SUPERINTENDENT OF PUBLIC INSTRUCTION

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The Common Core Standards for English language arts and mathematics were finalized by the Chief State School Officers (CCSSO) and National Governor's Association (NGA) development and validation committees on June 2, 2010. Educators and stakeholders from across the state of Washington had opportunities throughout the development process to provide input and weigh-in on the draft standards documents during the Fall of 2009 and Winter/Spring of 2010.

In June 2010, OSPI initiated an external alignment analysis project with Hanover Research, as part of an existing research contract between OSPI and Hanover. Hanover Research is a membership-based full-service research company that provides custom research and enhanced research capacity for a variety of school districts, institutions of higher education, and other non-profit and for-profit members across the United States and internationally.

Hanover produced two external reports that analyzed the degree to which Washington's current standards are found within the new common core standards:

1. **Alignment Analysis: Common Core and Washington State Mathematics Standards**
2. Alignment Analysis: Common Core and Washington State Reading, Writing, and Communications Grade Level Expectations

Hanover's analyses started with the Common Core Standards and mapped Washington standards to the common core. The front matter of each document provides an explanation of the results of their analysis. Content staff from OSPI provided input on clarity and navigation of the document, but did not provide judgment as to whether the analysis was accurate.

Next Steps: The Hanover reports will be used as a resource for a second comparison review by Washington educators that have been selected in the past to participate in state-led standards and assessment leadership efforts, as well as state reviews of instructional materials, development of teacher endorsement competencies, and for providing support to our most state's struggling schools.

The Washington analysis will use current Washington standards as the starting point and map the common core standards to them. The focus of this analysis will be to provide more specific and detailed information about how the common core compare to Washington standards for Washington educators and stakeholders, including the state Legislature.

Both comparison documents will be shared with educators throughout the state in the Fall of 2010 as OSPI seeks input on them (usability, clarity, etc.), and what supports would be needed by school districts and teachers to transition to the new standards in future school years.

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Alignment Analysis: Common Core and Washington State Mathematics Standards

Prepared for the State of Washington Office of Superintendent of Public Instruction (OSPI)

In the following report, The Hanover Research Council provides a crosswalk analysis comparing Washington State learning standards with the Common Core Mathematics Standards. The first section (p.2) introduces and outlines the methodology of the matching process, providing explanations for the terms and classifications used in the matching process. The second section (p. 7) provides a summary statistical overview of the matching process. The third section (p. 10) lists all those Common Core Standards with no match from the Washington Standards. The fourth section (p. 19) moves in the opposite direction – listing all Washington Standards with no counterpart in the Common Core. The main, detailed crosswalks follow for Grades K-5 (p.22), Grades 6-8 (p.83), and High School (p. 124). The eighth section (p. 181) explains some of the alignment issues based on different structures in the organization of standards. The ninth and final section (p.190) lists all Washington Standards which could not be matched to the common core, explaining and classifying the nature of the non-match.

Introduction and Methodology

In this report, we provide a comprehensive matching of the K-12 Common Core Standards with the K-12 Washington Performance Expectations (WPEs) for Mathematics. These two groups have been subjected to two separate rounds of analysis: a forward-analysis and a backward-analysis.

The Forward-Analysis

The forward analysis began with each Common Core Standard, matching it with as many Washington Performance Expectations as necessary to cover all major aspects of the common core standard. Not all Common Core Standards were completely matched by Washington Performance Expectations (WPEs). In this case, the most closely matched WPEs were included. Special attention was paid to those Common Core Standards which are not closely matched by any WPEs.

The closeness of the match between the Common Core Standard and the WPEs was evaluated according to two metrics: one devised by Hanover Research – which assesses the nature of the match – and another supplied by the Achieve Common Core Comparison tool – which provides a numerical score for the closeness of the match. These metrics are explained below.

Simple Match (Achieve Score 3)

An evaluation of **simple match** indicates that a single WPE is a very close approximation of the Common Core Standard. A simple match either contains similar language and/or key words or clearly mirrors the intention of the Common Core Standard. For example, the first Common Core Standard for Geometry at the Kindergarten level reads:

> "Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*."

WPE K.3.C provides a "simple match":

> "Describe the location of one object relative to another object using words such as *in*, *out*, *over*, *under*, *above*, *below*, *between*, *next to*, *behind*, and *in front of*."

It is important to note that the WPE may (and often does) exceed the scope of the Common Core Standard, but it is designated simple match as long as it at least meets the scope of its counterpart. For this and other evaluations, it is also important to note that WPEs are accompanied by "Explanatory Comments and Examples."

Matching language may be found either in the "Performance Expectation" itself, or in the clarifying examples.

All standards receiving the "Simple Match" designation also received an Achieve rating of 3 (3 = Excellent match between the two documents) using the Achieve Common Core Comparison Tool.

Composite Match (Achieve Score 3)

An evaluation of **composite match** indicates that multiple WPEs collectively form a very close approximation of the Common Core Standard. The designation composite match is given when multiple WPEs, taken collectively, share similar language and/or intention when compared to the Common Core Standard in question. For example, the third Common Core Standard for Geometry for fifth grade students is:

> "Understand that properties belonging to a category of plane figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.*"

We determined that two WPEs—5.3.A and 5.3.C—together provide a reasonably similar "composite match" of the Common Core Standard:

> 5.3.A: "Classify quadrilaterals;" 5.3.C: "Identify, describe, and classify triangles by angle measure and number of congruent sides."

As above, all standards receiving the composite match designation also received an Achieve rating of 3 (3 = Excellent match between the two documents) using the Achieve Common Core Comparison Tool.

Partial Match (Achieve Score of 2 or 1)

An evaluation of **partial match** indicates that a single WPE only partially resembles the Common Core Standard. In other words, there is some overlapping language and/or intention between Washington and Common Core, but the WPE is missing one or more key aspects contained in the Common Core Standard.

In the case of partial matches (and partial composite matches), the Achieve Common Core Comparison Tool was also used to award an Achieve rating of 1 or 2, depending on the seriousness of the disparity. A rating of 2 indicated that the standards formed a "Good match, with minor aspects of the CCSS not addressed," while a rating of 1 suggested a "Weak match, [with] major aspects of the CCSS not addressed."

For example, Hanover assigned a **partial match with a rating of 2** for the following pair of standards:

Common Core Standard	WPE
CC.K.CC.4a When counting objects, say the number names in the standard order, *pairing each object with one and only one number* name and each number name with one and only one object.	WA.K.1.E Count objects in a set of up to 20, and count out a specific number of up to 20 objects from a larger set.

Hanover decided that the absence of emphasis on the link between pairing each object with "one and only one number" rendered the WPE only a partial match, but that the missing element was not serious enough to merit a "weak match" score of 1. In contrast, a more seriously deficient partial match – a **partial match with a rating of 1** – is shown below:

Common Core Standard	WPE
CC.K.OA.4 Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from. For any number from 1 to 9, *find the number that makes 10* when added to the given number, e.g., *by using objects or drawings, and record the answer with a drawing or equation.*	WA.K.1.H Describe a number from 1 to 9 using 5 as a benchmark number.

In this case, Hanover awarded a score of 1 ("weak match") because it was felt that two major aspects of the Common Core Standard were absent: the idea of finding the number that makes ten and the use of objects or drawings to record answers. While the Washington standard does encompass the main intention of the Common Core Standard, its methods and terminology are significantly different suggesting only a weak match between the two.

Partial Composite Match (Achieve Score 2 or 1)

An evaluation of **partial composite match** indicates that multiple Washington WPEs collectively form partial resemblance to the Common Core Standard. The tag is given when multiple WPEs, when taken together, contain some overlapping language and/or intention when compared to Common Core, but there are other more key aspects that are not adequately covered.

Once again, standards receiving the partial composite match designation also received a rating of 1 or 2 using the Achieve Common Core Comparison Tool. The difference between a 1 and 2 is the same as that articulated above: a 2 is given for a minor discrepancy or single absent non-crucial element, while a 1 is given for the absence of multiple or major elements.

No Match

An evaluation of **no match** indicates that this standard is not meaningfully articulated by any WPEs. An evaluation of no match is independent of grade level and means that means that no WPEs from any grade level reasonably approximate the Common Core. Washing Standards which are assigned a designation of no match (which can also be represented by an Achieve Score of 0) are also highlighted in light yellow in the tables that follow and singled out in the "Unmatched Standards – The Forward Analysis" section at the front of this report.

Grade Level Timing

When matches are drawn from outside grade level, they are still considered matches – even if the standard is matched only in a later grade. Standards that arrive at least one grade level late (e.g., a 5th grade WPE is matched to a 4th grade Common Core Standard) are marked by **red text** in the main crosswalk tables. Also, those standards that arrive at least one grade early are marked by **green text.**

Additionally, each match in the forward-analysis is classified into one of six grade level timing designations.

- **Unmatched:** The Common Core Standard is never meaningfully approximated by corresponding WPEs.
- **Late:** All those WPEs that are matched to the Common Core Standard arrive at least one grade level late.
- **Partially Late:** At least one of the WPEs that are matched to the Common Core Standard arrives at least one grade level late. Even if some standards arrive early and others arrive late, the match is classed as partially late.
- **On Schedule:** All matching WPEs are taken from the same grade level as the common core standard.
- **Partially Early:** At least one of the WPEs that are matched to the Common Core Standard arrives at least one grade level early.
- **Early:** All those WPEs that are matched to the Common Core Standard arrive at least one grade level early

The Backward-Analysis

After conducting the forward-analysis, which began with each Common Core Standard and looked for matching WPEs, Hanover returned to the two standard sets to conduct a second "backward" analysis. This time, the matching began with the Washington Performance Expectations. In order to get a sense of which WPEs were not clearly articulated in the Common Core, each WPE that had not been previously matched to a Common Core Standard was re-evaluated. Wherever possible, these remaining WPEs were matched with their closest counterpart in the Common Core

and added to the main crosswalk tables that had been produced by the forward analysis.

A significant number of WPEs (317) could not be meaningfully paired with any Common Core Standard. However, these unmatched standards were frequently produced simply by the different organizational structure of the two standards sets. In particular, many of those unmatched WPEs were identified as "Core Content" or "Core Process" – categories without clear counterparts in the Common Core. As such, Hanover classified each of the unmatched WPE's into four categories:

- **True No Match:** This is the categorization given to those WPEs that are truly not matched in the Common Core and which do not fall into any special classification that accounts for their unmatched status. There are 71 standards of this type. This is probably the most relevant, most important classification.
- **Process Matching Difficulty:** This categorization was given to the "Core Processes" standards that come at the end of each grade level. There is no real corresponding structure in the Common Core for these standards, so these standards seldom – if ever – were used to match the common core. This classification accounted for 126 of the unmatched WPE standards.
- **Core Matching Difficulty:** This categorization was given to WPEs prefixed by the phrase "Core Content" or "Additional Key Content." These over-arching standards often contained numerous different general concepts and – while some of these WPEs were used to match Common Core Standards in the forward-analysis crosswalk – certain standards of this variety were impossible to map onto a single Common Core Standard. There are 20 unmatched standards in this category.
- **Duplicate:** The Achieve Core Comparison Tool, which was used to perform the majority of the standard-matching analysis, contained numerous duplicates at the high school level. All, or nearly all, standards coded as 9-12.A1, 9-12.A2, or 9-12.G were also duplicated with a 9-12.M standard with identical wording. These duplicates accounted for 100 of the unmatched standards.

For the treatment of each unmatched WPE, see the Backward-Analysis Crosswalk in the Appendix of this report.

Executive Summary and Statistical Results

In this section, we will provide an overview of the results of the standard-matching process from a statistical standpoint.

Statistical Results – The Forward-Analysis

Table 1, shown below, presents a statistical summary of the forward-analysis organized by grade level and grade level band (K-5, 6-8, 9-12). Overall, performance was strong and consistent at the K-8 level, but somewhat fewer standards were matched at the high school level. The two columns at the right provide a breakdown of what percentage of standards were and were not matched by their corresponding grade level.

Table 1: Grade Level Statistical Summary

Grade Level	Total # of CCSS	Simple and Composite WA Match	Partial and Partial Composite WA Match	Total Percent Matched to Some Extent	No Match	Percent Late, Partially Late, or Unmatched	Percent Early, Partially Early, or On Schedule
Kindergarten	25	18	7	100%	0	44%	56%
1st	21	17	3	95%	1	29%	71%
2nd	26	18	6	92%	2	16%	84%
3rd	35	23	8	89%	4	49%	51%
4th	35	23	8	89%	4	60%	40%
5th	36	20	10	83%	6	56%	44%
K-5 Band	**178**	**119**	**42**	**90%**	**17**	**44%**	**56%**
6th	43	28	10	88%	5	53%	47%
7th	44	26	12	86%	6	43%	57%
8th	33	25	4	88%	4	45%	55%
6-8 Band	**120**	**79**	**26**	**88%**	**15**	**48%**	**52%**
9-12 STEM	55	7	12	35%	36	65%	35%
9-12 All	189	76	45	64%	68	36%	64%
9-12 No STEM	**134**	**69**	**33**	**76%**	**32**	**24%**	**76%**
TOTAL (No STEM)	**432**	**267**	**101**	**85%**	**64**	**39%**	**61%**

Table 2, shown below, uses the Achieve Tool's rating system. Because there is significant overlap between the two ratings, these statistics tell a similar story.

Table 2: Grade Level Summary, Achieve Ratings

Grade Level	Total # of CCSS	# of 3 ratings	# of 2 ratings	# of 1 ratings	# of non-matched standards	Total Percent Matched to Some Extent	Compliance Score[1]
Kindergarten	25	18	6	1	0	100%	89%
1st	21	17	1	2	1	95%	87%
2nd	26	18	3	3	2	92%	81%
3rd	35	23	6	2	4	89%	79%
4th	35	23	3	5	4	89%	76%
5th	36	20	4	6	6	83%	69%
K-5 Band	**178**	**119**	**23**	**19**	**17**	**90%**	**79%**
6th	43	28	7	3	5	88%	78%
7th	44	26	9	3	6	86%	75%
8th	33	25	1	3	4	88%	81%
6-8 Band	**120**	**79**	**17**	**9**	**15**	**88%**	**78%**
9-12 STEM	55	7	3	9	36	35%	22%
9-12 All	189	76	21	24	68	64%	52%
9-12 No STEM	**134**	**69**	**18**	**15**	**32**	**76%**	**69%**
TOTAL (No STEM)	**432**	**267**	**58**	**43**	**64**	**85%**	**78%**

STEM Standards Explanatory Note

Compliance with the high school STEM mathematics standards, which are marked with a (+) symbol and highlighted in purple in this report, is encouraged but not strictly required. The Common Core website has the following to say about these standards:

> Additional mathematics that students should learn in order to take advanced courses such as calculus, advanced statistics, or discrete mathematics is indicated by (+)… All standards with a (+) symbol should be in the common mathematics curriculum for all college and career ready students.[2]

As such, we have sought to underline figures that do not include these standards, which demonstrate a substantially lower percentage match than other standards areas.

[1] The Compliance Score takes into account the ratings scale (0-3), and represents the number of points Washington scored from the total available. For example, at the Kindergarten level there were 75 points available (25 standards multiplied by a max if 3 per standard). Washington's score was equal to 18*3 + 6*2 + 1*1 +0*0 = 67, 89% of the total points available at the Kindergarten level.

[2] "Common Core Standards for Mathematics." The Common Core State Standards Initiative. p. 57. www.corestandards.org/assets/CCSSI_Math%20Standards.pdf

Statistical Results – The Backward-Analysis

Given the nature of the enterprise, statistical examination of the backward-analysis is considerably more limited. Excluding duplicates, there are 558 unique WPEs registered within the Achieve system. Considering only those 71 unmatched standards that were classified as "true" non-matches, 87.3% of Washington Performance Expectations can be matched to the Common Core. Only 12.7% of eligible WPEs could not be closely aligned to common core standards.

As mentioned in the methodology section of this report, a total of 246 WPEs went unmatched to a Common Core Standard but were ultimately not considered "true" non-matches – there were only 71 "true" non-matches among the standards. Table 3 provides a statistical breakdown of the classification of each of these unmatched standards.

Table 3: Nature of Unmatched Washington Performance Expectations

Statistic	Unmatched Total	True No Match	Core Matching Difficulty	Process Matching Difficulty	Duplicate
Total	317	71	20	126	100
Percent of Unmatched	100%	22.4%	6.3%	39.7%	31.5%

Unmatched Standards – The Forward Analysis

In this section, we draw attention to all those Common Core Standards which had no match among Washington State Performance Expectations.

Table 4: List of Common Core Standards with No Washington Match, K-5

Grade Level	Common Core Standard
K	None
1	CC.1.NBT.6 Use place value understanding and properties of operations to add and subtract. Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
2	CC.2.NBT.6 Use place value understanding and properties of operations to add and subtract. Add up to four two-digit numbers using strategies based on place value and properties of operations.
2	CC.2.MD.5 Relate addition and subtraction to length. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
3	CC.3.OA.9 Solve problems involving the four operations, and identify and explain patterns in arithmetic. Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.
3	CC.3.NF.3c Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)
3	CC.3.MD.7c Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a × b and a × c. Use area models to represent the distributive property in mathematical reasoning.
3	CC.3.G.2 Reason with shapes and their attributes. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part is 1/4 of the area of the shape.
4	CC.4.OA.1 Use the four operations with whole numbers to solve problems. Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
4	CC.4.NF.3 Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Understand a fraction a/b with a > 1 as a sum of fractions 1/b. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)

Grade Level	Common Core Standard
4	CC.4.NF.3b Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.
4	CC.4.MD.4 Represent and interpret data. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.
5	CC.5.NF.3 Apply and extend previous understandings of multiplication and division to multiply and divide fractions. Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3 and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?
5	CC.5.NF.4b Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
5	CC.5.NF.7a Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for (1/3) ÷ 4 and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.
5	CC.5.NF.7b Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for 4 ÷ (1/5) and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.
5	CC.5.MD.4 Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
5	CC.5.MD.5c Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

Table 5: List of Common Core Standards with No Washington Match, 6-8

Grade Level	Common Core Standard
6	CC.6.EE.2b 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. For example, describe the expression 2(8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.
6	CC.6.EE.4 Apply and extend previous understandings of arithmetic to algebraic expressions. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.
6	CC.6.EE.8 Reason about and solve one-variable equations and inequalities. Write an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form x > c or x < c have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
6	CC.6.EE.9 Represent and analyze quantitative relationships between dependent and independent variables. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.
6	CC.6.G.4 Solve real-world and mathematical problems involving area, surface area, and volume. 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.
7	CC.7.NS.1a Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.
7	CC.7.NS.2a 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	CC.7.NS.2d 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.
7	CC.7.SP.1 Use random sampling to draw inferences about a population. 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.

Grade Level	Common Core Standard
7	CC.7.SP.2 Use random sampling to draw inferences about a population. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.
8	CC.7.SP.8c Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?
8	CC.8.NS.2 Know that there are numbers that are not rational, and approximate them by rational numbers. Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). For example, by truncating the decimal expansion of √2 (square root of 2), show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.
8	CC.8.EE.3 Work with radicals and integer exponents. Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3 × 10^8 and the population of the world as 7 × 10^9, and determine that the world population is more than 20 times larger.
8	CC.8.EE.7a 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	CC.8.SP.4 Investigate patterns of association in bivariate data. Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?

Table 6: List of Common Core Standards with No Washington Match, 9-12 No STEM

Grade Level	Common Core Standard
High School	CC.9-12.N.Q.2 Reason quantitatively and use units to solve problems. Define appropriate quantities for the purpose of descriptive modeling.*
High School	CC.9-12.N.CN.2 Perform arithmetic operations with complex numbers. Use the relation i^2 = –1 and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.
High School	CC.9-12.A.SSE.1 Interpret the structure of expressions. Interpret expressions that represent a quantity in terms of its context.*
High School	CC.9-12.A.SSE.1a Interpret parts of an expression, such as terms, factors, and coefficients.*
High School	CC.9-12.A.SSE.1b Interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret P(1+r)^n as the product of P and a factor not depending on P.*
High School	CC.9-12.A.SSE.2 Interpret the structure of expressions. Use the structure of an expression to identify ways to rewrite it. 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).
High School	CC.9-12.A.APR.2 Understand the relationship between zeros and factors of polynomial. Know and apply 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).
High School	CC.9-12.A.APR.3 Understand the relationship between zeros and factors of polynomials. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.
High School	CC.9-12.A.APR.6 Rewrite rational expressions. Rewrite simple rational expressions in different forms; write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x), and r(x) are polynomials with the degree of r(x) less than the degree of b(x), using inspection, long division, or, for the more complicated examples, a computer algebra system.
High School	CC.9-12.A.CED.3 Create equations that describe numbers or relationship. 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. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.*
High School	CC.9-12.A.CED.4 Create equations that describe numbers or relationship. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.*
High School	CC.9-12.A.REI.1 Understand solving equations as a process of reasoning and explain the reasoning. 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.
High School	CC.9-12.A.REI.7 Solve systems of equations. Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line y = –3x and the circle x^2 + y^2 = 3.

Grade Level	Common Core Standard
High School	CC.9-12.A.REI.12 Represent and solve equations and inequalities graphically. 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.
High School	CC.9-12.F.BF.3 Build new functions from existing functions. 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. Include recognizing even and odd functions from their graphs and algebraic expressions for them.
High School	CC.9-12.F.LE.1a Prove that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.*
High School	CC.9-12.F.LE.1b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.*
High School	CC.9-12.F.LE.1c Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.*
High School	CC.9-12.F.LE.3 Construct and compare linear, quadratic, and exponential models and solve problems. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.*
High School	CC.9-12.F.TF.1 Extend the domain of trigonometric functions using the unit circle. Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.
High School	CC.9-12.F.TF.2 Extend the domain of trigonometric functions using the unit circle. Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.
High School	CC.9-12.F.TF.5 Model periodic phenomena with trigonometric functions. Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.*
High School	CC.9-12.G.GPE.1 Translate between the geometric description and the equation for a conic section. Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.
High School	CC.9-12.G.GPE.2 Translate between the geometric description and the equation for a conic section. Derive the equation of a parabola given a focus and directrix.
High School	CC.9-12.G.MG.1 Apply geometric concepts in modeling situations. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*
High School	CC.9-12.S.ID.5 Summarize, represent, and interpret data on two categorical and quantitative variables. 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.*
High School	CC.9-12.S.ID.6b Informally assess the fit of a function by plotting and analyzing residuals.*
High School	CC.9-12.S.ID.8 Interpret linear models. Compute (using technology) and interpret the correlation coefficient of a linear fit.*

Grade Level	Common Core Standard
High School	CC.9-12.S.ID.9 Interpret linear models. Distinguish between correlation and causation.*
High School	CC.9-12.S.IC.2 Understand and evaluate random processes underlying statistical experiments. Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. 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?*
High School	CC.9-12.S.IC.3 Make inferences and justify conclusions from sample surveys, experiments, and observational studies. Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.*
High School	CC.9-12.S.IC.5 Make inferences and justify conclusions from sample surveys, experiments, and observational studies. Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.*

Table 7: List of Common Core Standards with No Washington Match, 9-12 STEM

Grade Level	Common Core Standard
High School	CC.9-12.N.CN.3 (+) Perform arithmetic operations with complex numbers. Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.
High School	CC.9-12.N.CN.4 (+) Represent complex numbers and their operations on the complex plane. Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.
High School	CC.9-12.N.CN.5 (+) Represent complex numbers and their operations on the complex plane. Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. For example, (-1 + √3i)^3 = 8 because (-1 + √3i) has modulus 2 and argument 120°.
High School	CC.9-12.N.CN.6 (+) Represent complex numbers and their operations on the complex plane. Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.
High School	CC.9-12.N.CN.8 (+) Use complex numbers in polynomial identities and equations. Extend polynomial identities to the complex numbers. For example, rewrite x^2 + 4 as (x + 2i)(x – 2i).
High School	CC.9-12.N.VM.1 (+) Represent and model with vector quantities. Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., v(bold), |v|, ||v||, v(not bold)).
High School	CC.9-12.N.VM.2 (+) Represent and model with vector quantities. Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.
High School	CC.9-12.N.VM.3 (+) Represent and model with vector quantities. Solve problems involving velocity and other quantities that can be represented by vectors.
High School	CC.9-12.N.VM.4 (+) Perform operations on vectors. Add and subtract vectors.

