specificity): The CC specifies properties of perpendicularity.	MA11.2.1 Students use transformations, congruency, symmetry, similarity, perpendicularity, parallelism, and the Pythagorean Theorem to solve problems
HS.G.GPE.2. Understand that the equation of a circle can be found using its definition and the Pythagorean Theorem.	Partial alignment (specificity): The CC specifies relating the Pythagorean Theorem to the equation of a circle.	MA11.2.1 Students use transformations, congruency, symmetry, similarity, perpendicularity, parallelism, and the Pythagorean Theorem to solve problems
HS.G.GPE.3. Understand that transforming the graph of an equation by reflecting in the axes, translating parallel to the axes, or applying a dilation in one of the coordinate directions corresponds to substitutions in the equation.	Partial alignment (specificity): CC specifies an example of the more general WY concept.	MA.11.2.5 Students connect geometry with other mathematical topics.
HS.G.GPE.7. Use the slope criteria for parallel and perpendicular lines to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).	Partial alignment (specificity): CC specifies an example of the more general WY concept.	MA.11.2.5 Students connect geometry with other mathematical topics.
HS.G.GPE.8. Find the point on the segment between two given points that divides the segment in a given ratio.	Partial alignment (specificity): CC specifies an example of the more general WY concept.	MA.11.2.5 Students connect geometry with other mathematical topics.
HS.G.GPE.9. Use coordinates to compute perimeters of polygons and areas for triangles and rectangles, e.g. using the distance formula.	Weak alignment: The WY content is in the 8th grade and is less specific. The WY content does not specify the use of coordinates to compute perimeter.	MA8.3.3 Students select and use the appropriate methods, tools, and units to solve problems involving angle measure, perimeter, circumference, area (including circles), and volume of rectangular solids.
HS.G.GPE.10. Decide whether a point with given coordinates lies on a circle defined by a given equation.	No match	

HS.G.GPE.11. Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, $\sqrt{3}$) lies on the circle centered at the origin and containing the point (0, 2).	Partial alignment (specificity): CC specifies proving geometric theorems algebraically. Partial alignment (specificity): CC specifies proving geometric theorems algebraically.	MA11.2.2 Students communicate, using mathematical language, to: • Interpret, represent, or create geometric figures; • Draw or build figures from a mathematical description • Analyze properties and determine attributes of 2- and 3- dimensional objects. MA11.2.3 Students communicate the reasoning used in identifying geometric relationships in problem-solving situations.
	Partial alignment (implicit): Content is similar, with some difference in emphasis. Both CC and WY include content regarding solving problems using the coordinate plane, but WY specifies different types of problems than the CC does.	MA11.2.4 Students solve problems involving the coordinate plane such as the distance between two points, the midpoint, and slope.
HS.G.GPE.12. Complete the square to find the center and radius of a circle given by an equation.	No match	
HS.G.GMD. Geometric Measurement and Dimension		
HS.G.GMD.1. Understand that the area of a decomposed figure is the sum of the areas of its components and is independent of the choice of dissection.	No match	
HS.G.GMD.4. Find areas of polygons by dissecting them into triangles.	Partial alignment (specificity): CC specifies a method for finding area (dissecting polygons into triangles).	MA11.3.1 Students apply estimation and measurement using the appropriate methods and units to solve problems involving length, weight/mass, area, surface area, volume, and angle measure.

HS.G.GMD.5. Explain why the volume of a cylinder is the area of the base times the height, using informal arguments.	Weak alignment: Content is similar, but there is a significant difference in the phrasing or emphasis. Both WY and CC expect students to understand the concepts of length, area, and volume, and the use of formulas. However, the WY content emphasizes the application of the skills to solve problems, while the CC content emphasizes using arguments to understand formulas.	MA11.3.1 Students apply estimation and measurement using the appropriate methods and units to solve problems involving length, weight/mass, area, surface area, volume, and angle measure.
HS.G.GMD.6. For a pyramid or a cone, give a heuristic argument to show why its volume is one-third of its height times the area of its base.	Weak alignment: Content is similar, but there is a significant difference in the phrasing or emphasis. Both WY and CC expect students to understand the concepts of length, area, and volume, and the use of formulas. However, the WY content emphasizes the application of the skills to solve problems, while the CC content emphasizes using arguments to understand formulas.	MA11.3.1 Students apply estimation and measurement using the appropriate methods and units to solve problems involving length, weight/mass, area, surface area, volume, and angle measure.
HS.G.GMD.7. Apply formulas and solve problems involving volume and surface area of right prisms, right circular cylinders, right pyramids, cones, spheres and composite figures.	Partial alignment (specificity): CC specifies which types of problems should be solved.	MA11.3.1 Students apply estimation and measurement using the appropriate methods and units to solve problems involving length, weight/mass, area, surface area, volume, and angle measure.
HS.G.MG. Modeling with Geometry		
HS.G.MG.1. Understand that models of objects and structures can be built from a library of standard shapes; a single kind of shape can model seemingly different objects.	No match	
HS.G.MG.2. Use geometric shapes, their measures and their properties to describe objects (e.g., modeling a tree trunk or a human torso or as a cylinder).	No match	
HS.G.MG.3. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).	No match	

HS.G.MG.4. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy constraints or minimize cost; working with typographic grid systems based on ratios).	No match	