Grade Level	Common Core Standard
High School	CC.9-12.N.VM.4a (+) Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes.
High School	CC.9-12.N.VM.4b (+) Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.
High School	CC.9-12.N.VM.4c (+) Understand vector subtraction v – w as v + (–w), where (–w) is the additive inverse of w, with the same magnitude as w and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.
High School	CC.9-12.N.VM.5 (+) Perform operations on vectors. Multiply a vector by a scalar.
High School	CC.9-12.N.VM.5a (+) Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as c(v(sub x), v(sub y)) = (cv(sub x), cv(sub y)).
High School	CC.9-12.N.VM.5b (+) Compute the magnitude of a scalar multiple cv using $\|\|cv\|\| = \|c\|v$. Compute the direction of cv knowing that when $\|c\|v = 0$, the direction of cv is either along v (for $c > 0$) or against v (for $c < 0$).
High School	CC.9-12.N.VM.11 (+) Perform operations on matrices and use matrices in applications. Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.
High School	CC.9-12.A.REI.8 (+) Solve systems of equations. Represent a system of linear equations as a single matrix equation in a vector variable.
High School	CC.9-12.A.REI.9 (+) Solve systems of equations. Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 × 3 or greater).
High School	CC.9-12.F.IF.7d (+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.*
High School	CC.9-12.F.BF.4d (+) Produce an invertible function from a non-invertible function by restricting the domain.
High School	CC.9-12.F.TF.4 (+) Extend the domain of trigonometric functions using the unit circle. Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.
High School	CC.9-12.F.TF.6 (+) Model periodic phenomena with trigonometric functions. Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.
High School	CC.9-12.F.TF.7 (+) Model periodic phenomena with trigonometric functions. Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.*
High School	CC.9-12.G.SRT.9 (+) Apply trigonometry to general triangles. Derive the formula A = (1/2)ab sin(C) for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.
High School	CC.9-12.G.SRT.10 (+) Apply trigonometry to general triangles. Prove the Laws of Sines and Cosines and use them to solve problems.
High School	CC.9-12.G.SRT.11 (+) Apply trigonometry to general triangles. Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).

Grade Level	Common Core Standard
High School	CC.9-12.G.GPE.3 (+) Translate between the geometric description and the equation for a conic section. Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.
High School	CC.9-12.S.MD.1 (+) Calculate expected values and use them to solve problems. Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.*
High School	CC.9-12.S.MD.2 (+) Calculate expected values and use them to solve problems. Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.*
High School	CC.9-12.S.MD.3 (+) Calculate expected values and use them to solve problems. Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.*
High School	CC.9-12.S.MD.4 (+) Calculate expected values and use them to solve problems. Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?*
High School	CC.9-12.S.MD.5 (+) Use probability to evaluate outcomes of decisions. Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.*
High School	CC.9-12.S.MD.5a (+) Find the expected payoff for a game of chance. For example, find the expected winnings from a state lottery ticket or a game at a fast-food restaurant.*
High School	CC.9-12.S.MD.5b (+) Evaluate and compare strategies on the basis of expected values. For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.*
High School	CC.9-12.S.MD.6 (+) Use probability to evaluate outcomes of decisions. Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).*
High School	CC.9-12.S.MD.7 (+) Use probability to evaluate outcomes of decisions. Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).*

Unmatched Standards – The Backward-Analysis

In this section, we draw attention to all those Washington Performance Expectations which were considered true non-matches with the Common Core.

Table 8: True Unmatched Standards

Grade Level	Standard
1	WA.1.1.B Name the number that is one less or one more than any number given verbally up to 120.
1	WA.1.1.D Order objects or events using ordinal numbers.
1	WA.1.3.B Identify and name two-dimensional figures, including those in real-world contexts, regardless of size or orientation.
1	WA.1.4.E Describe the connection between the size of the measurement unit and the number of units needed to measure something.
1	WA.1.4.F Name the days of the week and the months of the year, and use a calendar to determine a day or month.
2	WA.2.2.F Create and state a rule for patterns that can be generated by addition and extend the pattern.
2	WA.2.3.A Identify objects that represent or approximate standard units and use them to measure length.
3	WA.3.1.A Read, write, compare, order, and represent numbers to 10,000 using numbers, words, and symbols.
3	WA.3.1.D Estimate sums and differences to approximate solutions to problems and determine reasonableness of answers.
3	WA.3.2.G Multiply any number from 11 through 19 by a single-digit number using the distributive property and place value concepts.
3	WA.3.5.A* Determine whether two expressions are equal and use "=" to denote equality.
3	WA.3.5.B* Measure temperature in degrees Fahrenheit and degrees Celsius using a thermometer.
3	WA.3.5.D* Estimate, measure, and compare capacity using appropriate-sized U.S. customary and metric units.
4	WA.4.2.I Solve single- and multi-step word problems involving comparison of decimals and fractions (including mixed numbers), and verify the solutions.
4	WA.4.3.E Demonstrate that rectangles with the same area can have different perimeters, and that rectangles with the same perimeter can have different areas.
4	WA.4.4.E* Determine the median, mode, and range of a set of data and describe what each measure indicates about the data.
4	WA.4.4.G* Determine a simple probability from a context that includes a picture.
4	WA.4.4.H* Display the results of probability experiments and interpret the results.
5	WA.5.1.D Estimate quotients to approximate solutions and determine reasonableness of answers in problems involving up to two-digit divisors
5	WA.5.1.E Mentally divide two-digit numbers by one-digit divisors and explain the strategies used.
5	WA.5.3.D Determine the formula for the area of a parallelogram by relating it to the area of a rectangle.
5	WA.5.3.E Determine the formula for the area of a triangle by relating it to the area of a parallelogram.

Grade Level	Standard
5	WA.5.3.F Determine the perimeters and areas of triangles and parallelograms.
5	WA.5.4.B Write a rule to describe the relationship between two sets of data that are linearly related.
5	WA.5.5.C* Construct and interpret line graphs.
6	WA.6.1.C Estimate products and quotients of fractions and decimals.
6	WA.6.1.G Describe the effect of multiplying or dividing a number by one, by zero, by a number between zero and one, and by a number greater than one.
6	WA.6.3.B Write ratios to represent a variety of rates.
6	WA.6.4.B Determine the perimeter and area of a composite figure that can be divided into triangles, rectangles, and parts of circles.
6	WA.6.4.D Recognize and draw two-dimensional representations of three-dimensional figures.
6	WA.6.4.F Determine the surface area of a pyramid.
6	WA.6.4.G Describe and sort polyhedra by their attributes: parallel faces, types of faces, number of faces, edges, and vertices.
6	WA.6.5.A* Use strategies for mental computations with non-negative whole numbers, fractions, and decimals.
7	WA.7.2.A Mentally add, subtract, multiply, and divide simple fractions, decimals, and percents.
7	WA.7.4.E Evaluate different displays of the same data for effectiveness and bias, and explain reasoning.
7	WA.7.5.B* Write the prime factorization of whole numbers greater than 1, using exponents when appropriate.
8	WA.8.1.F Solve single- and multi-step word problems involving linear functions and verify the solutions.
8	WA.8.2.E Quickly recall the square roots of the perfect squares from 1 through 225 and estimate the square roots of other positive numbers.
8	WA.8.3.B Select, construct, and analyze data displays, including box-and-whisker plots, to compare two sets of data.
8	WA.8.3.D Describe different methods of selecting statistical samples and analyze the strengths and weaknesses of each method.
8	WA.8.3.E Determine whether conclusions of statistical studies reported in the media are reasonable.
8	WA.8.3.F Determine probabilities for mutually exclusive, dependent, and independent events for small sample spaces.
8	WA.8.3.G Solve single- and multi-step problems using counting techniques and Venn diagrams and verify the solutions.
9-12	WA.9-12.A1.2.D Determine whether approximations or exact values of real numbers are appropriate, depending on the context, and justify the selection.
9-12	WA.9-12.A1.3.C Evaluate f(x) at a (i.e., f(a)) and solve for x in the equation f(x) = b.
9-12	WA.9-12.A1.7.B* Find and approximate solutions to exponential equations.
9-12	WA.9-12.A1.7.D* Solve an equation involving several variables by expressing one variable in terms of the others.
9-12	WA.9-12.G.1.A Distinguish between inductive and deductive reasoning.
9-12	WA.9-12.G.1.B Use inductive reasoning to make conjectures, to test the plausibility of a geometric statement, and to help find a counterexample.

Grade Level	Standard
9-12	WA.9-12.G.1.D Write the converse, inverse, and contrapositive of a valid proposition and determine their validity.
9-12	WA.9-12.G.1.E Identify errors or gaps in a mathematical argument and develop counterexamples to refute invalid statements about geometric relationships.
9-12	WA.9-12.G.1.F Distinguish between definitions and undefined geometric terms and explain the role of definitions, undefined terms, postulates (axioms), and theorems.
9-12	WA.9-12.G.2.D Describe the intersections of lines in the plane and in space, of lines and planes, and of planes in space.
9-12	WA.9-12.G.3.G Know, prove, and apply theorems about properties of quadrilaterals and other polygons.
9-12	WA.9-12.G.3.J Describe prisms, pyramids, parallelepipeds, tetrahedra, and regular polyhedra in terms of their faces, edges, vertices, and properties.
9-12	WA.9-12.G.4.B Determine the coordinates of a point that is described geometrically.
9-12	WA.9-12.G.4.D Determine the equation of a circle that is described geometrically in the coordinate plane and, given equations for a circle and a line, determine the coordinates of their intersection(s).
9-12	WA.9-12.G.5.D Describe the symmetries of two-dimensional figures and describe transformations, including reflections across a line and rotations about a point.
9-12	WA.9-12.G.6.D* Predict and verify the effect that changing one, two, or three linear dimensions has on perimeter, area, volume, or surface area of two- and three-dimensional figures.
9-12	WA.9-12.A2.3.A Translate between the standard form of a quadratic function, the vertex form, and the factored form; graph and interpret the meaning of each form.
9-12	WA.9-12.A2.3.B Determine the number and nature of the roots of a quadratic function.
9-12	WA.9-12.A2.5.A Construct new functions using the transformations f(x - h), f(x) + k, cf(x), and by adding and subtracting functions, and describe the effect on the original graph(s).
9-12	WA.9-12.A2.5.B Plot points, sketch, and describe the graphs of functions of the form f(x) = a√(x −c) + d, and solve related equations.
9-12	WA.9-12.A2.5.C Plot points, sketch, and describe the graphs of functions of the form f(x) = a/x + b, f(x) = a/x^2 + b, and f(x) = a/(bx + c), and solve related equations.
9-12	WA.9-12.A2.6.E Determine if a bivariate data set can be better modeled with an exponential or a quadratic function and use the model to make predictions.
9-12	WA.9-12.A2.7.A* Solve systems of three equations with three variables.
9-12	WA.9-12.M1.2.D Plot points, sketch, and describe the graphs of functions of the form f(x) = (a/x) + b.
9-12	WA.9-12.M1.7.A* Sketch the graph for an exponential function of the form y = abn where n is an integer, describe the effects that changes in the parameters a and b have on the graph, and answer questions that arise in situations modeled by exponential functions.
9-12	WA.9-12.M2.3.A Use deductive reasoning to prove that a valid geometric statement is true.
9-12	WA.9-12.M3.3.F Plot points, sketch, and describe the graphs of cubic polynomial functions of the form f(x) = ax^3 + d as an example of higher order polynomials and solve related equations.
9-12	WA.9-12.M3.5.A Describe the intersections of lines in the plane and in space, of lines and planes, and of planes in space.

K-5 Mathematics: Alignment Analysis Crosswalk

In this section, Hanover presents the main alignment crosswalk table for the K-5 grade band.

Table 9: K-5 Alignment Analysis Crosswalk

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.K.CC.1 Know number names and the count sequence. Count to 100 by ones and by tens.	WA.K.1.A Rote count by ones forward from 1 to 100 and backward from any number in the range of 10 to 1. WA.1.1.A Count by ones forward and backward from 1 to 120, starting at any number, and count by twos, fives, and tens to 100. WA.K.1 Core Content: Whole numbers: Students begin to develop basic notions of numbers and use numbers to think about objects and the world around them. They practice counting objects in sets, and they think about how numbers are ordered by showing the numbers on the number line. As they put together and take apart simple numbers, students lay the groundwork for learning how to add and subtract. Understanding numbers is perhaps the most central idea in all of mathematics, and if students build and maintain a strong foundation of number sense and number skills, they will be able to succeed with increasingly sophisticated numerical knowledge and skills from year to year.	Partially Late	Composite Match	The 'count by tens' aspect not encountered until first grade.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.K.CC.2 Know number names and the count sequence. Count forward beginning from a given number within the known sequence (instead of having to begin at 1).	WA.K.1.B Read aloud numerals from 0 to 31.WA.K.1.G Locate numbers from 1 to 31 on the number line. WA.K.1.G Locate numbers from 1 to 31 on the number line. WA.K.1.D Order numerals from 1 to 10.	On Schedule	Composite Match	WA.K.1.G. incorporates starting at a number other than one in its explanatory notes.	3
CC.K.CC.3 Know number names and the count sequence. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).	WA.K.1.E Count objects in a set of up to 20, and count out a specific number of up to 20 objects from a larger set. WA.1.1.E Write, compare, and order numbers to 120. WA.K.1.B Read aloud numerals from 0 to 31.	Partially Late	Partial Composite Match	The importance of zero as representing 'no objects' not stressed. Writing not stressed until first grade.	2
CC.K.CC.4 Count to tell the number of objects. Understand the relationship between numbers and quantities; connect counting to cardinality.	WA.K.1.E Count objects in a set of up to 20, and count out a specific number of up to 20 objects from a larger set.	On Schedule	Simple Match		3
CC.K.CC.4a When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.	WA.K.1.E Count objects in a set of up to 20, and count out a specific number of up to 20 objects from a larger set.	On Schedule	Partial Match	Weak link between number and 'one and only one object' in counted set.	2
CC.K.CC.4b Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.	WA.K.1.F Compare two sets of up to 10 objects each and say whether the number of objects in one set is equal to, greater than, or less than the number of objects in the other set. WA.K.1.E Count objects in a set of up to 20, and count out a specific number of up to 20 objects from a larger set.	On Schedule	Partial Composite Match	No stipulation that last number counted is the number of objects or that order and arrangement does not affect count.	2

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.K.CC.4c Understand that each successive number name refers to a quantity that is one larger.	WA.K.1.H Describe a number from 1 to 9 using 5 as a benchmark number. WA.K.1.G Locate numbers from 1 to 31 on the number line.	On Schedule	Composite Match	These two benchmarks should encompass and move beyond the intention of the common core standard.	3
CC.K.CC.5 Count to tell the number of objects. Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.	WA.1.1.G Group numbers into tens and ones in more than one way. WA.K.1.E Count objects in a set of up to 20, and count out a specific number of up to 20 objects from a larger set.	Partially Late	Partial Composite Match	Concept of grouping and rearrangement encountered in first grade.	2
CC.K.CC.6 Compare numbers. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. (Include groups with up to ten objects.)	WA.K.1.F Compare two sets of up to 10 objects each and say whether the number of objects in one set is equal to, greater than, or less than the number of objects in the other set.	On Schedule	Simple Match		3
CC.K.CC.7 Compare numbers. Compare two numbers between 1 and 10 presented as written numerals.	WA.K.1.H Describe a number from 1 to 9 using 5 as a benchmark number.	On Schedule	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.K.OA.1 Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from. Represent addition and subtraction with objects, fingers, mental images, drawings (drawings need not show details, but should show the mathematics in the problem), sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.	WA.K.2.C Model addition by joining sets of objects that have 10 or fewer total objects when joined and model subtraction by separating a set of 10 or fewer objects. WA.K.2.B Translate a pattern among sounds, symbols, movements, and physical objects. WA.K.2 Core Content: Patterns and operations: Students learn what it means to add and subtract by joining and separating sets of objects. Working with patterns helps them strengthen this understanding of addition and subtraction and moves them toward the important development of algebraic thinking. Students study simple repetitive patterns in preparation for increasingly sophisticated patterns that can be represented with algebraic expressions in later grades. WA.K.2.D Describe a situation that involves the actions of joining (addition) or separating (subtraction) using words, pictures, objects, or numbers. WA.1.2 Core Content: Addition and subtraction: Students learn how to add and subtract, when to add and subtract, and how addition and subtraction relate to each other. Understanding that addition and subtraction undo each other is an important part of learning to use these operations efficiently and accurately. Students notice patterns involving addition and subtraction, and they work with other types of patterns as they learn to make generalizations about what they observe.	Partially Late	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.K.OA.2 Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.	WA.1.2.H Solve and create word problems that match addition or subtraction equations. WA.K.2.C Model addition by joining sets of objects that have 10 or fewer total objects when joined and model subtraction by separating a set of 10 or fewer objects. WA.1.2.G Quickly recall addition facts and related subtraction facts for sums equal to 10.	Partially Late	Composite Match	Word problems introduced in first grade.	3
CC.K.OA.3 Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).	WA.K.1.C Fluently compose and decompose numbers to 5. WA.1.1.F Fluently compose and decompose numbers to 10.	Partially Late	Composite Match	The kindergarten mark is 5, rather than 10.	3
CC.K.OA.4 Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.	WA.K.1.H Describe a number from 1 to 9 using 5 as a benchmark number.	On Schedule	Partial Match	Major aspects of this standard not addressed, including 'find the number that makes 10' and 'record the answer with a drawing or equation.	1
CC.K.OA.5 Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from. Fluently add and subtract within 5.	WA.K.2.C Model addition by joining sets of objects that have 10 or fewer total objects when joined and model subtraction by separating a set of 10 or fewer objects. WA.K.2.D Describe a situation that involves the actions of joining (addition) or separating (subtraction) using words, pictures, objects, or numbers.	On Schedule	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.K.NBT.1 Work with numbers 11-19 to gain foundations for place value. Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.	WA.1.1 Core Content: Whole number relationships: Students continue to work with whole numbers to quantify objects. They consider how numbers relate to one another. As they expand the set of numbers they work with, students start to develop critical concepts of ones and tens that introduce them to place value in our base ten number system. An understanding of how ones and tens relate to each other allows students to begin adding and subtracting two-digit numbers, where thinking of ten ones as one ten and vice versa is routine. Some students will be ready to work with numbers larger than those identified in the Expectations and should be given every opportunity to do so. WA.1.1.F Fluently compose and decompose numbers to 10. WA.1.2.A Connect physical and pictorial representations to addition and subtraction equations.	Late	Partial Composite Match	No composition/ decomposition up to 19. Place value first mentioned as a key word in first grade. Recording with equations also only in first grade standards.	2
CC.K.MD.1 Describe and compare measurable attributes. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.	WA.K.4* Additional Key Content: Students informally develop early measurement concepts. This is an important precursor to Core Content on measurement in later grades, when students measure objects with tools. Solving measurement problems connects directly to the student's world and is a basic component of learning mathematics.	On Schedule	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.K.MD.2 Describe and compare measurable attributes. Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.	WA.K.4.A* Make direct comparisons using measurable attributes such as length, weight, and capacity.	On Schedule	Simple Match		3
CC.K.MD.3 Classify objects and count the number of objects in each category. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. (Limit category counts to be less than or equal to 10.)	WA.K.3.B Sort shapes using a sorting rule and explain the sorting rule. WA.K.2.C Model addition by joining sets of objects that have 10 or fewer total objects when joined and model subtraction by separating a set of 10 or fewer objects.	On Schedule	Partial Composite Match	WA.K.3.B. includes the sorting/categorizing component and W.K.2.C. incorporates the counting up to ten component, but no standard combines the two.	2
CC.K.G.1 Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres). Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.	WA.K.3.C Describe the location of one object relative to another object using words such as in, out, over, under, above, below, between, next to, behind, and in front of.	On Schedule	Simple Match		3
CC.K.G.2 Identify and describe shapes (such as squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres). Correctly name shapes regardless of their orientations or overall size.	WA.K.3.A Identify, name, and describe circles, triangles, rectangles, squares (as special rectangles), cubes, and spheres.	On Schedule	Simple Match	Explanatory notes explain the use of different orientations and size.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.K.G.3 Identify and describe shapes (such as squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres). Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").	WA.K.3.A Identify, name, and describe circles, triangles, rectangles, squares (as special rectangles), cubes, and spheres. WA.1.3 Core Content: Geometric attributes: Students expand their knowledge of two- and three-dimensional geometric figures by sorting, comparing, and contrasting them according to their characteristics. They learn important mathematical vocabulary used to name the figures. Students work with composite shapes made out of basic two-dimensional figures as they continue to develop their spatial sense of shapes, objects, and the world around them. WA.1.3.A Compare and sort a variety of two- and three-dimensional figures according to their geometric attributes.	Partially Late	Composite Match	Three-dimensional objects not mentioned until first grade standards.	3
CC.K.G.4 Analyze, compare, create, and compose shapes. Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).	WA.1.3 Core Content: Geometric attributes: Students expand their knowledge of two- and three-dimensional geometric figures by sorting, comparing, and contrasting them according to their characteristics. They learn important mathematical vocabulary used to name the figures. Students work with composite shapes made out of basic two-dimensional figures as they continue to develop their spatial sense of shapes, objects, and the world around them. WA.1.3.C Combine known shapes to create shapes and divide known shapes into other shapes.	Late	Composite Match	This matches for this standard come a grade late.	3
CC.K.G.5 Analyze, compare, create, and compose shapes. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.	WA.1.3.C Combine known shapes to create shapes and divide known shapes into other shapes.	Late	Simple Match	Comes a grade late. Explanatory notes include use of objects to model and the drawing of shapes.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.K.G.6 Analyze, compare, create, and compose shapes. Compose simple shapes to form larger shapes. For example, "can you join these two triangles with full sides touching to make a rectangle?"	WA.1.3.C Combine known shapes to create shapes and divide known shapes into other shapes.	Late	Simple Match	Comes a grade late. Explanatory notes detail the use of shapes to compose other shapes.	3
CC.1.OA.1 Represent and solve problems involving addition and subtraction. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	WA.1.2.H Solve and create word problems that match addition or subtraction equations. WA.1.6 Core Processes: Reasoning, problem solving, and communication: Students further develop the concept that doing mathematics involves solving problems and discussing what they did to solve them. Problems in first grade emphasize addition, subtraction, and solidifying number concepts, and sometimes include precursors to multiplication. Students continue to develop their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?"; "Why did you do that?"; and "How do you know that?" Students begin to build their mathematical vocabulary as they use correct mathematical language appropriate to first grade. WA.2.2.B Solve addition and subtraction word problems that involve joining, separating, and comparing and verify the solution. WA.2.2.G Solve equations in which the unknown number appears in a variety of positions.	Partially Late	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.1.OA.2 Represent and solve problems involving addition and subtraction. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	WA.1.2.H Solve and create word problems that match addition or subtraction equations. WA.1.2.E Add three or more one-digit numbers using the commutative and associative properties of addition.	On Schedule	Composite Match		3
CC.1.OA.3 Understand and apply properties of operations and the relationship between addition and subtraction. Apply properties of operations as strategies to add and subtract. Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.) (Students need not use formal terms for these properties.)	WA.1.2.E Add three or more one-digit numbers using the commutative and associative properties of addition.	On Schedule	Simple Match		3
CC.1.OA.4 Understand and apply properties of operations and the relationship between addition and subtraction. Understand subtraction as an unknown-addend problem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.	WA.1.2.D Demonstrate the inverse relationship between addition and subtraction by undoing an addition problem with subtraction and vice versa.	On Schedule	Simple Match		3
CC.1.OA.5 Add and subtract within 20. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	WA.1.2.F Apply and explain strategies to compute addition facts and related subtraction facts for sums to 18.	On Schedule	Simple Match	WA.1.2.F. only goes to 18 instead of 20.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.1.OA.6 Add and subtract within 20. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).	WA.1.2.F Apply and explain strategies to compute addition facts and related subtraction facts for sums to 18.	On Schedule	Simple Match	WA.1.2.F. uses 18 rather than 20.	3
CC.1.OA.7 Work with addition and subtraction equations. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.	WA.1.2.B Use the equal sign (=) and the word equals to indicate that two expressions are equivalent.	On Schedule	Partial Match	Washington standards do not incorporate the 'true or false' options for equations.	2
CC.1.OA.8 Work with addition and subtraction equations. Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = __ – 3, 6 + 6 = __.	WA.1.2.E Add three or more one-digit numbers using the commutative and associative properties of addition.	On Schedule	Simple Match	Explanatory notes account for the use of unknown numbers.	3
CC.1.NBT.1 Extend the counting sequence. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.	WA.1.1.A Count by ones forward and backward from 1 to 120, starting at any number, and count by twos, fives, and tens to 100.	On Schedule	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.1.NBT.2 Understand place value. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: -- a. 10 can be thought of as a bundle of ten ones — called a "ten." -- b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. -- c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).	WA.1.1 Core Content: Whole number relationships: Students continue to work with whole numbers to quantify objects. They consider how numbers relate to one another. As they expand the set of numbers they work with, students start to develop critical concepts of ones and tens that introduce them to place value in our base ten number system. An understanding of how ones and tens relate to each other allows students to begin adding and subtracting two-digit numbers, where thinking of ten ones as one ten and vice versa is routine. Some students will be ready to work with numbers larger than those identified in the Expectations and should be given every opportunity to do so. WA.2.1 Core Content: Place value and the base ten system: Students refine their understanding of the base ten number system and use place value concepts of ones, tens, and hundreds to understand number relationships. They become fluent in writing and renaming numbers in a variety of ways. This fluency, combined with the understanding of place value, is a strong foundation for learning how to add and subtract two-digit numbers.	Partially Late	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.1.NBT.3 Understand place value. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.	WA.1.1 Core Content: Whole number relationships: Students continue to work with whole numbers to quantify objects. They consider how numbers relate to one another. As they expand the set of numbers they work with, students start to develop critical concepts of ones and tens that introduce them to place value in our base ten number system. An understanding of how ones and tens relate to each other allows students to begin adding and subtracting two-digit numbers, where thinking of ten ones as one ten and vice versa is routine. Some students will be ready to work with numbers larger than those identified in the Expectations and should be given every opportunity to do so.	On Schedule	Partial Match	No standard accounts for the greater than, less than, equal to comparison of two-digit numbers.	1
CC.1.NBT.4 Use place value understanding and properties of operations to add and subtract. Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.	WA.2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.	Late	Simple Match	The matching standard comes one grade late.	3
CC.1.NBT.5 Use place value understanding and properties of operations to add and subtract. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.	WA.2.2.D Add and subtract two-digit numbers mentally and explain the strategies used.	Late	Simple Match	WA standard comes late, but exceeds common core.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.1.NBT.6 Use place value understanding and properties of operations to add and subtract. Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.		Unmatched	No Match		0
CC.1.MD.1 Measure lengths indirectly and by iterating length units. Order three objects by length; compare the lengths of two objects indirectly by using a third object.	WA.1.4.C Compare lengths using the transitive property.	On Schedule	Simple Match		3
CC.1.MD.2 Measure lengths indirectly and by iterating length units. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.	WA.1.4.B Use a variety of non-standard units to measure length WA.1.4.A Recognize that objects used to measure an attribute (length, weight, capacity) must be consistent in size. WA.1.4.D Use non-standard units to compare objects according to their capacities or weights.	On Schedule	Composite Match		3
CC.1.MD.3 Tell and write time. Tell and write time in hours and half-hours using analog and digital clocks.	2.3.E Use both analog and digital clocks to tell time to the minute.	Late	Simple Match	Standard comes one grade late.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.1.MD.4 Represent and interpret data. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.	WA.1.5.A* Represent data using tallies, tables, picture graphs, and bar-type graphs. WA.1.5.B* Ask and answer comparison questions about data. WA.1.5* Additional Key Content: Students are introduced to early ideas of statistics by collecting and visually representing data. These ideas reinforce their understanding of the Core Content areas related to whole numbers and addition and subtraction as students ask and answer questions about the data. As they move through the grades, students will continue to apply what they learn about data, making mathematics relevant and connecting numbers to applied situations.	On Schedule	Composite Match		3
CC.1.G.1 Reason with shapes and their attributes. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); for a wide variety of shapes; build and draw shapes to possess defining attributes.	WA.1.3.C Combine known shapes to create shapes and divide known shapes into other shapes.	On Schedule	Partial Match	No emphasis on defining versus non-defining attributes.	1
CC.1.G.2 Reason with shapes and their attributes. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. (Students do not need to learn formal names such as "right rectangular prism.")	WA.1.3.C Combine known shapes to create shapes and divide known shapes into other shapes.	On Schedule	Simple Match	Explanatory notes include the use of three-dimensional objects.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.1.G.3 Reason with shapes and their attributes. Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.	WA.1.3.C Combine known shapes to create shapes and divide known shapes into other shapes.	On Schedule	Simple Match		3
CC.2.OA.1 Represent and solve problems involving addition and subtraction. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	WA.1.2.H Solve and create word problems that match addition or subtraction equations.	Early	Partial Match	No mention is made of whether the standard includes numbers up to 100.	2
CC.2.OA.2 Add and subtract within 20. Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.	WA.2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20.	On Schedule	Simple Match		3
CC.2.OA.3 Work with equal groups of objects to gain foundations for multiplication. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.	WA.1.1.I Classify a number as odd or even and demonstrate that it is odd or even. WA.2.4.C* Model and describe multiplication situations in which sets of equal size are joined. WA.2.4.D* Model and describe division situations in which sets are separated into equal parts.	Partially Early	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.2.OA.4 Work with equal groups of objects to gain foundations for multiplication. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.	WA.2.4.C* Model and describe multiplication situations in which sets of equal size are joined. WA.3.2.A Represent multiplication as repeated addition, arrays, counting by multiples, and equal jumps on the number line, and connect each representation to the related equation.	Partially Late	Composite Match	Use of arrays not introduced until third grade standards.	3
CC.2.NBT.1 Understand place value. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: -- a. 100 can be thought of as a bundle of ten tens — called a "hundred." -- b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).	WA.2.1.B Connect place value models with their numerical equivalents to 1,000. WA.2.1.C Identify the ones, tens, and hundreds place in a number and the digits occupying them.	On Schedule	Composite Match		3
CC.2.NBT.2 Understand place value. Count within 1000; skip-count by 5s, 10s, and 100s.	WA.2.1.A Count by tens or hundreds forward and backward from 1 to 1,000, starting at any number. WA.1.1.H Group and count objects by tens, fives, and twos.	Partially Early	Composite Match		3
CC.2.NBT.3 Understand place value. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	WA.2.1.A Count by tens or hundreds forward and backward from 1 to 1,000, starting at any number. WA.2.1.D Write three-digit numbers in expanded form. WA.1.1.C Read aloud numerals from 0 to 1,000.	Partially Early	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.2.NBT.4 Understand place value. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.	WA.2.1.F Compare and order numbers from 0 to 1,000. WA.2.1.E Group three-digit numbers into hundreds, tens, and ones in more than one way.	On Schedule	Composite Match		3
CC.2.NBT.5 Use place value understanding and properties of operations to add and subtract. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	WA.2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.	On Schedule	Simple Match		3
CC.2.NBT.6 Use place value understanding and properties of operations to add and subtract. Add up to four two-digit numbers using strategies based on place value and properties of operations.		Unmatched	No Match		
CC.2.NBT.7 Use place value understanding and properties of operations to add and subtract. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.	WA.3.1 Core Content: Addition, subtraction, and place value: Students solidify and formalize important concepts and skills related to addition and subtraction. In particular, students extend critical concepts of the base ten number system to include large numbers, they formalize procedures for adding and subtracting large numbers, and they apply these procedures in new contexts.	Late	Partial Match	Grade Two standards do not include addition of three-digit numbers.	1
CC.2.NBT.8 Use place value understanding and properties of operations to add and subtract. Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.	WA.2.2.D Add and subtract two-digit numbers mentally and explain the strategies used.	On Schedule	Partial Match	No mental math standard for three-digit numbers.	1

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.2.NBT.9 Use place value understanding and properties of operations to add and subtract. Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)	WA.2.2 Core Content: Addition and subtraction: Students focus on what it means to add and subtract as they become fluent with single-digit addition and subtraction facts and develop addition and subtraction procedures for two-digit numbers. Students make sense of these procedures by building on what they know about place value and number relationships and by putting together or taking apart sets of objects. This is students' first time to deal formally with step-by-step procedures (algorithms)- an important component of mathematics where a generalizable technique can be used in many similar situations. Students begin to use estimation to determine if their answers are reasonable.	On Schedule	Simple Match		3
CC.2.MD.1 Measure and estimate lengths in standard units. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	WA.2.3.C Measure length to the nearest whole unit in both metric and U.S. customary units.	On Schedule	Simple Match		3
CC.2.MD.2 Measure and estimate lengths in standard units. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.	WA.2.2.E Estimate sums and differences. WA.2.3.C Measure length to the nearest whole unit in both metric and U.S. customary units.	On Schedule	Composite Match		3
CC.2.MD.3 Measure and estimate lengths in standard units. Estimate lengths using units of inches, feet, centimeters, and meters.	WA.2.3.C Measure length to the nearest whole unit in both metric and U.S. customary units. WA.2.3.B Estimate length using metric and U.S. customary units.	On Schedule	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.2.MD.4 Measure and estimate lengths in standard units. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.	WA.2.3.C Measure length to the nearest whole unit in both metric and U.S. customary units. WA.1.4 Core Content: Concepts of measurement: Students start to learn about measurement by measuring length. They begin to understand what it means to measure something, and they develop their measuring skills using everyday objects. As they focus on length, they come to understand that units of measure must be equal in size and learn that standard-sized units exist. They develop a sense of the approximate size of those standard units (like inches or centimeters) and begin using them to measure different objects. Students learn that when a unit is small, it takes more of the unit to measure an item than it does when the units are larger, and they relate and compare measurements of objects using units of different sizes. Over time they apply these same concepts of linear measurement to other attributes such as weight and capacity. As students practice using measurement tools to measure objects, they reinforce their numerical skills and continue to develop their sense of space and shapes. WA.2.3 Core Content: Measurement: Students understand the process of measuring length and progress from measuring length with objects such as toothpicks or craft sticks to the more practical skill of measuring length with standard units and tools such as rulers, tape measures, or meter sticks. As students are well acquainted with two-digit numbers by this point, they tell time on different types of clocks.	Partially Early	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.2.MD.5 Relate addition and subtraction to length. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.		Unmatched	No Match		
CC.2.MD.6 Relate addition and subtraction to length. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, … , and represent whole-number sums and differences within 100 on a number line diagram.	WA.1.2.C Represent addition and subtraction on the number line.	Early	Partial Match	Weak link between length and the number line.	1
CC.2.MD.7 Work with time and money. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.	WA.2.3.E Use both analog and digital clocks to tell time to the minute. WA.2.2.H Name each standard U.S. coin, write its value using the $ sign and the ¢ sign, and name combinations of other coins with the same total value. WA.2.2.I Determine the value of a collection of coins totaling less than $1.00.	On Schedule	Composite Match		3
CC.2.MD.8 Work with time and money. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ (dollars) and ¢ (cents) symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?	WA.2.2.H Name each standard U.S. coin, write its value using the $ sign and the ¢ sign, and name combinations of other coins with the same total value.	On Schedule	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.2.MD.9 Represent and interpret data. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.	WA.2.4.B* Collect, organize, represent, and interpret data in bar graphs and picture graphs.	On Schedule	Partial Match	WA standard includes collection and organization of data in graphs, but does not link to measurements of length.	2
CC.2.MD.10 Represent and interpret data. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.	WA.2.4.B* Collect, organize, represent, and interpret data in bar graphs and picture graphs.	On Schedule	Simple Match		3
CC.2.G.1 Reason with shapes and their attributes. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. (Sizes are compared directly or visually, not compared by measuring.)	WA.2.4.A* Solve problems involving properties of two- and three-dimensional figures.	On Schedule	Partial Match	No standard for drawing shapes based on a given set of attributes.	2
CC.2.G.2 Reason with shapes and their attributes. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	WA.2.4.A* Solve problems involving properties of two- and three-dimensional figures.	On Schedule	Simple Match	Explanatory Notes touch on problem-solving using the partitioning of shapes.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.2.G.3 Reason with shapes and their attributes. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.	WA.2.4.A* Solve problems involving properties of two- and three-dimensional figures.	On Schedule	Simple Match	Explanatory Notes touch on problem-solving using the partitioning of shapes.	3
CC.3.OA.1 Represent and solve problems involving multiplication and division. Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5 × 7.	WA.3.2.B Represent division as equal sharing, repeated subtraction, equal jumps on the number line, and formation of equal groups of objects, and connect each representation to the related equation. WA.3.2.A Represent multiplication as repeated addition, arrays, counting by multiples, and equal jumps on the number line, and connect each representation to the related equation.	On Schedule	Composite Match		3
CC.3.OA.2 Represent and solve problems involving multiplication and division. Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.	WA.3.2.B Represent division as equal sharing, repeated subtraction, equal jumps on the number line, and formation of equal groups of objects, and connect each representation to the related equation. WA.5.1 Core Content: Multi-digit division: Students learn efficient ways to divide whole numbers. They apply what they know about division to solve problems, using estimation and mental math skills to decide whether their results are reasonable. This emphasis on division gives students a complete set of tools for adding, subtracting, multiplying, and dividing whole numbers-basic skills for everyday life and further study of mathematics. WA.5.1.F Solve single- and multi-step word problems involving multi-digit division and verify the solutions.	Partially Late	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.3.OA.3 Represent and solve problems involving multiplication and division. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	WA.3.2.A Represent multiplication as repeated addition, arrays, counting by multiples, and equal jumps on the number line, and connect each representation to the related equation. WA.3.2.B Represent division as equal sharing, repeated subtraction, equal jumps on the number line, and formation of equal groups of objects, and connect each representation to the related equation.	On Schedule	Composite Match		3
CC.3.OA.4 Represent and solve problems involving multiplication and division. Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = __÷ 3, 6 × 6 = ?.	WA.3.2.C Determine products, quotients, and missing factors using the inverse relationship between multiplication and division.	On Schedule	Simple Match		3
CC.3.OA.5 Understand properties of multiplication and the relationship between multiplication and division. Apply properties of operations as strategies to multiply and divide. Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15 then 15 × 2 = 30, or by 5 × 2 = 10 then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.) (Students need not use formal terms for these properties.)	WA.3.2.C Determine products, quotients, and missing factors using the inverse relationship between multiplication and division.	On Schedule	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.3.OA.6 Understand properties of multiplication and the relationship between multiplication and division. Understand division as an unknown-factor problem. For example, divide 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.	WA.3.2.C Determine products, quotients, and missing factors using the inverse relationship between multiplication and division.	On Schedule	Simple Match		3
CC.3.OA.7 Multiply and divide within 100. Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of one-digit numbers.	WA.3.2.D Apply and explain strategies to compute multiplication facts to 10 X 10 and the related division facts. WA.3.2.E Quickly recall those multiplication facts for which one factor is 1, 2, 5, or 10 and the related division facts. WA.4.1.A Quickly recall multiplication facts through 10 X 10 and the related division facts.	Partially Late	Partial Composite Match	Explanatory Notes for WA.3.2.D. explain use of 'relationship between multiplication and division.' WA 3.2.E explains in its Explanatory notes that learning all multiplication facts is encouraged but not required - this is the main departure.	2
CC.3.OA.8 Solve problems involving the four operations, and identify and explain patterns in arithmetic. Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations).)	WA.3.2.F Solve and create word problems that match multiplication or division equations. WA.3.2.H Solve single- and multi-step word problems involving multiplication and division and verify the solutions. WA.K.2.A Copy, extend, describe, and create simple repetitive patterns. WA.3.1.E Solve single- and multi-step word problems involving addition and subtraction of whole numbers and verify the solutions.	Partially Early	Partial Composite Match	No explicit mixing of multiplication, division, addition, and subtraction in the word problems.	2

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.3.OA.9 Solve problems involving the four operations, and identify and explain patterns in arithmetic. Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.		Unmatched	No Match		
CC.3.NBT.1 Use place value understanding and properties of operations to perform multi-digit arithmetic. Use place value understanding to round whole numbers to the nearest 10 or 100.	WA.3.1.B Round whole numbers through 10,000 to the nearest ten, hundred, and thousand. WA.3.1.C Fluently and accurately add and subtract whole numbers using the standard regrouping algorithms.	On Schedule	Composite Match		3
CC.3.NBT.2 Use place value understanding and properties of operations to perform multi-digit arithmetic. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. (A range of algorithms may be used.)	WA.3.1.C Fluently and accurately add and subtract whole numbers using the standard regrouping algorithms.	On Schedule	Partial Match	The WA standard does not stipulate the need for fluency up to 1,000.	2
CC.3.NBT.3 Use place value understanding and properties of operations to perform multi-digit arithmetic. Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations. (A range of algorithms may be used.)	WA.3.2.E Quickly recall those multiplication facts for which one factor is 1, 2, 5, or 10 and the related division facts.	On Schedule	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.3.NF.1 Develop understanding of fractions as numbers. Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)	WA.3.3.A Represent fractions that have denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12 as parts of a whole, parts of a set, and points on the number line.	On Schedule	Simple Match		3
CC.3.NF.2 Develop understanding of fractions as numbers. Understand a fraction as a number on the number line; represent fractions on a number line diagram. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)	WA.3.3.B Compare and order fractions that have denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12. WA.3.3 Core Content: Fraction concepts: Students learn about fractions and how they are used. Students deepen their understanding of fractions by comparing and ordering fractions and by representing them in different ways. With a solid knowledge of fractions as numbers, students are prepared to be successful when they add, subtract, multiply, and divide fractions to solve problems in later grades.	On Schedule	Composite Match	Explanatory notes introduce the concept of a number line.	3
CC.3.NF.2a Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)	WA.3.3.C Represent and identify equivalent fractions with denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12.	On Schedule	Partial Match	Although the WA standard does mention a number line in the Explanatory Comments, it lacks the specificity of the common core standard.	2

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.3.NF.2b Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)	WA.3.3.C Represent and identify equivalent fractions with denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12.	On Schedule	Partial Match	Although the WA standard does mention a number line in the Explanatory Comments, it lacks the specificity of the common core standard.	2
CC.3.NF.3 Develop understanding of fractions as numbers. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)	WA.3.3.B Compare and order fractions that have denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12. WA.3.3.D Solve single- and multi-step word problems involving comparison of fractions and verify the solutions.	On Schedule	Composite Match		3
CC.3.NF.3a Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)	WA.3.3.B Compare and order fractions that have denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12. WA.4.2.E Compare and order decimals and fractions (including mixed numbers) on the number line, in lists, and with the symbols <, >, or =.	Partially Late	Composite Match	WA standard does not emphasize equivalent fractions on number line until Grade 4.	3
CC.3.NF.3b Recognize and generate simple equivalent fractions (e.g., 1/2 = 2/4, 4/6 = 2/3), Explain why the fractions are equivalent, e.g., by using a visual fraction model. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)	WA.4.2.F Write a fraction equivalent to a given fraction.	Late	Simple Match	This comes a grade level late.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.3.NF.3c Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)		Unmatched	No Match		
CC.3.NF.3d Compare two fractions with the same numerator or the same denominator, by reasoning about their size, Recognize that valid comparisons rely on the two fractions referring to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)	WA.3.3.B Compare and order fractions that have denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12.	On Schedule	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.3.MD.1 Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects. Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.	WA.4.4.C* Estimate and determine elapsed time using a calendar, a digital clock, and an analog clock. WA.4.4.B* Solve single- and multi-step problems involving familiar unit conversions, including time, within either the U.S. customary or metric system. WA.4.1 Core Content: Multi-digit multiplication: Students learn basic multiplication facts and efficient procedures for multiplying two- and three-digit numbers. They explore the relationship between multiplication and division as they learn related division and multiplication facts in the same fact family. These skills, along with mental math and estimation, allow students to solve problems that call for multiplication. Building on an understanding of how multiplication and division relate to each other, students prepare to learn efficient procedures for division, which will be developed in fifth grade. Multiplication of whole numbers is not only a basic skill, it is also closely connected to Core Content of area in this grade level, and this connection reinforces understanding of both concepts. Multiplication is also central to students' study of many other topics in mathematics across the grades, including fractions, volume, and algebra. WA.3.5.C* Estimate, measure, and compare weight and mass using appropriate-sized U.S. customary and metric units. WA.2.3.D Describe the relative size among minutes, hours, days, weeks, months, and years.	Partially Late	Partial Composite Match	There are no real excellent matches for this standard, although the above touch on similar areas.	1

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.3.MD.2 Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). (Excludes compound units such as cm^3 and finding the geometric volume of a container.) Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (Excludes multiplicative comparison problems (problems involving notions of "times as much.")	WA.4.4.C* Estimate and determine elapsed time using a calendar, a digital clock, and an analog clock. WA.4.4.B* Solve single- and multi-step problems involving familiar unit conversions, including time, within either the U.S. customary or metric system. WA.3.5.C* Estimate, measure, and compare weight and mass using appropriate-sized U.S. customary and metric units. WA.4.1 Core Content: Multi-digit multiplication: Students learn basic multiplication facts and efficient procedures for multiplying two- and three-digit numbers. They explore the relationship between multiplication and division as they learn related division and multiplication facts in the same fact family. These skills, along with mental math and estimation, allow students to solve problems that call for multiplication. Building on an understanding of how multiplication and division relate to each other, students prepare to learn efficient procedures for division, which will be developed in fifth grade. Multiplication of whole numbers is not only a basic skill, it is also closely connected to Core Content of area in this grade level, and this connection reinforces understanding of both concepts. Multiplication is also central to students' study of many other topics in mathematics across the grades, including fractions, volume, and algebra.	Partially Late	Partial Composite Match	There are no real excellent matches for this standard, although the above touch on similar areas.	1

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.3.MD.3 Represent and interpret data. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.	WA.3.5.E* Construct and analyze pictographs, frequency tables, line plots, and bar graphs.	On Schedule	Simple Match		3
CC.3.MD.4 Represent and interpret data. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.	WA.3.5.E* Construct and analyze pictographs, frequency tables, line plots, and bar graphs.	On Schedule	Partial Match	The WA standard is missing the element of generating the measurement data.	2
CC.3.MD.5 Geometric measurement: understand concepts of area and relate area to multiplication and to addition. Recognize area as an attribute of plane figures and understand concepts of area measurement. -- a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area. -- b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.	WA.4.3.B Determine the approximate area of a figure using square units.	Late	Simple Match	Comes a grade level late.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.3.MD.6 Geometric measurement: understand concepts of area and relate area to multiplication and to addition. Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).	WA.4.3.B Determine the approximate area of a figure using square units. WA.4.3 Core Content: Concept of area: Students learn how to find the area of a rectangle as a basis for later work with areas of other geometric figures. They select appropriate units, tools, and strategies, including formulas, and use them to solve problems involving perimeter and area. Solving such problems helps students develop spatial skills, which are critical for dealing with a wide range of geometric concepts. The study of area is closely connected to Core Content on multiplication, and connections between these concepts should be emphasized whenever possible.	Late	Composite Match	Comes a grade level late.	3
CC.3.MD.7 Geometric measurement: understand concepts of area and relate area to multiplication and to addition. Relate area to the operations of multiplication and addition.	WA.4.3 Core Content: Concept of area: Students learn how to find the area of a rectangle as a basis for later work with areas of other geometric figures. They select appropriate units, tools, and strategies, including formulas, and use them to solve problems involving perimeter and area. Solving such problems helps students develop spatial skills, which are critical for dealing with a wide range of geometric concepts. The study of area is closely connected to Core Content on multiplication, and connections between these concepts should be emphasized whenever possible.	Late	Simple Match	Comes a grade level late.	3
CC.3.MD.7a Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.	WA.4.3.C Determine the perimeter and area of a rectangle using formulas, and explain why the formulas work.	Late	Simple Match	Comes a grade level late.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.3.MD.7b Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.	WA.4.3.F Solve single- and multi-step word problems involving perimeters and areas of rectangles and verify the solutions.	Late	Simple Match	Comes a grade level late.	3
CC.3.MD.7c Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a × b and a × c. Use area models to represent the distributive property in mathematical reasoning.		Unmatched	No Match		
CC.3.MD.7d Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.	WA.4.3.D Determine the areas of figures that can be broken down into rectangles.	Late	Simple Match	Comes a grade level late.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.3.MD.8 Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different area or with the same area and different perimeter.	WA.3.4 Core Content: Geometry: Students learn about lines and use lines, line segments, and right angles as they work with quadrilaterals. Students connect this geometric work to numbers, operations, and measurement as they determine simple perimeters in ways they will use when calculating perimeters of more complex figures in later grades. WA.3.4.D Measure and calculate perimeters of quadrilaterals. WA.3.4.E Solve single- and multi-step word problems involving perimeters of quadrilaterals and verify the solutions. WA.4.3 Core Content: Concept of area: Students learn how to find the area of a rectangle as a basis for later work with areas of other geometric figures. They select appropriate units, tools, and strategies, including formulas, and use them to solve problems involving perimeter and area. Solving such problems helps students develop spatial skills, which are critical for dealing with a wide range of geometric concepts. The study of area is closely connected to Core Content on multiplication, and connections between these concepts should be emphasized whenever possible. WA.4.3.E Demonstrate that rectangles with the same area can have different perimeters, and that rectangles with the same perimeter can have different areas.	Partially Late	Composite Match	The Link with area is probably a grade level late.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.3.G.1 Reason with shapes and their attributes. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.	WA.3.4.C Identify and describe special types of quadrilaterals.	On Schedule	Simple Match		3
CC.3.G.2 Reason with shapes and their attributes. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part is 1/4 of the area of the shape.		Unmatched	No Match		
CC.4.OA.1 Use the four operations with whole numbers to solve problems. Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.		Unmatched	No Match		
CC.4.OA.2 Use the four operations with whole numbers to solve problems. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.	WA.4.1.I Solve single- and multi-step word problems involving multi-digit multiplication and verify the solutions. WA.4.1.J Solve single- and multi-step word problems involving division and verify the solutions. WA.4.4.A* Represent an unknown quantity in simple expressions, equations, and inequalities using letters, boxes, and other symbols.	On Schedule	Partial Composite Match	The WA standards do not incorporate the use of all four operations or 'distinguishing multiplicative comparison from additive comparison.'	1

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.4.OA.3 Use the four operations with whole numbers to solve problems. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	WA.4.1.I Solve single- and multi-step word problems involving multi-digit multiplication and verify the solutions. WA.4.1.J Solve single- and multi-step word problems involving division and verify the solutions. WA.4.1.H Estimate products to approximate solutions to problems and determine reasonableness of answers. WA.4.4.A* Represent an unknown quantity in simple expressions, equations, and inequalities using letters, boxes, and other symbols. WA.5.1.C Fluently and accurately divide up to a four-digit number by one- or two-digit divisors using the standard long-division algorithm.	Partially Late	Composite Match	It is unclear whether remainders are encountered in the fourth grade.	3
CC.4.OA.4 Gain familiarity with factors and multiples. Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.	WA.4.1.B Identify factors and multiples of a number. WA.5.5* Additional Key Content: Students extend their work with common factors and common multiples as they deal with prime numbers. Students extend and reinforce their use of numbers, operations, and graphing to describe and compare data sets for increasingly complex situations they may encounter in other school subjects and in their lives. WA.5.5.A* Classify numbers as prime or composite.	Partially Late	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.4.OA.5 Generate and analyze patterns. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.	WA.1.2.I Recognize, extend, and create number patterns. WA.1.1.I Classify a number as odd or even and demonstrate that it is odd or even.	Early	Partial Composite Match	There are early standards covering the use of patterns, but no discussion of patterns at fourth grade level or shape patterns.	1
CC.4.NBT.1 Generalize place value understanding for multi-digit whole numbers. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.)	WA.4.1.C Represent multiplication of a two-digit number by a two-digit number with place value models. WA.4.1.E Compare the values represented by digits in whole numbers using place value. WA.4.1.D Multiply by 10, 100, and 1,000. WA.5.1.B Determine quotients for multiples of 10 and 100 by applying knowledge of place value and properties of operations.	Partially Late	Composite Match	Link between division and place value does not come in until fifth grade.	3
CC.4.NBT.2 Generalize place value understanding for multi-digit whole numbers. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.)	WA.4.1.E Compare the values represented by digits in whole numbers using place value.	On Schedule	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.4.NBT.3 Generalize place value understanding for multi-digit whole numbers. Use place value understanding to round multi-digit whole numbers to any place. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.)	WA.3.1.B Round whole numbers through 10,000 to the nearest ten, hundred, and thousand.	Early	Simple Match		3
CC.4.NBT.4 Use place value understanding and properties of operations to perform multi-digit arithmetic. Fluently add and subtract multi-digit whole numbers using the standard algorithm. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)	WA.3.1 Core Content: Addition, subtraction, and place value: Students solidify and formalize important concepts and skills related to addition and subtraction. In particular, students extend critical concepts of the base ten number system to include large numbers, they formalize procedures for adding and subtracting large numbers, and they apply these procedures in new contexts. WA.3.1.C Fluently and accurately add and subtract whole numbers using the standard regrouping algorithms.	Early	Composite Match	Composite Match.	3
CC.4.NBT.5 Use place value understanding and properties of operations to perform multi-digit arithmetic. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)	WA.4.1.F Fluently and accurately multiply up to a three-digit number by one- and two-digit numbers using the standard multiplication algorithm. WA.4.1.G Mentally multiply two-digit numbers by numbers through 10 and by multiples of 10.	On Schedule	Partial Composite Match	WA.4.1.F goes only to three digits, rather than the four digits in the common core. WA.4.1.G. incorporates aspects of the common core's 'multiply two two-digit numbers' but in a limited respect.	1

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.4.NBT.6 Use place value understanding and properties of operations to perform multi-digit arithmetic. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)	WA.5.1.A Represent multi-digit division using place value models and connect the representation to the related equation. WA.5.1.B Determine quotients for multiples of 10 and 100 by applying knowledge of place value and properties of operations. WA.5.1.C Fluently and accurately divide up to a four-digit number by one- or two-digit divisors using the standard long-division algorithm.	Late	Composite Match	Composite Match. Comes a grade level late.	3
CC.4.NF.1 Extend understanding of fraction equivalence and ordering. Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)	WA.4.2.F Write a fraction equivalent to a given fraction. WA.4.2.A Represent decimals through hundredths with place value models, fraction equivalents, and the number line.	On Schedule	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.4.NF.2 Extend understanding of fraction equivalence and ordering. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)	WA.4.2.E Compare and order decimals and fractions (including mixed numbers) on the number line, in lists, and with the symbols <, >, or =. WA.4.2.G Simplify fractions using common factors.	On Schedule	Composite Match		3
CC.4.NF.3 Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Understand a fraction a/b with a > 1 as a sum of fractions 1/b. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)		Unmatched	No Match		
CC.4.NF.3a Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.	WA.2.4.E* Interpret a fraction as a number of equal parts of a whole or a set. WA.5.2 Core Content: Addition and subtraction of fractions and decimals: Students extend their knowledge about adding and subtracting whole number to learning procedures for adding and subtracting fractions and decimals. Students apply these procedures, along with mental math and estimation, to solve a wide range of problems that involve more of the types of numbers students see in other school subjects and in their lives.	Partially Late	Partial Composite Match	Understanding of fractions as parts of a whole not related to addition/subtraction.	2

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.4.NF.3b Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.		Unmatched	No Match		
CC.4.NF.3c Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.	WA.4.2.C Convert a mixed number to a fraction and vice versa, and visually represent the number. WA.5.2.E Fluently and accurately add and subtract fractions, including mixed numbers. WA.5.2.A Represent addition and subtraction of fractions and mixed numbers using visual and numerical models, and connect the representation to the related equation.	Partially Late	Composite Match	Addition/Subtraction of mixed numbers come a grade level late.	3
CC.4.NF.3d Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.	WA.5.2.H Solve single- and multi-step word problems involving addition and subtraction of whole numbers, fractions (including mixed numbers), and decimals, and verify the solutions.	Late	Simple Match	Comes a grade level late.	3
CC.4.NF.4 Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)	WA.6.1.B Represent multiplication and division of nonnegative fractions and decimals using area models and the number line, and connect each representation to the related equation.	Late	Simple Match	WA late in introducing multiplication to fractions.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.4.NF.4a Understand a fraction a/b as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).	WA.6.1.B Represent multiplication and division of nonnegative fractions and decimals using area models and the number line, and connect each representation to the related equation.	Late	Simple Match	WA late in introducing multiplication to fractions.	3
CC.4.NF.4b Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)	WA.6.1.B Represent multiplication and division of nonnegative fractions and decimals using area models and the number line, and connect each representation to the related equation.	Late	Simple Match	WA is late in introducing multiplication to fractions.	3
CC.4.NF.4c Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?	WA.6.1.H Solve single- and multi-step word problems involving operations with fractions and decimals and verify the solutions.	Late	Simple Match	WA is late introducing multiplication to fractions.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.4.NF.5 Understand decimal notation for fractions, and compare decimal fractions. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. For example, express 3/10 as 30/100 and add 3/10 + 4/100 = 34/100. (Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.) (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)	WA.4.2.F Write a fraction equivalent to a given fraction. WA.4.2.D Convert a decimal to a fraction and vice versa, and visually represent the number.	On Schedule	Composite Match		3
CC.4.NF.6 Understand decimal notation for fractions, and compare decimal fractions. Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100 ; describe a length as 0.62 meters; locate 0.62 on a number line diagram. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)	WA.4.2.D Convert a decimal to a fraction and vice versa, and visually represent the number. WA.4.2 Core Content: Fractions, decimals, and mixed numbers: Students solidify and extend their understanding of fractions (including mixed numbers) to include decimals and the relationships between fractions and decimals. Students work with common factors and common multiples as preparation for learning procedures for fraction operations in grades five and six. When they are comfortable with and knowledgeable about fractions, students are likely to be successful with the challenging skills of learning how to add, subtract, multiply, and divide fractions.	On Schedule	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.4.NF.7 Understand decimal notation for fractions, and compare decimal fractions. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons comparisons are valid only when two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)	WA.4.2.E Compare and order decimals and fractions (including mixed numbers) on the number line, in lists, and with the symbols <, >, or =.	On Schedule	Simple Match		3
CC.4.MD.1 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example: Know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ….	WA.4.4.B* Solve single- and multi-step problems involving familiar unit conversions, including time, within either the U.S. customary or metric system.	On Schedule	Simple Match	Explanatory Notes touch on the conversion of large units to smaller units.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.4.MD.2 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	WA.4.4.B* Solve single- and multi-step problems involving familiar unit conversions, including time, within either the U.S. customary or metric system.	On Schedule	Partial Match	The WA lacks the detail of the common core standard.	2
CC.4.MD.3 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.	WA.4.4.A* Represent an unknown quantity in simple expressions, equations, and inequalities using letters, boxes, and other symbols. WA.4.4.B* Solve single- and multi-step problems involving familiar unit conversions, including time, within either the U.S. customary or metric system.	On Schedule	Partial Composite Match	WA standards lacking some of the common core specifics.	2
CC.4.MD.4 Represent and interpret data. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.		Unmatched	No Match		

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.4.MD.5 Geometric measurement: understand concepts of angle and measure angles. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: -- a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles. -- b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.	WA.5.3.B Identify, sketch, and measure acute, right, and obtuse angles. WA.3.4 Core Content: Geometry: Students learn about lines and use lines, line segments, and right angles as they work with quadrilaterals. Students connect this geometric work to numbers, operations, and measurement as they determine simple perimeters in ways they will use when calculating perimeters of more complex figures in later grades. WA.3.4.B Identify and sketch right angles.	Partially Late	Partial Composite Match	Basic introduction to angles seems lacking, with major aspects of the above standard not present.	1
CC.4.MD.6 Geometric measurement: understand concepts of angle and measure angles. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	WA.5.3.B Identify, sketch, and measure acute, right, and obtuse angles.	Late	Simple Match	Comes a grade level late.	3
CC.4.MD.7 Geometric measurement: understand concepts of angle and measure angles. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.	WA.5.3.C Identify, describe, and classify triangles by angle measure and number of congruent sides.	Late	Partial Match	Performing arithmetic with angles seems lacking.	1

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.4.G.1 Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	WA.5.3.B Identify, sketch, and measure acute, right, and obtuse angles. WA.5.3.C Identify, describe, and classify triangles by angle measure and number of congruent sides.	Late	Composite Match		3
CC.4.G.2 Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.	WA.3.4.A Identify and sketch parallel, intersecting, and perpendicular lines and line segments. WA.5.3.B Identify, sketch, and measure acute, right, and obtuse angles. WA.5.3.C Identify, describe, and classify triangles by angle measure and number of congruent sides.	Partially Late	Composite Match	Work with Triangles comes a grade level late.	3
CC.4.G.3 Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	WA.5.3.H Determine the number and location of lines of symmetry in triangles and quadrilaterals.	Late	Simple Match	Comes a grade level late.	3
CC.5.OA.1 Write and interpret numerical expressions. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	WA.5.4.C Write algebraic expressions that represent simple situations and evaluate the expressions, using substitution when variables are involved.	On Schedule	Simple Match	See Explanatory Notes, which include use of parentheses.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.5.OA.2 Write and interpret numerical expressions. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.	WA.5.4.C Write algebraic expressions that represent simple situations and evaluate the expressions, using substitution when variables are involved.	On Schedule	Partial Match	The WA standard is missing the 'without evaluating them' aspect.	2
CC.5.OA.3 Analyze patterns and relationships. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.	WA.5.4.A Describe and create a rule for numerical and geometric patterns and extend the patterns.	On Schedule	Simple Match		3
CC.5.NBT.1 Understand the place value system. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	WA.4.1.E Compare the values represented by digits in whole numbers using place value.	Early	Simple Match	Explanatory Notes draw out the relationship between place value and comparative quantity.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.5.NBT.2 Understand the place value system. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole number exponents to denote powers of 10.	WA.4.1.D Multiply by 10, 100, and 1,000. WA.6.1.E Multiply and divide whole numbers and decimals by 1000, 100, 10, 1, 0.1, 0.01, and 0.001.	Partially Late	Partial Composite Match	There are a couple WA standards that approximate this one, but there is no use of exponents at this level.	1
CC.5.NBT.3 Understand the place value system. Read, write, and compare decimals to thousandths.	WA.4.2.A Represent decimals through hundredths with place value models, fraction equivalents, and the number line.	Early	Partial Match	Goes to hundredths rather than thousandths.	2
CC.5.NBT.3a Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.	WA.4.2.B Read, write, compare, and order decimals through hundredths.	Early	Partial Match	Decimals only go through hundredths. No discussion of expanded form as related to decimals.	1
CC.5.NBT.3b Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	WA.4.2.E Compare and order decimals and fractions (including mixed numbers) on the number line, in lists, and with the symbols <, >, or =.	Early	Partial Match	Comparison presumably does not extend to the thousandths place.	2
CC.5.NBT.4 Understand the place value system. Use place value understanding to round decimals to any place.	WA.4.2.H Round fractions and decimals to the nearest whole number	Early	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.5.NBT.5 Perform operations with multi-digit whole numbers and with decimals to hundredths. Fluently multiply multi-digit whole numbers using the standard algorithm.	WA.4.1.F Fluently and accurately multiply up to a three-digit number by one- and two-digit numbers using the standard multiplication algorithm. WA.5.2.F Fluently and accurately add and subtract decimals. WA.6.1 Core Content: Multiplication and division of fractions and decimals: Students have done extensive work with fractions and decimals in previous grades and are now prepared to learn how to multiply and divide fractions and decimals with understanding. They can solve a wide variety of problems that involve the numbers they see every day-whole numbers, fractions, and decimals. By using approximations of fractions and decimals, students estimate computations and verify that their answers make sense.	Partially Late	Composite Match		3
CC.5.NBT.6 Perform operations with multi-digit whole numbers and with decimals to hundredths. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	WA.5.1.C Fluently and accurately divide up to a four-digit number by one- or two-digit divisors using the standard long-division algorithm. WA.5.1.A Represent multi-digit division using place value models and connect the representation to the related equation.	On Schedule	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.5.NBT.7 Perform operations with multi-digit whole numbers and with decimals to hundredths. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	WA.5.2.F Fluently and accurately add and subtract decimals. WA.6.1.F Fluently and accurately multiply and divide non-negative decimals. WA.5.2.B Represent addition and subtraction of decimals using place value models and connect the representation to the related equation. WA.6.1.B Represent multiplication and division of nonnegative fractions and decimals using area models and the number line, and connect each representation to the related equation.	Partially Late	Composite Match	Multiplication/Division of Decimals comes a grade level late.	3
CC.5.NF.1 Use equivalent fractions as a strategy to add and subtract fractions. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)	WA.5.2.C Given two fractions with unlike denominators, rewrite the fractions with a common denominator. WA.5.2.E Fluently and accurately add and subtract fractions, including mixed numbers.	On Schedule	Composite Match	Composite Match.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.5.NF.2 Use equivalent fractions as a strategy to add and subtract fractions. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result 2/5 + 1/2 = 3/7 by observing that 3/7 < 1/2.	WA.5.2.G Estimate sums and differences of fractions, mixed numbers, and decimals to approximate solutions to problems and determine reasonableness of answers. WA.5.2.H Solve single- and multi-step word problems involving addition and subtraction of whole numbers, fractions (including mixed numbers), and decimals, and verify the solutions. WA.5.2.E Fluently and accurately add and subtract fractions, including mixed numbers. WA.5.2.C Given two fractions with unlike denominators, rewrite the fractions with a common denominator.	On Schedule	Composite Match	Composite Match.	3
CC.5.NF.3 Apply and extend previous understandings of multiplication and division to multiply and divide fractions. Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3 and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?		Unmatched	No Match		

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.5.NF.4 Apply and extend previous understandings of multiplication and division to multiply and divide fractions. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.	WA.6.1.D Fluently and accurately multiply and divide non-negative fractions and explain the inverse relationship between multiplication and division with fractions.	Late	Simple Match	Comes a grade level late.	3
CC.5.NF.4a Interpret the product (a/b) × q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a × q ÷ b. For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)	WA.6.1.B Represent multiplication and division of nonnegative fractions and decimals using area models and the number line, and connect each representation to the related equation.	Late	Partial Match	This is the best matching standard, but it does not appear to include all parts of the common core.	1
CC.5.NF.4b Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.		Unmatched	No Match		

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.5.NF.5 Apply and extend previous understandings of multiplication and division to multiply and divide fractions. Interpret multiplication as scaling (resizing) by: -- a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. -- b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = (n×a) / (n×b) to the effect of multiplying a/b by 1.	WA.6.1.B Represent multiplication and division of nonnegative fractions and decimals using area models and the number line, and connect each representation to the related equation.	Late	Partial Match	The WA standard is missing important parts of this common core standard, including link between fractions and size.	1
CC.5.NF.6 Apply and extend previous understandings of multiplication and division to multiply and divide fractions. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	WA.6.1.H Solve single- and multi-step word problems involving operations with fractions and decimals and verify the solutions.	Late	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.5.NF.7 Apply and extend previous understandings of multiplication and division to multiply and divide fractions. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.)	WA.6.1.D Fluently and accurately multiply and divide non-negative fractions and explain the inverse relationship between multiplication and division with fractions.	Late	Simple Match	Comes a grade level late.	3
CC.5.NF.7a Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for (1/3) ÷ 4 and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.		Unmatched	No Match		
CC.5.NF.7b Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for 4 ÷ (1/5) and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.		Unmatched	No Match		

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.5.NF.7c Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?	WA.6.1.H Solve single- and multi-step word problems involving operations with fractions and decimals and verify the solutions.	Late	Simple Match		3
CC.5.MD.1 Convert like measurement units within a given measurement system. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step real world problems.	WA.4.4.B* Solve single- and multi-step problems involving familiar unit conversions, including time, within either the U.S. customary or metric system.	Early	Simple Match		3
CC.5.MD.2 Represent and interpret data. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.	WA.3.5.E* Construct and analyze pictographs, frequency tables, line plots, and bar graphs.	Early	Partial Match	WA standards do not match the use of line plots with fractional units.	1

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.5.MD.3 Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. Recognize volume as an attribute of solid figures and understand concepts of volume measurement. -- a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. -- b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.	WA.6.4 Core Content: Two- and three-dimensional figures: Students extend what they know about area and perimeter to more complex two-dimensional figures, including circles. They find the surface area and volume of simple three-dimensional figures. As they learn about these important concepts, students can solve problems involving more complex figures than in earlier grades and use geometry to deal with a wider range of situations. These fundamental skills of geometry and measurement are increasingly called for in the workplace and they lead to a more formal study of geometry in high school.	Late	Partial Match	Comes a grade level late and involves volume of prisms rather than cubes.	2
CC.5.MD.4 Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.		Unmatched	No Match		
CC.5.MD.5 Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.	WA.7.3.D Solve single- and multi-step word problems involving surface area or volume and verify the solutions.	Late	Simple Match	Use of word problems involving volume comes two grades late.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.5.MD.5a Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent three-fold whole-number products as volumes, e.g., to represent the associative property of multiplication.	WA.6.4.E Determine the surface area and volume of rectangular prisms using appropriate formulas and explain why the formulas work.	Late	Partial Match	The WA standard comes a year late and does not involve unit cubes.	1
CC.5.MD.5b Apply the formulas V =(l)(w)(h) and V = (b)(h) for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.	WA.6.4.E Determine the surface area and volume of rectangular prisms using appropriate formulas and explain why the formulas work.	Late	Simple Match	Comes a year late.	3
CC.5.MD.5c Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.		Unmatched	No Match		

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.5.G.1 Graph points on the coordinate plane to solve real-world and mathematical problems. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).	WA.5.4.D Graph ordered pairs in the coordinate plane for two sets of data related by a linear rule and draw the line they determine. WA.4.4* Additional Key Content: Students use coordinate grids to connect numbers to basic ideas in algebra and geometry. This connection between algebra and geometry runs throughout advanced mathematics and allows students to use tools from one branch of mathematics to solve problems related to another branch. Students also extend and reinforce their work with whole numbers and fractions to describe sets of data and find simple probabilities. Students combine measurement work with their developing ideas about multiplication and division as they do basic measurement conversions. They begin to use algebraic notation while solving problems in preparation for formalizing algebraic thinking in later grades. WA.4.4.D* Graph and identify points in the first quadrant of the coordinate plane using ordered pairs.	Partially Early	Composite Match	Explanatory Notes for WA.5.4.D show a real-world application.	3
CC.5.G.2 Graph points on the coordinate plane to solve real-world and mathematical problems. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	WA.5.4.D Graph ordered pairs in the coordinate plane for two sets of data related by a linear rule and draw the line they determine. WA.4.4.D* Graph and identify points in the first quadrant of the coordinate plane using ordered pairs.	Partially Late	Composite Match	Explanatory Notes for WA.5.4.D show a real-world application.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.5.G.3 Classify two-dimensional figures into categories based on their properties. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.	WA.5.3.A Classify quadrilaterals. WA.5.3.C Identify, describe, and classify triangles by angle measure and number of congruent sides.	On Schedule	Composite Match	See Explanatory Notes.	3
CC.5.G.4 Classify two-dimensional figures into categories based on their properties. Classify two-dimensional figures in a hierarchy based on properties.	WA.5.3.A Classify quadrilaterals.	On Schedule	Simple Match		3

Grade 6-8 Mathematics: Alignment Analysis Crosswalk

In this section, Hanover presents the main alignment crosswalk table for the 6-8 grade band.

Table 10: 6-8 Alignment Analysis Crosswalk

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.6.RP.1 Understand ratio concepts and use ratio reasoning to solve problems. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."	WA.6.3.A Identify and write ratios as comparisons of part-to-part and part-to-whole relationships. WA.6.3 Core Content: Ratios, rates, and percents: Students extend their knowledge of fractions to develop an understanding of what a ratio is and how it relates to a rate and a percent. Fractions, ratios, rates, and percents appear daily in the media and in everyday calculations like determining the sale price at a retail store or figuring out gas mileage. Students solve a variety of problems related to such situations. A solid understanding of ratios and rates is important for work involving proportional relationships in grade seven.	On Schedule	Composite Match		3
CC.6.RP.2 Understand ratio concepts and use ratio reasoning to solve problems. Understand the concept of a unit rate a/b associated with a ratio a:b with $b \neq 0$ (b not equal to zero), and use rate language in the context of a ratio relationship. For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger." (Expectations for unit rates in this grade are limited to non-complex fractions.)	WA.6.3.A Identify and write ratios as comparisons of part-to-part and part-to-whole relationships. WA.6.3.D Solve single- and multi-step word problems involving ratios, rates, and percents, and verify the solutions. WA.6.3.B Write ratios to represent a variety of rates.	On Schedule	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.6.RP.3 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.	WA.6.3.D Solve single- and multi-step word problems involving ratios, rates, and percents, and verify the solutions.	On Schedule	Simple Match		3
CC.6.RP.3a Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.	WA.6.3.D Solve single- and multi-step word problems involving ratios, rates, and percents, and verify the solutions. WA.6.2.B Draw a first-quadrant graph in the coordinate plane to represent information in a table or given situation.	On Schedule	Partial Composite Match	It is unclear whether there is a link between ratios and tables and/or the coordinate plane.	2
CC.6.RP.3b Solve unit rate problems including those involving unit pricing and constant speed. For example, If it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?	WA.6.3.D Solve single- and multi-step word problems involving ratios, rates, and percents, and verify the solutions.	On Schedule	Simple Match		3
CC.6.RP.3c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole given a part and the percent.	WA.6.3.C Represent percents visually and numerically, and convert between the fractional, decimal, and percent representations of a number.	On Schedule	Simple Match		3
CC.6.RP.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	WA.7.2.I Solve single- and multi-step problems involving conversions within or between measurement systems and verify the solutions.	Late	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.6.NS.1 Apply and extend previous understandings of multiplication and division to divide fractions by fractions. 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. For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?	WA.6.1.D Fluently and accurately multiply and divide non-negative fractions and explain the inverse relationship between multiplication and division with fractions. WA.6.1.H Solve single- and multi-step word problems involving operations with fractions and decimals and verify the solutions.	On Schedule	Composite Match		3
CC.6.NS.2 Compute fluently with multi-digit numbers and find common factors and multiples. Fluently divide multi-digit numbers using the standard algorithm.	WA.5.1.C Fluently and accurately divide up to a four-digit number by one- or two-digit divisors using the standard long-division algorithm.	Early	Simple Match		3
CC.6.NS.3 Compute fluently with multi-digit numbers and find common factors and multiples. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	WA.6.1.F Fluently and accurately multiply and divide non-negative decimals. WA.5.2.B Represent addition and subtraction of decimals using place value models and connect the representation to the related equation.	Partially Early	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.6.NS.4 Compute fluently with multi-digit numbers and find common factors and multiples. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. 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. For example, express 36 + 8 as 4 (9 + 2).	WA.5.2.D Determine the greatest common factor and the least common multiple of two or more whole numbers.	Early	Simple Match		3
CC.6.NS.5 Apply and extend previous understandings of numbers to the system of rational numbers. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, debits/credits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	WA.6.5.C* Compare and order positive and negative integers using the number line, lists, and the symbols <, >, or =. WA.6.5* Additional Key Content: Students extend their mental math skills now that they have learned all of the operations-addition, subtraction, multiplication, and division-with whole numbers, fractions, and decimals. Students continue to expand their understanding of our number system as they are introduced to negative numbers for describing positions or quantities below zero. These numbers are a critical foundation for algebra, and students will learn how to add, subtract, multiply, and divide positive and negative numbers in seventh grade as further preparation for algebraic study.	On Schedule	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.6.NS.6 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.	WA.7.1.A Compare and order rational numbers using the number line, lists, and the symbols <, >, or =. WA.7.1.B Represent addition, subtraction, multiplication, and division of positive and negative integers visually and numerically.	Late	Composite Match		3
CC.6.NS.6a 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.	WA.6.5.B* Locate positive and negative integers on the number line and use integers to represent quantities in various contexts. WA.6.5.C* Compare and order positive and negative integers using the number line, lists, and the symbols <, >, or =.	On Schedule	Composite Match		3
CC.6.NS.6b 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.	WA.7.5* Additional Key Content: Students extend their coordinate graphing skills to plotting points with both positive and negative coordinates on the coordinate plane. Using pairs of numbers to locate points is a necessary skill for reading maps and tables and a critical foundation for high school mathematics. Students further prepare for algebra by learning how to use exponents to write numbers in terms of their most basic (prime) factors.	Late	Simple Match	Comes a grade level late.	3
CC.6.NS.6c 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.	WA.7.5.A* Graph ordered pairs of rational numbers and determine the coordinates of a given point in the coordinate plane. WA.6.1.A Compare and order non-negative fractions, decimals, and integers using the number line, lists, and the symbols <, >, or =.	Partially Late	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.6.NS.7 Apply and extend previous understandings of numbers to the system of rational numbers. Understand ordering and absolute value of rational numbers.	WA.7.1.D Define and determine the absolute value of a number.	Late	Simple Match	Comes a grade level late.	3
CC.6.NS.7a Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right.	WA.6.5.C* Compare and order positive and negative integers using the number line, lists, and the symbols <, >, or =.	On Schedule	Simple Match		3
CC.6.NS.7b Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write –3°C > –7°C to express the fact that –3°C is warmer than –7°C.	WA.7.1.A Compare and order rational numbers using the number line, lists, and the symbols <, >, or =.	Late	Partial Match	Lack of connection between rational numbers and real world contexts.	2
CC.6.NS.7c 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. For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.	WA.7.1.D Define and determine the absolute value of a number. WA.7.1.A Compare and order rational numbers using the number line, lists, and the symbols <, >, or =.	Late	Partial Composite Match	Lack of connection between rational numbers and real world contexts.	2
CC.6.NS.7d Distinguish comparisons of absolute value from statements about order. For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.	WA.7.1.D Define and determine the absolute value of a number.	Late	Partial Match	Lacking comparison between absolute value and order.	1

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.6.NS.8 Apply and extend previous understandings of numbers to the system of rational numbers. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	WA.7.5* Additional Key Content: Students extend their coordinate graphing skills to plotting points with both positive and negative coordinates on the coordinate plane. Using pairs of numbers to locate points is a necessary skill for reading maps and tables and a critical foundation for high school mathematics. Students further prepare for algebra by learning how to use exponents to write numbers in terms of their most basic (prime) factors.	Late	Partial Match	Lack of connection between the four quadrant coordinate plane and real world situations.	1
CC.6.EE.1 Apply and extend previous understandings of arithmetic to algebraic expressions. Write and evaluate numerical expressions involving whole-number exponents.	WA.8.4.C* Evaluate numerical expressions involving nonnegative integer exponents using the laws of exponents and the order of operations.	Late	Simple Match	Exponents introduced at least a grade level late.	3
CC.6.EE.2 Apply and extend previous understandings of arithmetic to algebraic expressions. Write, read, and evaluate expressions in which letters stand for numbers.	WA.6.2.A Write a mathematical expression or equation with variables to represent information in a table or given situation. WA.5.4 Core Content: Representations of algebraic relationships: Students continue their development of algebraic thinking as they move toward more in-depth study of algebra in middle school. They use variables to write simple algebraic expressions describing patterns or solutions to problems. They use what they have learned about numbers and operations to evaluate simple algebraic expressions and to solve simple equations. Students make tables and graphs from linear equations to strengthen their understanding of algebraic relationships and to see the mathematical connections between algebra and geometry. These foundational algebraic skills allow students to see where mathematics, including algebra, can be used in real situations, and these skills prepare students for success in future grades.	Partially Early	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.6.EE.2a Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation "Subtract y from 5" as 5 – y.	WA.6.2.A Write a mathematical expression or equation with variables to represent information in a table or given situation.	On Schedule	Simple Match		3
CC.6.EE.2b 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. For example, describe the expression 2(8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.		Unmatched	No Match		
CC.6.EE.2c Evaluate expressions at specific values for their variables. Include expressions that arise from formulas in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas V = s^3 and A = 6 s^2 to find the volume and surface area of a cube with sides of length s = 1/2.	WA.6.2.C Evaluate mathematical expressions when the value for each variable is given.	On Schedule	Partial Match	The WA standard lacks some of the detail of the common core, but does feature the essential structure.	2
CC.6.EE.3 Apply and extend previous understandings of arithmetic to algebraic expressions. Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression 3(2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.	WA.6.2.D Apply the commutative, associative, and distributive properties, and use the order of operations to evaluate mathematical expressions.	On Schedule	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.6.EE.4 Apply and extend previous understandings of arithmetic to algebraic expressions. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.		Unmatched	No Match		
CC.6.EE.5 Reason about and solve one-variable equations and inequalities. 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.	WA.6.2.E Solve one-step equations and verify solutions. WA.8.1.B Solve one- and two-step linear inequalities and graph the solutions on the number line.	Partially Late	Composite Match		3
CC.6.EE.6 Reason about and solve one-variable equations and inequalities. 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.	WA.6.2.E Solve one-step equations and verify solutions. WA.6.2.F Solve word problems using mathematical expressions and equations and verify solutions.	On Schedule	Composite Match		3
CC.6.EE.7 Reason about and solve one-variable equations and inequalities. 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.	WA.8.1.B Solve one- and two-step linear inequalities and graph the solutions on the number line. WA.6.2.E Solve one-step equations and verify solutions.	Partially Late	Partial Composite Match	Lack of real world context.	2

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.6.EE.8 Reason about and solve one-variable equations and inequalities. Write an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form x > c or x < c have infinitely many solutions; represent solutions of such inequalities on number line diagrams.		Unmatched	No Match		
CC.6.EE.9 Represent and analyze quantitative relationships between dependent and independent variables. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.		Unmatched	No Match		

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.6.G.1 Solve real-world and mathematical problems involving area, surface area, and volume. Find 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.	WA.5.3.I Solve single- and multi-step word problems about the perimeters and areas of quadrilaterals and triangles and verify the solutions. WA.5.3 Core Content: Triangles and quadrilaterals: Students focus on triangles and quadrilaterals to formalize and extend their understanding of these geometric shapes. They classify different types of triangles and quadrilaterals and develop formulas for their areas. In working with these formulas, students reinforce an important connection between algebra and geometry. They explore symmetry of these figures and use what they learn about triangles and quadrilaterals to solve a variety of problems in geometric contexts.	Early	Composite Match		3
CC.6.G.2 Solve real-world and mathematical problems involving area, surface area, and volume. 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.	WA.6.4.E Determine the surface area and volume of rectangular prisms using appropriate formulas and explain why the formulas work.	On Schedule	Partial Match	No mention of fractional edge length or use of unit cubes.	2

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.6.G.3 Solve real-world and mathematical problems involving area, surface area, and volume. Draw polygons in the coordinate plane given coordinates for the vertices; 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.	WA.9-12.G.4.C Verify and apply properties of triangles and quadrilaterals in the coordinate plane.	Late	Simple Match	Comes very late.	3
CC.6.G.4 Solve real-world and mathematical problems involving area, surface area, and volume. 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.		Unmatched	No Match		
CC.6.SP.1 Develop understanding of statistical variability. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.	WA.8.3 Core Content: Summary and analysis of data sets: Students build on their extensive experience organizing and interpreting data and apply statistical principles to analyze statistical studies or short statistical statements, such as those they might encounter in newspapers, on television, or on the Internet. They use mean, median, and mode to summarize and describe information, even when these measures may not be whole numbers. Students use their knowledge of linear functions to analyze trends in displays of data. They create displays for two sets of data in order to compare the two sets and draw conclusions. They expand their work with probability to deal with more complex situations than they have previously seen. These concepts of statistics and probability are important not only in students' lives, but also throughout the high school mathematics program.	Late	Partial Match	There is no corresponding standard that serves as an 'introduction' to statistics similar to the common core standard.	1

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.6.SP.2 Develop understanding of statistical variability. 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.	WA.7.4.C Describe a data set using measures of center (median, mean, and mode) and variability (maximum, minimum, and range) and evaluate the suitability and limitations of using each measure for different situations.	Late	Simple Match		3
CC.6.SP.3 Develop understanding of statistical variability. 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.	WA.8.3.A Summarize and compare data sets in terms of variability and measures of center.	Late	Simple Match		3
CC.6.SP.4 Summarize and describe distributions. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	WA.7.4.D Construct and interpret histograms, stem-and-leaf plots, and circle graphs. WA.9-12.A1.6 Core Content: Data and distributions: Students select mathematical models for data sets and use those models to represent, describe, and compare data sets. They analyze data to determine the relationship between two variables and make and defend appropriate predictions, conjectures, and generalizations. Students understand limitations of conclusions based on results of a study or experiment and recognize common misconceptions and misrepresentations in interpreting conclusions.	Late	Partial Composite Match	No standards include the use of dot plots or box plots.	2

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.6.SP.5 Summarize and describe distributions. Summarize numerical data sets in relation to their context, such as by: -- a. Reporting the number of observations. -- b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. -- 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 was gathered. -- d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data was gathered.	WA.4.4.E* Determine the median, mode, and range of a set of data and describe what each measure indicates about the data. WA.5.5.B* Determine and interpret the mean of a small data set of whole numbers. WA.9-12.A1.6 Core Content: Data and distributions: Students select mathematical models for data sets and use those models to represent, describe, and compare data sets. They analyze data to determine the relationship between two variables and make and defend appropriate predictions, conjectures, and generalizations. Students understand limitations of conclusions based on results of a study or experiment and recognize common misconceptions and misrepresentations in interpreting conclusions. WA.9-12.A2.6 Core Content: Probability, data, and distributions: Students formalize their study of probability, computing both combinations and permutations to calculate the likelihood of an outcome in uncertain circumstances and applying the binominal theorem to solve problems. They extend their use of statistics to graph bivariate data and analyze its shape to make predictions. They calculate and interpret measures of variability, confidence intervals, and margins of error for population proportions. Dual goals underlie the content in the section: students prepare for the further study of statistics and become thoughtful consumers of data. WA.9-12.A2.6.F Calculate and interpret measures of variability and standard deviation and use these measures and the characteristics of the normal distribution to describe and compare data sets.	Partially Late	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.7.RP.1 Analyze proportional relationships and use them to solve real-world and mathematical problems. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction (1/2)/(1/4) miles per hour, equivalently 2 miles per hour.	WA.7.2 Core Content: Proportionality and similarity: Students extend their work with ratios to solve problems involving a variety of proportional relationships, such as making conversions between measurement units or finding the percent increase or decrease of an amount. They also solve problems involving the proportional relationships found in similar figures, and in so doing reinforce an important connection between numerical operations and geometric relationships. Students graph proportional relationships and identify the rate of change as the slope of the related line. The skills and concepts related to proportionality represent some of the most important connecting ideas across K-12 mathematics. With a good understanding of how things grow proportionally, students can understand the linear relationships that are the basis for much of high school mathematics. If learned well, proportionality can open the door for success in much of secondary mathematics. WA.7.2.B Solve single- and multi-step problems involving proportional relationships and verify the solutions.	On Schedule	Composite Match		3
CC.7.RP.2 Analyze proportional relationships and use them to solve real-world and mathematical problems. Recognize and represent proportional relationships between quantities.	WA.7.2.B Solve single- and multi-step problems involving proportional relationships and verify the solutions.	On Schedule	Simple Match		3
CC.7.RP.2a 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.	WA.7.2.E Represent proportional relationships using graphs, tables, and equations, and make connections among the representations. WA.7.2.H Determine whether or not a relationship is proportional and explain your reasoning.	On Schedule	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.7.RP.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	WA.7.2.G Determine the unit rate in a proportional relationship and relate it to the slope of the associated line. WA.7.2.E Represent proportional relationships using graphs, tables, and equations, and make connections among the representations.	On Schedule	Composite Match		3
CC.7.RP.2c Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.	WA.7.2.E Represent proportional relationships using graphs, tables, and equations, and make connections among the representations.	On Schedule	Simple Match		3
CC.7.RP.2d 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.	WA.7.2.E Represent proportional relationships using graphs, tables, and equations, and make connections among the representations.	On Schedule	Simple Match		3
CC.7.RP.3 Analyze proportional relationships and use them to solve real-world and mathematical problems. Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.	WA.7.2.B Solve single- and multi-step problems involving proportional relationships and verify the solutions.	On Schedule	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.7.NS.1 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.	WA.7.1.C Fluently and accurately add, subtract, multiply, and divide rational numbers.	On Schedule	Simple Match		3
CC.7.NS.1a Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.		Unmatched	No Match		
CC.7.NS.1b 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.	WA.7.1.A Compare and order rational numbers using the number line, lists, and the symbols <, >, or =. WA.7.1.G Solve single- and multi-step word problems involving rational numbers and verify the solutions.	On Schedule	Partial Composite Match	Lacking attention to additive inverses.	2
CC.7.NS.1c 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.	WA.7.1.A Compare and order rational numbers using the number line, lists, and the symbols <, >, or =. WA.7.1.D Define and determine the absolute value of a number. WA.7.1.G Solve single- and multi-step word problems involving rational numbers and verify the solutions. WA.9-12.A1.2.A Know the relationship between real numbers and the number line, and compare and order real numbers with and without the number line.	Partially Late	Partial Composite Match	Lacks attention to additive inverse.	2

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.7.NS.1d Apply properties of operations as strategies to add and subtract rational numbers.	WA.7.1.C Fluently and accurately add, subtract, multiply, and divide rational numbers.	On Schedule	Simple Match		3
CC.7.NS.2 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.	WA.7.1.C Fluently and accurately add, subtract, multiply, and divide rational numbers.	On Schedule	Simple Match		3
CC.7.NS.2a 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.		Unmatched	No Match		

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.7.NS.2b 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.	WA.8.4.D* Identify rational and irrational numbers. WA.7.1 Core Content: Rational numbers and linear equations: Students add, subtract, multiply, and divide rational numbers-fractions, decimals, and integers-including both positive and negative numbers. With the inclusion of negative numbers, students can move more deeply into algebraic content that involves the full set of rational numbers. They also approach problems that deal with a wider range of contexts than before. Using generalized algebraic skills and approaches, students can approach a wide range of problems involving any type of rational number, adapting strategies for solving one problem to different problems in different settings with underlying similarities. WA.7.1.G Solve single- and multi-step word problems involving rational numbers and verify the solutions.	Partially Late	Partial Composite Match	No WA clearly link to the common core definition of rational numbers.	2
CC.7.NS.2c Apply properties of operations as strategies to multiply and divide rational numbers.	WA.7.1.C Fluently and accurately add, subtract, multiply, and divide rational numbers.	On Schedule	Simple Match		3
CC.7.NS.2d 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.		Unmatched	No Match		

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.7.NS.3 Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. Solve real-world and mathematical problems involving the four operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.)	WA.7.1.C Fluently and accurately add, subtract, multiply, and divide rational numbers. WA.7.1.G Solve single- and multi-step word problems involving rational numbers and verify the solutions.	On Schedule	Composite Match		3
CC.7.EE.1 Use properties of operations to generate equivalent expressions. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	WA.9-12.M2.5* Additional Key Content: Students grow more proficient in their use of algebraic techniques as they use these techniques to write equivalent expressions in various forms. They build on their understanding of computation using arithmetic operations and properties and expand this understanding to include the symbolic language of algebra. Students understand the role of units in measurement, convert among units within and between different measurement systems as needed, and apply what they know to solve problems. They use derived measures such as those used for speed (e.g., feet per second) or determining automobile gas consumption (e.g., miles per gallon). WA.7.1.E Solve two-step linear equations.	Partially Late	Composite Match	Generation of equivalent expressions left till high school.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.7.EE.2 Use properties of operations to generate equivalent expressions. 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. For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."	WA.9-12.M2.5* Additional Key Content: Students grow more proficient in their use of algebraic techniques as they use these techniques to write equivalent expressions in various forms. They build on their understanding of computation using arithmetic operations and properties and expand this understanding to include the symbolic language of algebra. Students understand the role of units in measurement, convert among units within and between different measurement systems as needed, and apply what they know to solve problems. They use derived measures such as those used for speed (e.g., feet per second) or determining automobile gas consumption (e.g., miles per gallon).	Late	Simple Match		3
CC.7.EE.3 Solve real-life and mathematical problems using numerical and algebraic expressions and equations. 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 as strategies to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.	WA.7.1.G Solve single- and multi-step word problems involving rational numbers and verify the solutions.	On Schedule	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.7.EE.4 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.	WA.6.2 Core Content: Mathematical expressions and equations: Students continue to develop their understanding of how letters are used to represent numbers in mathematics-an important foundation for algebraic thinking. Students use tables, words, numbers, graphs, and equations to describe simple linear relationships. They write and evaluate expressions and write and solve equations. By developing these algebraic skills at the middle school level, students will be able to make a smooth transition to high school mathematics. WA.8.1.B Solve one- and two-step linear inequalities and graph the solutions on the number line.	Partially Late	Composite Match	This common core standard appears to be extremely general. It is difficult to select the exact WA standards that correspond, but the content of using numerical and algebraic expressions to solve real-world problems is certainly covered in the WA standards. Inequalities, however, may arrive slightly late in Grade 8.	3
CC.7.EE.4a 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. For example, The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?	WA.7.2.B Solve single- and multi-step problems involving proportional relationships and verify the solutions.	On Schedule	Partial Match	No WA standards at this level account for comparison of algebraic to arithmetic solutions.	1

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.7.EE.4b 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. For example, As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.	WA.8.1.B Solve one- and two-step linear inequalities and graph the solutions on the number line.	Late	Simple Match		3
CC.7.G.1 Draw, construct, and describe geometrical figures and describe the relationships between them. 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.	WA.7.2.D Make scale drawings and solve problems related to scale. WA.7.3.C Describe the effect that a change in scale factor on one attribute of a two- or three-dimensional figure has on other attributes of the figure, such as the side or edge length, perimeter, area, surface area, or volume of a geometric figure.	On Schedule	Simple Match		3
CC.7.G.2 Draw, construct, and describe geometrical figures and describe the relationships between them. 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.	WA.5.3.G Draw quadrilaterals and triangles from given information about sides and angles. WA.7.2.D Make scale drawings and solve problems related to scale.	Partially Early	Partial Composite Match	Lacking specific attention to triangles.	2
CC.7.G.3 Draw, construct, and describe geometrical figures and describe the relationships between them. Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	WA.5.3.G Draw quadrilaterals and triangles from given information about sides and angles.	Early	Partial Match	No standard for describing two-dimensional slices of three-dimensional figures.	1

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.7.G.4 Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	WA.6.4.A Determine the circumference and area of circles. WA.6.3.E Identify the ratio of the circumference to the diameter of a circle as the constant π, and recognize 22/7 and 3.14 as common approximations of π. WA.6.4 Core Content: Two- and three-dimensional figures: Students extend what they know about area and perimeter to more complex two-dimensional figures, including circles. They find the surface area and volume of simple three-dimensional figures. As they learn about these important concepts, students can solve problems involving more complex figures than in earlier grades and use geometry to deal with a wider range of situations. These fundamental skills of geometry and measurement are increasingly called for in the workplace and they lead to a more formal study of geometry in high school. WA.6.4.C Solve single- and multi-step word problems involving the relationships among radius, diameter, circumference, and area of circles, and verify the solutions.	Early	Composite Match	The WA link is between circumference and diameter rather than circumference and area.	3
CC.7.G.5 Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. 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.	WA.8.2.A Identify pairs of angles as complementary, supplementary, adjacent, or vertical, and use these relationships to determine missing angle measures. WA.8.2.B Determine missing angle measures using the relationships among the angles formed by parallel lines and transversals.	Late	Composite Match	Comes a grade level late.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.7.G.6 Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	WA.7.3.D Solve single- and multi-step word problems involving surface area or volume and verify the solutions.	On Schedule	Partial Match	The WA standard does not require solving problems related to a angle measure.	2
CC.7.SP.1 Use random sampling to draw inferences about a population. 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.		Unmatched	No Match		
CC.7.SP.2 Use random sampling to draw inferences about a population. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.		Unmatched	No Match		

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.7.SP.3 Draw informal comparative inferences about two populations. 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. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.	WA.8.3.A Summarize and compare data sets in terms of variability and measures of center.	Late	Partial Match		2
CC.7.SP.4 Draw informal comparative inferences about two populations. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.	WA.8.3.A Summarize and compare data sets in terms of variability and measures of center.	Late	Partial Match		2
CC.7.SP.5 Investigate chance processes and develop, use, and evaluate probability models. 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.	WA.4.4.F* Describe and compare the likelihood of events. WA.6.3.G Determine the theoretical probability of an event and its complement and represent the probability as a fraction or decimal from 0 to 1 or as a percent from 0 to 100.	Early	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.7.SP.6 Investigate chance processes and develop, use, and evaluate probability models. 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. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.	WA.6.3.F Determine the experimental probability of a simple event using data collected in an experiment.	Early	Simple Match		3
CC.7.SP.7 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.	WA.7.4.B Determine the theoretical probability of a particular event and use theoretical probability to predict experimental outcomes.	On Schedule	Partial Match	The WA standard does not account for reconciling discrepancies between probabilities and outcomes.	2
CC.7.SP.7a Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.	WA.7.4.B Determine the theoretical probability of a particular event and use theoretical probability to predict experimental outcomes.	On Schedule	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.7.SP.7b Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?	WA.6.3.F Determine the experimental probability of a simple event using data collected in an experiment.	Early	Simple Match		3
CC.7.SP.8 Investigate chance processes and develop, use, and evaluate probability models. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	WA.9-12.A2.6.A Apply the fundamental counting principle and the ideas of order and replacement to calculate probabilities in situations arising from two-stage experiments (compound events). WA.7.4.A Represent the sample space of probability experiments in multiple ways, including tree diagrams and organized lists.	Partially Late	Partial Composite Match	Compound events first treated in high school.	2
CC.7.SP.8a 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.	WA.9-12.A2.6.A Apply the fundamental counting principle and the ideas of order and replacement to calculate probabilities in situations arising from two-stage experiments (compound events).	Late	Simple Match	The above two standards appear to have the same wording.	3
CC.7.SP.8a 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.	WA.9-12.A2.6.A Apply the fundamental counting principle and the ideas of order and replacement to calculate probabilities in situations arising from two-stage experiments (compound events).	Late	Simple Match	The above two standards appear to have the same wording.	3
CC.7.SP.8b 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.	WA.9-12.A2.6.A Apply the fundamental counting principle and the ideas of order and replacement to calculate probabilities in situations arising from two-stage experiments (compound events).	Late	Partial Match		1

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.7.SP.8c Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?		Unmatched	No Match		
CC.8.NS.11. Know that there are numbers that are not rational, and approximate them by rational numbers. Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	WA.8.4.D* Identify rational and irrational numbers.	On Schedule	Simple Match	Explanatory Notes cover repeating decimals.	3
CC.8.NS.2 Know that there are numbers that are not rational, and approximate them by rational numbers. Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). For example, by truncating the decimal expansion of √2 (square root of 2), show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.		Unmatched	No Match		

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.8.EE.1 Work with radicals and integer exponents. Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 3^2 × 3^(–5) = 3^(–3) = 1/(3^3) = 1/27.	WA.8.4.C* Evaluate numerical expressions involving nonnegative integer exponents using the laws of exponents and the order of operations. WA.9-12.A1.2.C Interpret and use integer exponents and square and cube roots, and apply the laws and properties of exponents to simplify and evaluate exponential expressions. WA.9-12.A2.2.B Use the laws of exponents to simplify and evaluate numeric and algebraic expressions that contain rational exponents.	Partially Late	Composite Match	See 'Examples' of WA.9-12.A1.2.C for use of equivalency.	3
CC.8.EE.2 Work with radicals and integer exponents. 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 √2 is irrational.	WA.9-12.A1.2.C Interpret and use integer exponents and square and cube roots, and apply the laws and properties of exponents to simplify and evaluate exponential expressions.	Late	Simple Match		3
CC.8.EE.3 Work with radicals and integer exponents. Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3 × 10^8 and the population of the world as 7 × 10^9, and determine that the world population is more than 20 times larger.		Unmatched	No Match		

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.8.EE.4 Work with radicals and integer exponents. Perform operations with 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.	WA.8.4.A* Represent numbers in scientific notation, and translate numbers written in scientific notation into standard form. WA.8.4.B* Solve problems involving operations with numbers in scientific notation and verify solutions. WA.8.4* Additional Key Content: Students deal with a few key topics about numbers as they prepare to shift to higher level mathematics in high school. First, they use scientific notation to represent very large and very small numbers, especially as these numbers are used in technological fields and in everyday tools like calculators or personal computers. Scientific notation has become especially important as "extreme units" continue to be identified to represent increasingly tiny or immense measures arising in technological fields. A second important numerical skill involves using exponents in expressions containing both numbers and variables. Developing this skill extends students' work with order of operations to include more complicated expressions they might encounter in high school mathematics. Finally, to help students understand the full breadth of the real-number system, students are introduced to simple irrational numbers, thus preparing them to study higher level mathematics in which properties and procedures are generalized for the entire set of real numbers.	On Schedule	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.8.EE.5 Understand the connections between proportional relationships, lines, and linear equations. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	WA.7.2.G Determine the unit rate in a proportional relationship and relate it to the slope of the associated line. WA.7.2.E Represent proportional relationships using graphs, tables, and equations, and make connections among the representations. WA.8.1 Core Content: Linear functions and equations: Students solve a variety of linear equations and inequalities. They build on their familiarity with proportional relationships and simple linear equations to work with a broader set of linear relationships, and they learn what functions are. They model applied problems with mathematical functions represented by graphs and other algebraic techniques. This Core Content area includes topics typically addressed in a high school algebra or a first-year integrated math course, but here this content is expected of all middle school students in preparation for a rich high school mathematics program that goes well beyond these basic algebraic ideas.	Partially Early	Composite Match		3
CC.8.EE.6 Understand the connections between proportional relationships, lines, and linear equations. 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.	WA.7.2.F Determine the slope of a line corresponding to the graph of a proportional relationship and relate slope to similar triangles. WA.7.2.C Describe proportional relationships in similar figures and solve problems involving similar figures.	Early	Composite Match		3
CC.8.EE.7 Analyze and solve linear equations and pairs of simultaneous linear equations. Solve linear equations in one variable.	WA.8.1.A Solve one-variable linear equations.	On Schedule	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.8.EE.7a 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).		Unmatched	No Match		
CC.8.EE.7b Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	WA.8.1.A Solve one-variable linear equations.	On Schedule	Simple Match	See Examples.	3
CC.8.EE.8 Analyze and solve linear equations and pairs of simultaneous linear equations. Analyze and solve pairs of simultaneous linear equations.	WA.9-12.A1.1.C Solve problems that can be represented by a system of two linear equations or inequalities.	Late	Simple Match		3
CC.8.EE.8a 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.	WA.9-12.A1.4.D Write and solve systems of two linear equations and inequalities in two variables.	Late	Simple Match	See explanatory notes.	3
CC.8.EE.8b Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6.	WA.9-12.A1.4.D Write and solve systems of two linear equations and inequalities in two variables. WA.9-12.A2.1.B Solve problems that can be represented by systems of equations and inequalities.	Partially Late	Partial Composite Match	No solving of two equations by inspection.	2

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.8.EE.8c Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.	WA.9-12.A1.1.C Solve problems that can be represented by a system of two linear equations or inequalities.	Late	Simple Match		3
CC.8.F.1 Define, evaluate, and compare functions. Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. (Function notation is not required in Grade 8.)	WA.8.1.C Represent a linear function with a verbal description, table, graph, or symbolic expression, and make connections among these representations.	On Schedule	Simple Match		3
CC.8.F.2 Define, evaluate, and compare functions. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.	WA.8.1.C Represent a linear function with a verbal description, table, graph, or symbolic expression, and make connections among these representations.	On Schedule	Simple Match		3
CC.8.F.3 Define, evaluate, and compare functions. 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. For example, the function A = s^2 giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.	WA.8.1.C Represent a linear function with a verbal description, table, graph, or symbolic expression, and make connections among these representations.	On Schedule	Partial Match	Nonlinear functions not introduced at this level.	1

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.8.F.4 Use functions to model relationships between quantities. Construct a function to model a linear relationship between two quantities. 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. 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.	WA.8.1.E Interpret the slope and y-intercept of the graph of a linear function representing a contextual situation. WA.9-12.A1.4 Core Content: Linear functions, equations, and inequalities: Students understand that linear functions can be used to model situations involving a constant rate of change. They build on the work done in middle school to solve sets of linear equations and inequalities in two variables, learning to interpret the intersection of the lines as the solution. While the focus is on solving equations, students also learn graphical and numerical methods for approximating solutions to equations. They use linear functions to analyze relationships, represent and model problems, and answer questions. These algebraic skills are applied in other Core Content areas across high school courses.	Partially Late	Composite Match		3
CC.8.F.5 Use functions to model relationships between quantities. 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.	WA.8.1.G Determine and justify whether a given verbal description, table, graph, or symbolic expression represents a linear relationship.	On Schedule	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.8.G.1 Understand congruence and similarity using physical models, transparencies, or geometry software. Verify experimentally the properties of rotations, reflections, and translations: -- a. Lines are taken to lines, and line segments to line segments of the same length. -- b. Angles are taken to angles of the same measure. -- c. Parallel lines are taken to parallel lines.	WA.9-12.G.5.C Given two congruent or similar figures in a coordinate plane, describe a composition of translations, reflections, rotations, and dilations that superimposes one figure on the other.	Late	Simple Match		3
CC.8.G.2 Understand congruence and similarity using physical models, transparencies, or geometry software. 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.	WA.9-12.G.5.D Describe the symmetries of two-dimensional figures and describe transformations, including reflections across a line and rotations about a point. WA.4.3.A Determine congruence of two-dimensional figures.	Partially Late	Composite Match		3
CC.8.G.3 Understand congruence and similarity using physical models, transparencies, or geometry software. Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates.	WA.9-12.G.5.C Given two congruent or similar figures in a coordinate plane, describe a composition of translations, reflections, rotations, and dilations that superimposes one figure on the other. WA.8.2.D Represent and explain the effect of one or more translations, rotations, reflections, or dilations (centered at the origin) of a geometric figure on the coordinate plane.	Partially Late	Composite Match	See examples.	3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.8.G.4 Understand congruence and similarity using physical models, transparencies, or geometry software. 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.	WA.9-12.G.5.C Given two congruent or similar figures in a coordinate plane, describe a composition of translations, reflections, rotations, and dilations that superimposes one figure on the other.	Late	Simple Match		3
CC.8.G.5 Understand congruence and similarity using physical models, transparencies, or geometry software. 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. For example, arrange three copies of the same triangle so that the three angles appear to form a line, and give an argument in terms of transversals why this is so.	WA.8.2.B Determine missing angle measures using the relationships among the angles formed by parallel lines and transversals.	On Schedule	Simple Match		3
CC.8.G.6 Understand and apply the Pythagorean Theorem. Explain a proof of the Pythagorean Theorem and its converse.	WA.8.2.F Demonstrate the Pythagorean Theorem and its converse and apply them to solve problems.	On Schedule	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.8.G.7 Understand and apply the Pythagorean Theorem. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	WA.8.2.G Apply the Pythagorean Theorem to determine the distance between two points on the coordinate plane. WA.8.2 Core Content: Properties of geometric figures: Students work with lines and angles, especially as they solve problems involving triangles. They use known relationships involving sides and angles of triangles to find unknown measures, connecting geometry and measurement in practical ways that will be useful well after high school. Since squares of numbers arise when using the Pythagorean Theorem, students work with squares and square roots, especially in problems with two- and three-dimensional figures. Using basic geometric theorems such as the Pythagorean Theorem, students get a preview of how geometric theorems are developed and applied in more formal settings, which they will further study in high school.	On Schedule	Composite Match		3
CC.8.G.8 Understand and apply the Pythagorean Theorem. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	WA.8.2.G Apply the Pythagorean Theorem to determine the distance between two points on the coordinate plane.	On Schedule	Simple Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.8.G.9 Solve real-world and mathematical problems involving volume of cylinders, cones and spheres. Know the formulas for the volume of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	WA.7.3.A Determine the surface area and volume of cylinders using the appropriate formulas and explain why the formulas work. WA.7.3.B Determine the volume of pyramids and cones using formulas. WA.7.3.D Solve single- and multi-step word problems involving surface area or volume and verify the solutions. WA.7.3 Core Content: Surface area and volume: Students extend their understanding of surface area and volume to include finding surface area and volume of cylinders and volume of cones and pyramids. They apply formulas and solve a range of problems involving three-dimensional objects, including problems people encounter in everyday life, in certain types of work, and in other school subjects. With a strong understanding of how to work with both two-dimensional and three-dimensional figures, students build an important foundation for the geometry they will study in high school.	Early	Partial Composite Match	No standards address volume of spheres.	1
CC.8.SP.1 Investigate patterns of association in bivariate data. 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.	WA.8.3.C Create a scatterplot for a two-variable data set, and, when appropriate, sketch and use a trend line to make predictions.	On Schedule	Partial Match	The WA standard does not focus on patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	1

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.8.SP.2 Investigate patterns of association in bivariate data. 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.	WA.8.3.C Create a scatterplot for a two-variable data set, and, when appropriate, sketch and use a trend line to make predictions.	On Schedule	Simple Match		3
CC.8.SP.3 Investigate patterns of association in bivariate data. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.	WA.8.1.D Determine the slope and y-intercept of a linear function described by a symbolic expression, table, or graph. WA.8.1.E Interpret the slope and y-intercept of the graph of a linear function representing a contextual situation.	On Schedule	Composite Match		3

Common Core	Washington	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.8.SP.4 Investigate patterns of association in bivariate data. Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?		Unmatched	No Match		

High School Mathematics: Alignment Analysis Crosswalk

In this section, Hanover presents the main alignment crosswalk table for the high school (9-12) Grade Band.

Table 11: High School Standards

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.N.RN.1 Extend the properties of exponents to rational exponents. 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. For example, we define 5^(1/3) to be the cube root of 5 because we want [5^(1/3)]^3 = 5^[(1/3) x 3] to hold, so [5^(1/3)]^3 must equal 5.	WA.9-12.A1.2.C Interpret and use integer exponents and square and cube roots, and apply the laws and properties of exponents to simplify and evaluate exponential expressions.	On Schedule	Simple Match		3
CC.9-12.N.RN.2 Extend the properties of exponents to rational exponents. Rewrite expressions involving radicals and rational exponents using the properties of exponents.	WA.9-12.A1.2.C Interpret and use integer exponents and square and cube roots, and apply the laws and properties of exponents to simplify and evaluate exponential expressions.	On Schedule	Simple Match		3
CC.9-12.N.RN.3 Use properties of rational and irrational numbers. Explain why the sum or product of rational numbers is rational; 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.	WA.9-12.A2.2.A Explain how whole, integer, rational, real, and complex numbers are related, and identify the number system(s) within which a given algebraic equation can be solved.	On Schedule	Simple Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.N.Q.1 Reason quantitatively and use units to solve problems. 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.*	WA.9-12.G.6* Additional Key Content: Students extend and formalize their work with geometric formulas for perimeter, area, surface area, and volume of two- and three-dimensional figures, focusing on mathematical derivations of these formulas and their applications in complex problems. They use properties of geometry and measurement to solve problems in purely mathematical as well as applied contexts. Students understand the role of units in measurement and apply what they know to solve problems involving derived measures like speed or density. They understand that all measurement is approximate and specify precision in measurement problems. WA.9-12.G.6.F* Solve problems involving measurement conversions within and between systems, including those involving derived units, and analyze solutions in terms of reasonableness of solutions and appropriate units.	On Schedule	Partial Composite Match	The WA standards are missing the concepts of scale and origin.	2
CC.9-12.N.Q.2 Reason quantitatively and use units to solve problems. Define appropriate quantities for the purpose of descriptive modeling.*		Unmatched	No Match		
CC.9-12.N.Q.3 Reason quantitatively and use units to solve problems. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.*	WA.9-12.G.6.E* Use different degrees of precision in measurement, explain the reason for using a certain degree of precision, and apply estimation strategies to obtain reasonable measurements with appropriate precision for a given purpose.	On Schedule	Simple Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.N.CN.1 Perform arithmetic operations with complex numbers. 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.	WA.9-12.A2.2.A Explain how whole, integer, rational, real, and complex numbers are related, and identify the number system(s) within which a given algebraic equation can be solved. WA.9-12.A2.2.B Use the laws of exponents to simplify and evaluate numeric and algebraic expressions that contain rational exponents.	On Schedule	Partial Composite Match	These are the best WA matches.	1
CC.9-12.N.CN.2 Perform arithmetic operations with complex numbers. Use the relation i^2 = –1 and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.		Unmatched	No Match		
CC.9-12.N.CN.3 (+) Perform arithmetic operations with complex numbers. Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.		Unmatched	No Match		
CC.9-12.N.CN.4 (+) Represent complex numbers and their operations on the complex plane. Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.N.CN.5 (+) Represent complex numbers and their operations on the complex plane. Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. For example, (-1 + √3i)^3 = 8 because (-1 + √3i) has modulus 2 and argument 120°.		Unmatched	No Match		
CC.9-12.N.CN.6 (+) Represent complex numbers and their operations on the complex plane. Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.		Unmatched	No Match		
CC.9-12.N.CN.7 Use complex numbers in polynomial identities and equations. Solve quadratic equations with real coefficients that have complex solutions.	WA.9-12.A1.5.C Solve quadratic equations that can be factored as (ax + b)(cx + d) where a, b, c, and d are integers. WA.9-12.A1.5.D Solve quadratic equations that have real roots by completing the square and by using the quadratic formula. WA.9-12.A2.3.C Solve quadratic equations and inequalities, including equations with complex roots.	On Schedule	Composite Match	See Explanatory Notes for WA.9-12.A1.5D for complex solutions.	3
CC.9-12.N.CN.8 (+) Use complex numbers in polynomial identities and equations. Extend polynomial identities to the complex numbers. For example, rewrite x^2 + 4 as (x + 2i)(x – 2i).		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.N.CN.9 (+) Use complex numbers in polynomial identities and equations. Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	WA.9-12.A1.3.B Represent a function with a symbolic expression, as a graph, in a table, and using words, and make connections among these representations.	On Schedule	Simple Match	See Explanatory Notes for Fundamental Theorem of Algebra.	3
CC.9-12.N.VM.1 (+) Represent and model with vector quantities. Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., v(bold), |v|, ||v||, v(not bold)).		Unmatched	No Match		
CC.9-12.N.VM.2 (+) Represent and model with vector quantities. Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.		Unmatched	No Match		
CC.9-12.N.VM.3 (+) Represent and model with vector quantities. Solve problems involving velocity and other quantities that can be represented by vectors.		Unmatched	No Match		
CC.9-12.N.VM.4 (+) Perform operations on vectors. Add and subtract vectors.		Unmatched	No Match		
CC.9-12.N.VM.4a (+) Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes.		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.N.VM.4b (+) Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.		Unmatched	No Match		
CC.9-12.N.VM.4c (+) Understand vector subtraction v – w as v + (–w), where (–w) is the additive inverse of w, with the same magnitude as w and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.		Unmatched	No Match		
CC.9-12.N.VM.5 (+) Perform operations on vectors. Multiply a vector by a scalar.		Unmatched	No Match		
CC.9-12.N.VM.5a (+) Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as c(v(sub x), v(sub y)) = (cv(sub x), cv(sub y)).		Unmatched	No Match		
CC.9-12.N.VM.5b (+) Compute the magnitude of a scalar multiple cv using $\|\|cv\|\| = \|c\|v$. Compute the direction of cv knowing that when $\|c\|v = 0$, the direction of cv is either along v (for $c > 0$) or against v (for $c < 0$).		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.N.VM.6 (+) Perform operations on matrices and use matrices in applications. Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.	WA.9-12.A2.7* Additional Key Content: Students study two important topics here. First, they extend their ability to solve systems of two equations in two variables to solving systems of three equations in three variables, which leads to the full development of matrices in Precalculus. Second, they formalize their work with series as they learn to find the terms and partial sums of arithmetic series and the terms and partial and infinite sums of geometric series. This conceptual understanding of series lays an important foundation for understanding calculus.	On Schedule	Partial Match	The WA standard mentions matrices, but only in a limited respect.	1
CC.9-12.N.VM.7 (+) Perform operations on matrices and use matrices in applications. Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.	WA.9-12.A2.7* Additional Key Content: Students study two important topics here. First, they extend their ability to solve systems of two equations in two variables to solving systems of three equations in three variables, which leads to the full development of matrices in Precalculus. Second, they formalize their work with series as they learn to find the terms and partial sums of arithmetic series and the terms and partial and infinite sums of geometric series. This conceptual understanding of series lays an important foundation for understanding calculus.	On Schedule	Partial Match	The WA standard mentions matrices, but only in a limited respect.	1

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.N.VM.8 (+) Perform operations on matrices and use matrices in applications. Add, subtract, and multiply matrices of appropriate dimensions.	WA.9-12.A2.7* Additional Key Content: Students study two important topics here. First, they extend their ability to solve systems of two equations in two variables to solving systems of three equations in three variables, which leads to the full development of matrices in Precalculus. Second, they formalize their work with series as they learn to find the terms and partial sums of arithmetic series and the terms and partial and infinite sums of geometric series. This conceptual understanding of series lays an important foundation for understanding calculus.	On Schedule	Partial Match	The WA standard mentions matrices, but only in a limited respect.	1
CC.9-12.N.VM.9 (+) Perform operations on matrices and use matrices in applications. Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.	WA.9-12.A2.7* Additional Key Content: Students study two important topics here. First, they extend their ability to solve systems of two equations in two variables to solving systems of three equations in three variables, which leads to the full development of matrices in Precalculus. Second, they formalize their work with series as they learn to find the terms and partial sums of arithmetic series and the terms and partial and infinite sums of geometric series. This conceptual understanding of series lays an important foundation for understanding calculus.	On Schedule	Partial Match	The WA standard mentions matrices, but only in a limited respect.	1

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.N.VM.10 (+) Perform operations on matrices and use matrices in applications. Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.	WA.9-12.A2.7* Additional Key Content: Students study two important topics here. First, they extend their ability to solve systems of two equations in two variables to solving systems of three equations in three variables, which leads to the full development of matrices in Precalculus. Second, they formalize their work with series as they learn to find the terms and partial sums of arithmetic series and the terms and partial and infinite sums of geometric series. This conceptual understanding of series lays an important foundation for understanding calculus.	On Schedule	Partial Match	The WA standard mentions matrices, but only in a limited respect.	1
CC.9-12.N.VM.11 (+) Perform operations on matrices and use matrices in applications. Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.		Unmatched	No Match		
CC.9-12.N.VM.12 (+) Perform operations on matrices and use matrices in applications. Work with 2 X 2 matrices as transformations of the plane, and interpret the absolute value of the determinant in terms of area.	WA.9-12.A2.7* Additional Key Content: Students study two important topics here. First, they extend their ability to solve systems of two equations in two variables to solving systems of three equations in three variables, which leads to the full development of matrices in Precalculus. Second, they formalize their work with series as they learn to find the terms and partial sums of arithmetic series and the terms and partial and infinite sums of geometric series. This conceptual understanding of series lays an important foundation for understanding calculus.	On Schedule	Partial Match	The WA standard mentions matrices, but only in a limited respect.	1
CC.9-12.A.SSE.1 Interpret the structure of expressions. Interpret expressions that represent a quantity in terms of its context.*		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.A.SSE.1a Interpret parts of an expression, such as terms, factors, and coefficients.*		Unmatched	No Match		
CC.9-12.A.SSE.1b Interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret P(1+r)^n as the product of P and a factor not depending on P.*		Unmatched	No Match		
CC.9-12.A.SSE.2 Interpret the structure of expressions. Use the structure of an expression to identify ways to rewrite it. 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).		Unmatched	No Match		
CC.9-12.A.SSE.3 Write expressions in equivalent forms to solve problems. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.*	WA.9-12.M2.5* Additional Key Content: Students grow more proficient in their use of algebraic techniques as they use these techniques to write equivalent expressions in various forms. They build on their understanding of computation using arithmetic operations and properties and expand this understanding to include the symbolic language of algebra. Students understand the role of units in measurement, convert among units within and between different measurement systems as needed, and apply what they know to solve problems. They use derived measures such as those used for speed (e.g., feet per second) or determining automobile gas consumption (e.g., miles per gallon).	On Schedule	Simple Match		3
CC.9-12.A.SSE.3a Factor a quadratic expression to reveal the zeros of the function it defines.*	WA.9-12.A1.5.C Solve quadratic equations that can be factored as (ax + b)(cx + d) where a, b, c, and d are integers.	On Schedule	Simple Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.A.SSE.3b Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.*	WA.9-12.A1.5.D Solve quadratic equations that have real roots by completing the square and by using the quadratic formula.	On Schedule	Simple Match		3
CC.9-12.A.SSE.3c Use the properties of exponents to transform expressions for exponential functions. For example the expression 1.15^t can be rewritten as [1.15^(1/12)]^(12t) ≈ 1.012^(12t) to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*	WA.9-12.M3.6 Core Content: Algebraic properties: Students continue to use variables and expressions to solve both purely mathematical and applied problems, and they broaden their understanding of the real number system to include complex numbers. Students extend their use of algebraic techniques to include manipulations of expressions with rational exponents, operations on polynomials and rational expressions, and solving equations involving rational and radical expressions.	On Schedule	Simple Match		3
CC.9-12.A.SSE.4 Write expressions in equivalent forms to solve problems. Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. For example, calculate mortgage payments.*	WA.9-12.A2.7.B* Find the terms and partial sums of arithmetic and geometric series and the infinite sum for geometric series.	On Schedule	Simple Match		3
CC.9-12.A.APR.1 Perform arithmetic operations on polynomials. 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.	WA.9-12.A1.2.E Use algebraic properties to factor and combine like terms in polynomials. WA.9-12.A1.2.F Add, subtract, multiply, and divide polynomials.	On Schedule	Composite Match		3
CC.9-12.A.APR.2 Understand the relationship between zeros and factors of polynomial. Know and apply 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).		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.A.APR.3 Understand the relationship between zeros and factors of polynomials. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.		Unmatched	No Match		
CC.9-12.A.APR.4 Use polynomial identities to solve problems. Prove polynomial identities and use them to describe numerical relationships. For example, the polynomial identity (x^2 + y^2)^2 = (x^2 – y^2)^2 + (2xy)^2 can be used to generate Pythagorean triples.	WA.9-12.A1.2.E Use algebraic properties to factor and combine like terms in polynomials.	On Schedule	Partial Match	No link to Pythagorean triples.	2
CC.9-12.A.APR.5 (+) Use polynomial identities to solve problems. Know and apply that the Binomial Theorem gives the expansion of (x + y)^n in powers of x and y for a positive integer n, where x and y are any numbers, with coefficients determined for example by Pascal's Triangle. (The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.)	WA.9-12.A2.6.D Apply the binomial theorem to solve problems involving probability.	On Schedule	Partial Match	No link to Pascal's triangle.	2
CC.9-12.A.APR.6 Rewrite rational expressions. Rewrite simple rational expressions in different forms; write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x), and r(x) are polynomials with the degree of r(x) less than the degree of b(x), using inspection, long division, or, for the more complicated examples, a computer algebra system.		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.A.APR.7 (+) Rewrite rational expressions. Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.	WA.9-12.A2.2.C Add, subtract, multiply, divide, and simplify rational and more general algebraic expressions.	On Schedule	Simple Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.A.CED.1 Create equations that describe numbers or relationship. Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*	WA.7.1.F Write an equation that corresponds to a given problem situation, and describe a problem situation that corresponds to a given equation. WA.8.1.B Solve one- and two-step linear inequalities and graph the solutions on the number line. WA.9-12.A1.4.A Write and solve linear equations and inequalities in one variable. WA.9-12.A1.1.D Solve problems that can be represented by quadratic functions and equations. WA.9-12.A2.2.C Add, subtract, multiply, divide, and simplify rational and more general algebraic expressions. WA.9-12.A1.5 Core Content: Quadratic functions and equations: Students study quadratic functions and their graphs, and solve quadratic equations with real roots in Algebra 1. They use quadratic functions to represent and model problems and answer questions in situations that are modeled by these functions. Students solve quadratic equations by factoring and computing with polynomials. The important mathematical technique of completing the square is developed enough so that the quadratic formula can be derived.	On Schedule	Composite Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.A.CED.2 Create equations that describe numbers or relationship. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*	WA.9-12.A1.1.C Solve problems that can be represented by a system of two linear equations or inequalities. WA.9-12.A1.4.D Write and solve systems of two linear equations and inequalities in two variables. WA.9-12.A1.3.B Represent a function with a symbolic expression, as a graph, in a table, and using words, and make connections among these representations. WA.9-12.A1.5.B Sketch the graph of a quadratic function, describe the effects that changes in the parameters have on the graph, and interpret the x-intercepts as solutions to a quadratic equation.	On Schedule	Composite Match		3
CC.9-12.A.CED.3 Create equations that describe numbers or relationship. 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. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.*		Unmatched	No Match		
CC.9-12.A.CED.4 Create equations that describe numbers or relationship. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.*		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.A.REI.1 Understand solving equations as a process of reasoning and explain the reasoning. 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.		Unmatched	No Match		
CC.9-12.A.REI.2 Understand solving equations as a process of reasoning and explain the reasoning. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	WA.9-12.M3.6 Core Content: Algebraic properties: Students continue to use variables and expressions to solve both purely mathematical and applied problems, and they broaden their understanding of the real number system to include complex numbers. Students extend their use of algebraic techniques to include manipulations of expressions with rational exponents, operations on polynomials and rational expressions, and solving equations involving rational and radical expressions.	On Schedule	Simple Match		3
CC.9-12.A.REI.3 Solve equations and inequalities in one variable. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	WA.9-12.A1.1.B Solve problems that can be represented by linear functions, equations, and inequalities. WA.9-12.M1.1.B Solve problems that can be represented by linear functions, equations, and inequalities.	On Schedule	Composite Match		3
CC.9-12.A.REI.4 Solve equations and inequalities in one variable. Solve quadratic equations in one variable.	WA.9-12.A1.1.D Solve problems that can be represented by quadratic functions and equations. WA.9-12.A1.5.C Solve quadratic equations that can be factored as (ax + b)(cx + d) where a, b, c, and d are integers. WA.9-12.A2.1.C Solve problems that can be represented by quadratic functions, equations, and inequalities.	On Schedule	Composite Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.A.REI.4a Use the method of completing the square to transform any quadratic equation in x into an equation of the form (x – p)^2 = q that has the same solutions. Derive the quadratic formula from this form.	WA.9-12.A1.5.D Solve quadratic equations that have real roots by completing the square and by using the quadratic formula.	On Schedule	Simple Match	The Notes also explain use of completing the square to derive the quadratic formula.	3
CC.9-12.A.REI.4b Solve quadratic equations by inspection (e.g., for x^2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b.	WA.9-12.A1.1.D Solve problems that can be represented by quadratic functions and equations. WA.9-12.A1.5.C Solve quadratic equations that can be factored as (ax + b)(cx + d) where a, b, c, and d are integers. WA.9-12.A1.5.D Solve quadratic equations that have real roots by completing the square and by using the quadratic formula. WA.9-12.M2.2.D Solve quadratic equations that can be factored as (ax + b)(cx + d) where a, b, c, and d are integers.	On Schedule	Partial Composite Match	There does not appear to be any standard relating to solving quadratics by inspection. All other means are accounted for.	2
CC.9-12.A.REI.5 Solve systems of equations. 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.	WA.9-12.A1.1.C Solve problems that can be represented by a system of two linear equations or inequalities.	On Schedule	Partial Match	There are WA standards working with systems of equations but they lack the specific proof articulated here in the common core.	1
CC.9-12.A.REI.6 Solve systems of equations. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	WA.9-12.A1.1.C Solve problems that can be represented by a system of two linear equations or inequalities.	On Schedule	Simple Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.A.REI.7 Solve systems of equations. Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line y = –3x and the circle x^2 + y^2 = 3.		Unmatched	No Match		
CC.9-12.A.REI.8 (+) Solve systems of equations. Represent a system of linear equations as a single matrix equation in a vector variable.		Unmatched	No Match		
CC.9-12.A.REI.9 (+) Solve systems of equations. Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 × 3 or greater).		Unmatched	No Match		
CC.9-12.A.REI.10 Represent and solve equations and inequalities graphically. Understand that the graph of an 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).	WA.9-12.A1.5.B Sketch the graph of a quadratic function, describe the effects that changes in the parameters have on the graph, and interpret the x-intercepts as solutions to a quadratic equation.	On Schedule	Partial Match	No Standard accounts for graphing inequalities.	1
CC.9-12.A.REI.11 Represent and solve equations and inequalities graphically. 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.*	WA.9-12.A1.5.B Sketch the graph of a quadratic function, describe the effects that changes in the parameters have on the graph, and interpret the x-intercepts as solutions to a quadratic equation.	On Schedule	Partial Match	The WA does not account for inequalities.	2

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.A.REI.12 Represent and solve equations and inequalities graphically. 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.		Unmatched	No Match		
CC.9-12.F.IF.1 Understand the concept of a function and use function notation. 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).	WA.9-12.A1.3 Core Content: Characteristics and behaviors of functions: Students formalize and deepen their understanding of functions, the defining characteristics and uses of functions, and the mathematical language used to describe functions. They learn that functions are often specified by an equation of the form y = f(x), where any allowable x-value yields a unique y-value. While Algebra 1 has a particular focus on linear and quadratic equations and systems of equations, students also learn about exponential functions and those that can be defined piecewise, particularly step functions and functions that contain the absolute value of an expression. Students learn about the representations and basic transformations of these functions and the practical and mathematical limitations that must be considered when working with functions and when using functions to model situations. WA.9-12.A1.3.B Represent a function with a symbolic expression, as a graph, in a table, and using words, and make connections among these representations. WA.9-12.A1.1.A Select and justify functions and equations to model and solve problems.	On Schedule	Composite Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.F.IF.2 Understand the concept of a function and use function notation. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	WA.9-12.A1.1.B Solve problems that can be represented by linear functions, equations, and inequalities.	On Schedule	Simple Match		3
CC.9-12.F.IF.3 Understand the concept of a function and use function notation. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by $f(0) = f(1) = 1$, $f(n+1) = f(n) + f(n-1)$ for $n \geq 1$ (n is greater than or equal to 1).	WA.9-12.A1.7* Additional Key Content: Students develop a basic understanding of arithmetic and geometric sequences and of exponential functions, including their graphs and other representations. They use exponential functions to analyze relationships, represent and model problems, and answer questions in situations that are modeled by these nonlinear functions. Students learn graphical and numerical methods for approximating solutions to exponential equations. Students interpret the meaning of problem solutions and explain limitations related to solutions. WA.9-12.A1.7.C* Express arithmetic and geometric sequences in both explicit and recursive forms, translate between the two forms, explain how rate of change is represented in each form, and use the forms to find specific terms in the sequence.	On Schedule	Partial Composite Match	The link between sequences and functions is tenuous in the WA standards.	2

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.F.IF.4 Interpret functions that arise in applications in terms of the context. For a 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. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*	WA.9-12.A2.3 Core Content: Quadratic functions and equations: As students continue to solve quadratic equations and inequalities in Algebra 2, they encounter complex roots for the first time. They learn to translate between forms of quadratic equations, applying the vertex form to evaluate maximum and minimum values and find symmetry of the graph, and they learn to identify which form should be used in a particular situation. This opens up a whole range of new problems students can solve using quadratics. These algebraic skills are applied in subsequent high school mathematics and statistics courses. WA.9-12.A1.5.B Sketch the graph of a quadratic function, describe the effects that changes in the parameters have on the graph, and interpret the x-intercepts as solutions to a quadratic equation. WA.9-12.A1.5.A Represent a quadratic function with a symbolic expression, as a graph, in a table, and with a description, and make connections among the representations.	On Schedule	Partial Composite Match	Missing several of the 'key features' including end behavior and periodicity.	2
CC.9-12.F.IF.5 Interpret functions that arise in applications in terms of the context. 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.*	WA.9-12.A1.3.A Determine whether a relationship is a function and identify the domain, range, roots, and independent and dependent variables. WA.9-12.A1.3.B Represent a function with a symbolic expression, as a graph, in a table, and using words, and make connections among these representations.	On Schedule	Composite Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.F.IF.6 Interpret functions that arise in applications in terms of the context. 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.*	WA.9-12.A1.7.C* Express arithmetic and geometric sequences in both explicit and recursive forms, translate between the two forms, explain how rate of change is represented in each form, and use the forms to find specific terms in the sequence.	On Schedule	Partial Match	Weak link between rate of change and functions, no estimation of rate of change.	1
CC.9-12.F.IF.7 Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*	WA.9-12.A1.3.B Represent a function with a symbolic expression, as a graph, in a table, and using words, and make connections among these representations.	On Schedule	Simple Match		3
CC.9-12.F.IF.7a Graph linear and quadratic functions and show intercepts, maxima, and minima.*	WA.9-12.A1.3.B Represent a function with a symbolic expression, as a graph, in a table, and using words, and make connections among these representations. WA.9-12.A1.4.B Write and graph an equation for a line given the slope and the y-intercept, the slope and a point on the line, or two points on the line, and translate between forms of linear equations. WA.9-12.A1.4.E Describe how changes in the parameters of linear functions and functions containing an absolute value of a linear expression affect their graphs and the relationships they represent. WA.9-12.A1.5.B Sketch the graph of a quadratic function, describe the effects that changes in the parameters have on the graph, and interpret the x-intercepts as solutions to a quadratic equation.	On Schedule	Composite Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.F.IF.7b Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.*	WA.9-12.A1.2.C Interpret and use integer exponents and square and cube roots, and apply the laws and properties of exponents to simplify and evaluate exponential expressions. WA.9-12.A1.1 Core Content: Solving problems: Students learn to solve many new types of problems in Algebra 1, and this first core content area highlights the types of problems students will be able to solve after they master the concepts and skills in this course. Students are introduced to several types of functions, including exponential and functions defined piecewise, and they spend considerable time with linear and quadratic functions. Each type of function included in Algebra 1 provides students a tool to solve yet another class of problems. They learn that specific functions model situations described in word problems, and so functions are used to solve various types of problems. The ability to determine functions and write equations that represent problems is an important mathematical skill in itself. Many problems that initially appear to be very different from each other can actually be represented by identical equations. Students encounter this important and unifying principle of algebra-that the same algebraic techniques can be applied to a wide variety of different situations. WA.9-12.A1.3 Core Content: Characteristics and behaviors of functions: Students formalize and deepen their understanding of functions, the defining characteristics and uses of functions, and the mathematical language used to describe functions. They learn that functions are often specified by an equation of the form y = f(x), where any allowable x-value yields a unique y-value. While Algebra 1 has a particular focus on linear and quadratic equations and systems of equations, students also learn about exponential functions and those that can be defined piecewise, particularly step functions and functions that contain the absolute value of an expression. Students learn about the representations and basic transformations of these functions and the practical and mathematical limitations that must be considered	On Schedule	Partial Composite Match	The WA standards do not necessarily link square roots, cube roots, and other piecewise-defined functions to graphical representation.	2

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.F.IF.7c Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.*	WA.9-12.A2.5.D Plot points, sketch, and describe the graphs of cubic polynomial functions of the form f(x) = ax^3 + d as an example of higher order polynomials and solve related equations.	On Schedule	Simple Match		3
CC.9-12.F.IF.7d (+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.*		Unmatched	No Match		
CC.9-12.F.IF.7e Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.*	WA.9-12.A2.4.B Graph an exponential function of the form f(x) = ab^x and its inverse logarithmic function.	On Schedule	Partial Match	No graphing of trigonometric functions.	1
CC.9-12.F.IF.8 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.	WA.9-12.M2.5* Additional Key Content: Students grow more proficient in their use of algebraic techniques as they use these techniques to write equivalent expressions in various forms. They build on their understanding of computation using arithmetic operations and properties and expand this understanding to include the symbolic language of algebra. Students understand the role of units in measurement, convert among units within and between different measurement systems as needed, and apply what they know to solve problems. They use derived measures such as those used for speed (e.g., feet per second) or determining automobile gas consumption (e.g., miles per gallon).	On Schedule	Partial Match		2
CC.9-12.F.IF.8a 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.	WA.9-12.A1.5.D Solve quadratic equations that have real roots by completing the square and by using the quadratic formula. WA.9-12.A1.5.C Solve quadratic equations that can be factored as (ax + b)(cx + d) where a, b, c, and d are integers.	On Schedule	Composite Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.F.IF.8b Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as y = (1.02)^t, y = (0.97)^t, y = (1.01)^(12t), y = (1.2)^(t/10), and classify them as representing exponential growth and decay.	WA.9-12.A1.1.E Solve problems that can be represented by exponential functions and equations. WA.9-12.A1.7.C* Express arithmetic and geometric sequences in both explicit and recursive forms, translate between the two forms, explain how rate of change is represented in each form, and use the forms to find specific terms in the sequence.	On Schedule	Partial Composite Match	No link between rate of change or percent rate of change and exponents, no discussion of exponential growth or decay.	2
CC.9-12.F.IF.9 Analyze functions using different representations. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.	WA.9-12.A1.3.B Represent a function with a symbolic expression, as a graph, in a table, and using words, and make connections among these representations.	On Schedule	Simple Match		3
CC.9-12.F.BF.1 Build a function that models a relationship between two quantities. Write a function that describes a relationship between two quantities.*	WA.9-12.A2.1.A Select and justify functions and equations to model and solve problems.	On Schedule	Simple Match		3
CC.9-12.F.BF.1a Determine an explicit expression, a recursive process, or steps for calculation from a context.	WA.9-12.A2.1.A Select and justify functions and equations to model and solve problems.	On Schedule	Simple Match		3
CC.9-12.F.BF.1b Combine standard function types using arithmetic operations. For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.	WA.9-12.A1.2.E Use algebraic properties to factor and combine like terms in polynomials.	On Schedule	Simple Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.F.BF.1c (+) Compose functions. For example, if T(y) is the temperature in the atmosphere as a function of height, and h(t) is the height of a weather balloon as a function of time, then T(h(t)) is the temperature at the location of the weather balloon as a function of time.	WA.9-12.A1.1.A Select and justify functions and equations to model and solve problems.	On Schedule	Simple Match		3
CC.9-12.F.BF.2 Build a function that models a relationship between two quantities. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.*	WA.9-12.A1.7.C* Express arithmetic and geometric sequences in both explicit and recursive forms, translate between the two forms, explain how rate of change is represented in each form, and use the forms to find specific terms in the sequence.	On Schedule	Simple Match		3
CC.9-12.F.BF.3 Build new functions from existing functions. 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. Include recognizing even and odd functions from their graphs and algebraic expressions for them.		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.F.BF.4 Build new functions from existing functions. Find inverse functions.	WA.9-12.A2.4.A Know and use basic properties of exponential and logarithmic functions and the inverse relationship between them. WA.9-12.M3.3 Core Content: Functions and modeling: Students extend their understanding of exponential functions from Mathematics 2 with an emphasis on inverse functions. This leads to a natural introduction of logarithms and logarithmic functions. They learn to use the basic properties of exponential and logarithmic functions, graphing both types of functions to analyze relationships, represent and model problems, and answer questions. Students apply these functions in many practical situations, such as applying exponential functions to determine compound interest and applying logarithmic functions to determine the pH of a liquid. In addition, students extend their study of functions to include polynomials of higher degree and those containing radical expressions. They formalize and deepen their understanding of real-valued functions, their defining characteristics and uses, and the mathematical language used to describe them. They compare and contrast the types of functions they have studied and their basic transformations. Students learn the practical and mathematical limitations that must be considered when working with functions or when using functions to model situations.	On Schedule	Composite Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.F.BF.4a Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse. For example, f(x) =2(x^3) or f(x) = (x+1)/(x-1) for x ≠ 1 (x not equal to 1).	WA.9-12.A2.1.E Solve problems that can be represented by inverse variations of the forms f(x) = (a/x)+ b, f(x) = (a/x^2) + b, and f(x) = a/(bx+ c) . WA.9-12.A2.4.A Know and use basic properties of exponential and logarithmic functions and the inverse relationship between them. WA.9-12.A2.4 Core Content: Exponential and logarithmic functions and equations: Students extend their understanding of exponential functions from Algebra 1 with an emphasis on inverse functions. This leads to a natural introduction of logarithms and logarithmic functions. They learn to use the basic properties of exponential and logarithmic functions, graphing both types of function to analyze relationships, represent and model problems, and answer questions. Students employ these functions in many practical situations, such as applying exponential functions to determine compound interest and applying logarithmic functions to determine the pH of a liquid. WA.9-12.A2.4.B Graph an exponential function of the form f(x) = ab^x and its inverse logarithmic function. WA.9-12.A2.4.A Know and use basic properties of exponential and logarithmic functions and the inverse relationship between them.	On Schedule	Composite Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.F.BF.4b (+) Verify by composition that one function is the inverse of another.	WA.9-12.A2.4 Core Content: Exponential and logarithmic functions and equations: Students extend their understanding of exponential functions from Algebra 1 with an emphasis on inverse functions. This leads to a natural introduction of logarithms and logarithmic functions. They learn to use the basic properties of exponential and logarithmic functions, graphing both types of function to analyze relationships, represent and model problems, and answer questions. Students employ these functions in many practical situations, such as applying exponential functions to determine compound interest and applying logarithmic functions to determine the pH of a liquid. WA.9-12.A2.4.A Know and use basic properties of exponential and logarithmic functions and the inverse relationship between them. WA.9-12.A2.4.B Graph an exponential function of the form f(x) = ab^x and its inverse logarithmic function.	On Schedule	Composite Match		3
CC.9-12.F.BF.4c (+) Read values of an inverse function from a graph or a table, given that the function has an inverse.	WA.9-12.A2.4.A Know and use basic properties of exponential and logarithmic functions and the inverse relationship between them.	On Schedule	Partial Composite Match	The WA standards involving inverses may not extend to the use of graphs or tables.	2
CC.9-12.F.BF.4d (+) Produce an invertible function from a non-invertible function by restricting the domain.		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.F.BF.5 (+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.	WA.9-12.A2.4.A Know and use basic properties of exponential and logarithmic functions and the inverse relationship between them.	On Schedule	Simple Match		3
CC.9-12.F.LE.1 Construct and compare linear, quadratic, and exponential models and solve problems. Distinguish between situations that can be modeled with linear functions and with exponential functions.*	WA.9-12.M1.1.D Solve problems that can be represented by exponential functions and equations. WA.9-12.M1.1.B Solve problems that can be represented by linear functions, equations, and inequalities.	On Schedule	Composite Match		3
CC.9-12.F.LE.1a Prove that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.*		Unmatched	No Match		
CC.9-12.F.LE.1b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.*		Unmatched	No Match		
CC.9-12.F.LE.1c Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.*		Unmatched	No Match		
CC.9-12.F.LE.2 Construct and compare linear, quadratic, and exponential models and solve problems. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).*	WA.9-12.A1.1.A Select and justify functions and equations to model and solve problems.	On Schedule	Partial Match		2

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.F.LE.3 Construct and compare linear, quadratic, and exponential models and solve problems. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.*		Unmatched	No Match		
CC.9-12.F.LE.4 Construct and compare linear, quadratic, and exponential models and solve problems. For exponential models, express as a logarithm the solution to ab^(ct) = d where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.*	WA.9-12.A2.4.C Solve exponential and logarithmic equations. WA.9-12.A2.1.D Solve problems that can be represented by exponential and logarithmic functions and equations.	On Schedule	Composite Match		3
CC.9-12.F.LE.5 Construct and compare linear, quadratic, and exponential models and solve problems. Interpret the parameters in a linear or exponential function in terms of a context.*	WA.9-12.A1.4.E Describe how changes in the parameters of linear functions and functions containing an absolute value of a linear expression affect their graphs and the relationships they represent. WA.9-12.A1.5.B Sketch the graph of a quadratic function, describe the effects that changes in the parameters have on the graph, and interpret the x-intercepts as solutions to a quadratic equation.	On Schedule	Composite Match		3
CC.9-12.F.TF.1 Extend the domain of trigonometric functions using the unit circle. Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.F.TF.2 Extend the domain of trigonometric functions using the unit circle. Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.		Unmatched	No Match		
CC.9-12.F.TF.3 (+) Extend the domain of trigonometric functions using the unit circle. Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosine, and tangent for π - x, π + x, and 2π - x in terms of their values for x, where x is any real number.	WA.9-12.G.3.E Solve problems involving the basic trigonometric ratios of sine, cosine, and tangent.	On Schedule	Partial Match	No use of the Unit Circle, the WA standards don't delve deeply into the nature of the sine, cosine, and tangent.	1
CC.9-12.F.TF.4 (+) Extend the domain of trigonometric functions using the unit circle. Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.		Unmatched	No Match		
CC.9-12.F.TF.5 Model periodic phenomena with trigonometric functions. Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.*		Unmatched	No Match		
CC.9-12.F.TF.6 (+) Model periodic phenomena with trigonometric functions. Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.F.TF.7 (+) Model periodic phenomena with trigonometric functions. Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.*		Unmatched	No Match		
CC.9-12.F.TF.8 Prove and apply trigonometric identities. Prove the Pythagorean identity (sin A)^2 + (cos A)^2 = 1 and use it to calculate trigonometric ratios.	WA.9-12.G.3 Core Content: Two- and three-dimensional figures: Students know and can prove theorems about two- and three-dimensional geometric figures, both formally and informally. They identify necessary and sufficient conditions for proving congruence, similarity, and properties of figures. Triangles are a primary focus, beginning with general properties of triangles, working with right triangles and special triangles, proving and applying the Pythagorean Theorem and its converse, and applying the basic trigonometric ratios of sine, cosine, and tangent. Students extend their learning to other polygons and the circle, and do some work with three-dimensional figures. WA.9-12.G.3.D Know, prove, and apply the Pythagorean Theorem and its converse.	On Schedule	Partial Composite Match	The WA standards incorporate the Pythagorean Theorem, but not the Pythagorean identity.	1
CC.9-12.F.TF.9 (+) Prove and apply trigonometric identities. Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.	WA.9-12.G.3.E Solve problems involving the basic trigonometric ratios of sine, cosine, and tangent.	On Schedule	Partial Match	The WA standards involve the use of sine, cosine, and tangent to solve problems, but there is no proof of the addition and subtraction formulas.	1

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.G.CO.1 Experiment with transformations in the plane. 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.	WA.9-12.G.2 Core Content: Lines and angles: Students study basic properties of parallel and perpendicular lines, their respective slopes, and the properties of the angles formed when parallel lines are intersected by a transversal. They prove related theorems and apply them to solve both mathematical and practical problems. WA.9-12.G.3.A Know, explain, and apply basic postulates and theorems about triangles and the special lines, line segments, and rays associated with a triangle. WA.9-12.G.2.B Know, prove, and apply theorems about angles, including angles that arise from parallel lines intersected by a transversal.	On Schedule	Composite Match	While there is no WA standard focusing exclusively on understanding the definition of these terms, there are numerous standards, like the above, which focus on usage.	3
CC.9-12.G.CO.2 Experiment with transformations in the plane. 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).	WA.9-12.G.5.A Sketch results of transformations and compositions of transformations for a given two-dimensional figure on the coordinate plane, and describe the rule(s) for performing translations or for performing reflections about the coordinate axes or the line y = x. WA.9-12.M3.2 Core Content: Transformations and functions: Students formalize their previous study of geometric transformations, focusing on the effect of such transformations on the attributes of geometric figures. They study techniques for using transformations to determine congruence and similarity. Students extend their study of transformations to include transformations of many types of functions, including quadratic and exponential functions.	On Schedule	Partial Composite Match		2

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.G.CO.3 Experiment with transformations in the plane. Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	WA.9-12.G.5.C Given two congruent or similar figures in a coordinate plane, describe a composition of translations, reflections, rotations, and dilations that superimposes one figure on the other. WA.9-12.G.5.B Determine and apply properties of transformations.	On Schedule	Composite Match		3
CC.9-12.G.CO.4 Experiment with transformations in the plane. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	WA.9-12.G.5.C Given two congruent or similar figures in a coordinate plane, describe a composition of translations, reflections, rotations, and dilations that superimposes one figure on the other.	On Schedule	Partial Match	While rotations, reflections, and translations are used, no WA standard focuses on their definition.	2
CC.9-12.G.CO.5 Experiment with transformations in the plane. 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.	WA.9-12.G.5.C Given two congruent or similar figures in a coordinate plane, describe a composition of translations, reflections, rotations, and dilations that superimposes one figure on the other.	On Schedule	Simple Match		3
CC.9-12.G.CO.6 Understand congruence in terms of rigid motions. 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.	WA.9-12.G.5 Core Content: Geometric transformations: Students continue their study of geometric transformations, focusing on the effect of such transformations and the composition of transformations on the attributes of geometric figures. They study techniques for establishing congruence and similarity by means of transformations.	On Schedule	Partial Match	The concept of rigid formations is not addressed in the WA standards.	1

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.G.CO.7 Understand congruence in terms of rigid motions. 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.	WA.9-12.G.3.B Determine and prove triangle congruence, triangle similarity, and other properties of triangles.	On Schedule	Partial Match	The WA standard does not include the concept of rigid motions.	1
CC.9-12.G.CO.8 Understand congruence in terms of rigid motions. Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.	WA.9-12.G.3.B Determine and prove triangle congruence, triangle similarity, and other properties of triangles.	On Schedule	Partial Match	The WA standard does not include the concept of rigid motions.	1
CC.9-12.G.CO.9 Prove geometric theorems. 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; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.	WA.9-12.G.1.C Use deductive reasoning to prove that a valid geometric statement is true.	On Schedule	Partial Match	The WA standard does involve the use of proofs, but does not address the specific proofs outlined in the common core standard.	2
CC.9-12.G.CO.10 Prove geometric theorems. Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180 degrees; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.	WA.9-12.G.3.A Know, explain, and apply basic postulates and theorems about triangles and the special lines, line segments, and rays associated with a triangle. WA.8.2.C Demonstrate that the sum of the angle measures in a triangle is 180 degrees, and apply this fact to determine the sum of the angle measures of polygons and to determine unknown angle measures.	Partially Early	Composite Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.G.CO.11 Prove geometric theorems. Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.	WA.9-12.G.3.F Know, prove, and apply basic theorems about parallelograms. WA.9-12.M2.3.J Know, prove, and apply basic theorems about parallelograms.	On Schedule	Composite Match		3
CC.9-12.G.CO.12 Make geometric constructions. 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.	WA.9-12.G.2.C Explain and perform basic compass and straightedge constructions related to parallel and perpendicular lines.	On Schedule	Partial Match	The WA standards addressing the making of geometric constructions are very limited, and do not include all aspects of the common core.	1
CC.9-12.G.CO.13 Make geometric constructions. Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	WA.9-12.G.2.C Explain and perform basic compass and straightedge constructions related to parallel and perpendicular lines. WA.9-12.G.3.I Explain and perform constructions related to the circle.	On Schedule	Partial Composite Match	The WA standards addressing the making of geometric constructions are very limited, and do not include all aspects of the common core.	1

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.G.SRT.1 Understand similarity in terms of similarity transformations. Verify experimentally the properties of dilations given by a center and a scale factor: -- 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. -- b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	WA.9-12.G.5.C Given two congruent or similar figures in a coordinate plane, describe a composition of translations, reflections, rotations, and dilations that superimposes one figure on the other.	On Schedule	Partial Match	The WA standard does not focus its attention exclusively on dilation.	1
CC.9-12.G.SRT.2 Understand similarity in terms of similarity transformations. 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.	WA.9-12.G.3.B Determine and prove triangle congruence, triangle similarity, and other properties of triangles. WA.9-12.G.5 Core Content: Geometric transformations: Students continue their study of geometric transformations, focusing on the effect of such transformations and the composition of transformations on the attributes of geometric figures. They study techniques for establishing congruence and similarity by means of transformations.	On Schedule	Composite Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.G.SRT.3 Understand similarity in terms of similarity transformations. Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.	WA.9-12.G.3.B Determine and prove triangle congruence, triangle similarity, and other properties of triangles. WA.9-12.G.3 Core Content: Two- and three-dimensional figures: Students know and can prove theorems about two- and three-dimensional geometric figures, both formally and informally. They identify necessary and sufficient conditions for proving congruence, similarity, and properties of figures. Triangles are a primary focus, beginning with general properties of triangles, working with right triangles and special triangles, proving and applying the Pythagorean Theorem and its converse, and applying the basic trigonometric ratios of sine, cosine, and tangent. Students extend their learning to other polygons and the circle, and do some work with three-dimensional figures. WA.9-12.M1.4.D Determine and prove triangle similarity.	On Schedule	Composite Match		3
CC.9-12.G.SRT.4 Prove theorems involving similarity. Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.	WA.9-12.G.3.D Know, prove, and apply the Pythagorean Theorem and its converse. WA.9-12.G.3.B Determine and prove triangle congruence, triangle similarity, and other properties of triangles.	On Schedule	Composite Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.G.SRT.5 Prove theorems involving similarity. Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	WA.9-12.G.3.B Determine and prove triangle congruence, triangle similarity, and other properties of triangles.	On Schedule	Simple Match		3
CC.9-12.G.SRT.6 Define trigonometric ratios and solve problems involving right triangles. 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.	WA.9-12.G.3.C Use the properties of special right triangles (30°-60°-90° and 45°-45°-90°) to solve problems.	On Schedule	Partial Match	The WA standard lacks connection to the trigonometric ratios.	2
CC.9-12.G.SRT.7 Define trigonometric ratios and solve problems involving right triangles. Explain and use the relationship between the sine and cosine of complementary angles.	WA.9-12.G.3.C Use the properties of special right triangles (30°-60°-90° and 45°-45°-90°) to solve problems.	On Schedule	Partial Match	The WA standard does not connect to the trigonometric ratios.	2
CC.9-12.G.SRT.8 Define trigonometric ratios and solve problems involving right triangles. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	WA.9-12.G.3.C Use the properties of special right triangles (30°-60°-90° and 45°-45°-90°) to solve problems. WA.9-12.G.3.D Know, prove, and apply the Pythagorean Theorem and its converse. WA.9-12.G.3.E Solve problems involving the basic trigonometric ratios of sine, cosine, and tangent.	On Schedule	Composite Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.G.SRT.9 (+) Apply trigonometry to general triangles. Derive the formula A = (1/2)ab sin(C) for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.		Unmatched	No Match		
CC.9-12.G.SRT.10 (+) Apply trigonometry to general triangles. Prove the Laws of Sines and Cosines and use them to solve problems.		Unmatched	No Match		
CC.9-12.G.SRT.11 (+) Apply trigonometry to general triangles. Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).		Unmatched	No Match		
CC.9-12.G.C.1 Understand and apply theorems about circles. Prove that all circles are similar.	WA.9-12.G.3.H Know, prove, and apply basic theorems relating circles to tangents, chords, radii, secants, and inscribed angles.	On Schedule	Simple Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.G.C.2 Understand and apply theorems about circles. Identify and describe relationships among inscribed 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.	WA.9-12.G.3.H Know, prove, and apply basic theorems relating circles to tangents, chords, radii, secants, and inscribed angles.	On Schedule	Simple Match		3
CC.9-12.G.C.3 Understand and apply theorems about circles. Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	WA.9-12.G.3.H Know, prove, and apply basic theorems relating circles to tangents, chords, radii, secants, and inscribed angles.	On Schedule	Partial Match	No WA standards discuss inscribed or circumscribed circles of a triangle, or the properties of angles for a quadrilateral inscribed in a circle.	1
CC.9-12.G.C.4 (+) Understand and apply theorems about circles. Construct a tangent line from a point outside a given circle to the circle.	WA.9-12.G.3.H Know, prove, and apply basic theorems relating circles to tangents, chords, radii, secants, and inscribed angles.	On Schedule	Simple Match		3
CC.9-12.G.C.5 Find arc lengths and areas of sectors of circles. 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.	WA.9-12.G.6.A* Derive and apply formulas for arc length and area of a sector of a circle.	On Schedule	Simple Match		3
CC.9-12.G.GPE.1 Translate between the geometric description and the equation for a conic section. Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.G.GPE.2 Translate between the geometric description and the equation for a conic section. Derive the equation of a parabola given a focus and directrix.		Unmatched	No Match		
CC.9-12.G.GPE.3 (+) Translate between the geometric description and the equation for a conic section. Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.		Unmatched	No Match		
CC.9-12.G.GPE.4 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, √3) lies on the circle centered at the origin and containing the point (0, 2).	WA.9-12.G.1.C Use deductive reasoning to prove that a valid geometric statement is true. WA.9-12.G.4 Core Content: Geometry in the coordinate plane: Students make connections between geometry and algebra by studying geometric properties and attributes that can be represented on the coordinate plane. They use the coordinate plane to represent situations that are both purely mathematical and that arise in applied contexts. In this way, they use the power of algebra to solve problems about shapes and space.	On Schedule	Composite Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.G.GPE.5 Use coordinates to prove simple geometric theorems algebraically. Prove the slope criteria for parallel and perpendicular lines and use them 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).	WA.9-12.G.1.C Use deductive reasoning to prove that a valid geometric statement is true. WA.9-12.G.2.A Know, prove, and apply theorems about parallel and perpendicular lines. WA.9-12.G.4.A Determine the equation of a line in the coordinate plane that is described geometrically, including a line through two given points, a line through a given point parallel to a given line, and a line through a given point perpendicular to a given line.	On Schedule	Composite Match		3
CC.9-12.G.GPE.6 Use coordinates to prove simple geometric theorems algebraically. Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	WA.9-12.G.1.C Use deductive reasoning to prove that a valid geometric statement is true.	On Schedule	Simple Match		3
CC.9-12.G.GPE.7 Use coordinates to prove simple geometric theorems algebraically. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.*	WA.9-12.G.1.C Use deductive reasoning to prove that a valid geometric statement is true.	On Schedule	Simple Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.G.GMD.1 Explain volume formulas and use them to solve problems. Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.	WA.9-12.G.6.C* Apply formulas for surface area and volume of three-dimensional figures to solve problems.	On Schedule	Partial Match	The WA standard includes finding the volume of a three dimensional figures, but makes no reference to Cavalieri's principle and does not require students to formulate an argument. No WA standards account for making an informal argument about area or circumference of a circle.	1
CC.9-12.G.GMD.2 (+) Explain volume formulas and use them to solve problems. Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.	WA.9-12.G.6.C* Apply formulas for surface area and volume of three-dimensional figures to solve problems.	On Schedule	Partial Match	The WA standard includes finding the volume of a sphere, but makes no reference to Cavalieri's principle and does not require students to formulate an argument.	1

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.G.GMD.3 Explain volume formulas and use them to solve problems. Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.*	WA.9-12.G.6.C* Apply formulas for surface area and volume of three-dimensional figures to solve problems. WA.9-12.G.6.B* Analyze distance and angle measures on a sphere and apply these measurements to the geometry of the earth.	On Schedule	Composite Match		3
CC.9-12.G.GMD.4 Visualize relationships between two-dimensional and three-dimensional objects. Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	WA.9-12.G.3.K Analyze cross-sections of cubes, prisms, pyramids, and spheres and identify the resulting shapes.	On Schedule	Partial Match	The WA standard lacks the concept of three-dimensional shapes generated by rotation.	1
CC.9-12.G.MG.1 Apply geometric concepts in modeling situations. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*		Unmatched	No Match		
CC.9-12.G.MG.2 Apply geometric concepts in modeling situations. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).*	WA.9-12.G.6* Additional Key Content: Students extend and formalize their work with geometric formulas for perimeter, area, surface area, and volume of two- and three-dimensional figures, focusing on mathematical derivations of these formulas and their applications in complex problems. They use properties of geometry and measurement to solve problems in purely mathematical as well as applied contexts. Students understand the role of units in measurement and apply what they know to solve problems involving derived measures like speed or density. They understand that all measurement is approximate and specify precision in measurement problems.	On Schedule	Simple Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.G.MG.3 Apply geometric concepts in modeling situations. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).*	WA.9-12.G.6* Additional Key Content: Students extend and formalize their work with geometric formulas for perimeter, area, surface area, and volume of two- and three-dimensional figures, focusing on mathematical derivations of these formulas and their applications in complex problems. They use properties of geometry and measurement to solve problems in purely mathematical as well as applied contexts. Students understand the role of units in measurement and apply what they know to solve problems involving derived measures like speed or density. They understand that all measurement is approximate and specify precision in measurement problems.	On Schedule	Simple Match		3
CC.9-12.S.ID.1 Summarize, represent, and interpret data on a single count or measurement variable. Represent data with plots on the real number line (dot plots, histograms, and box plots).*	WA.7.4.D Construct and interpret histograms, stem-and-leaf plots, and circle graphs.	Early	Partial Match		2

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.S.ID.2 Summarize, represent, and interpret data on a single count or measurement variable. 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.*	WA.9-12.A1.6 Core Content: Data and distributions: Students select mathematical models for data sets and use those models to represent, describe, and compare data sets. They analyze data to determine the relationship between two variables and make and defend appropriate predictions, conjectures, and generalizations. Students understand limitations of conclusions based on results of a study or experiment and recognize common misconceptions and misrepresentations in interpreting conclusions. WA.9-12.A2.6.F Calculate and interpret measures of variability and standard deviation and use these measures and the characteristics of the normal distribution to describe and compare data sets. WA.9-12.A1.6.C Describe how linear transformations affect the center and spread of univariate data. WA.9-12.A1.6.A Use and evaluate the accuracy of summary statistics to describe and compare data sets.	On Schedule	Composite Match		3
CC.9-12.S.ID.3 Summarize, represent, and interpret data on a single count or measurement variable. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).*	WA.9-12.A1.6.C Describe how linear transformations affect the center and spread of univariate data.	On Schedule	Partial Match		2

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.S.ID.4 Summarize, represent, and interpret data on a single count or measurement variable. 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.*	WA.9-12.A2.6.F Calculate and interpret measures of variability and standard deviation and use these measures and the characteristics of the normal distribution to describe and compare data sets.	On Schedule	Simple Match		3
CC.9-12.S.ID.5 Summarize, represent, and interpret data on two categorical and quantitative variables. 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.*		Unmatched	No Match		
CC.9-12.S.ID.6 Summarize, represent, and interpret data on two categorical and quantitative variables. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.*	WA.9-12.A1.6.E Describe the correlation of data in scatterplots in terms of strong or weak and positive or negative.	On Schedule	Simple Match		3
CC.9-12.S.ID.6a Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.*	WA.9-12.A1.1.A Select and justify functions and equations to model and solve problems.	On Schedule	Simple Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.S.ID.6b Informally assess the fit of a function by plotting and analyzing residuals.*		Unmatched	No Match		
CC.9-12.S.ID.6c Fit a linear function for a scatter plot that suggests a linear association.*	WA.9-12.A1.6.E Describe the correlation of data in scatterplots in terms of strong or weak and positive or negative. WA.9-12.A1.6.D Find the equation of a linear function that best fits bivariate data that are linearly related, interpret the slope and y-intercept of the line, and use the equation to make predictions.	On Schedule	Composite Match		3
CC.9-12.S.ID.7 Interpret linear models. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.*	WA.9-12.A1.4.C Identify and interpret the slope and intercepts of a linear function, including equations for parallel and perpendicular lines.	On Schedule	Simple Match		3
CC.9-12.S.ID.8 Interpret linear models. Compute (using technology) and interpret the correlation coefficient of a linear fit.*		Unmatched	No Match		
CC.9-12.S.ID.9 Interpret linear models. Distinguish between correlation and causation.*		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.S.IC.1 Understand and evaluate random processes underlying statistical experiments. Understand statistics as a process for making inferences about population parameters based on a random sample from that population.*	WA.9-12.A2.6 Core Content: Probability, data, and distributions: Students formalize their study of probability, computing both combinations and permutations to calculate the likelihood of an outcome in uncertain circumstances and applying the binominal theorem to solve problems. They extend their use of statistics to graph bivariate data and analyze its shape to make predictions. They calculate and interpret measures of variability, confidence intervals, and margins of error for population proportions. Dual goals underlie the content in the section: students prepare for the further study of statistics and become thoughtful consumers of data.	On Schedule	Simple Match		3
CC.9-12.S.IC.2 Understand and evaluate random processes underlying statistical experiments. Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. 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?*		Unmatched	No Match		
CC.9-12.S.IC.3 Make inferences and justify conclusions from sample surveys, experiments, and observational studies. Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.*		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.S.IC.4 Make inferences and justify conclusions from sample surveys, experiments, and observational studies. 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.*	WA.9-12.A2.6.G Calculate and interpret margin of error and confidence intervals for population proportions. WA.9-12.A2.6 Core Content: Probability, data, and distributions: Students formalize their study of probability, computing both combinations and permutations to calculate the likelihood of an outcome in uncertain circumstances and applying the binominal theorem to solve problems. They extend their use of statistics to graph bivariate data and analyze its shape to make predictions. They calculate and interpret measures of variability, confidence intervals, and margins of error for population proportions. Dual goals underlie the content in the section: students prepare for the further study of statistics and become thoughtful consumers of data.	On Schedule	Composite Match		3
CC.9-12.S.IC.5 Make inferences and justify conclusions from sample surveys, experiments, and observational studies. Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.*		Unmatched	No Match		
CC.9-12.S.IC.6 Make inferences and justify conclusions from sample surveys, experiments, and observational studies. Evaluate reports based on data.*	WA.9-12.A1.6.B Make valid inferences and draw conclusions based on data.	On Schedule	Simple Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.S.CP.1 Understand independence and conditional probability and use them to interpret data. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").*	WA.9-12.A2.6.B Given a finite sample space consisting of equally likely outcomes and containing events A and B, determine whether A and B are independent or dependent, and find the conditional probability of A given B.	On Schedule	Simple Match		3
CC.9-12.S.CP.2 Understand independence and conditional probability and use them to interpret data. Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.*	WA.9-12.A2.6.B Given a finite sample space consisting of equally likely outcomes and containing events A and B, determine whether A and B are independent or dependent, and find the conditional probability of A given B.	On Schedule	Simple Match		3
CC.9-12.S.CP.3 Understand independence and conditional probability and use them to interpret data. Understand the conditional probability of A given B as P(A 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.*	WA.9-12.A2.6.B Given a finite sample space consisting of equally likely outcomes and containing events A and B, determine whether A and B are independent or dependent, and find the conditional probability of A given B.	On Schedule	Simple Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.S.CP.4 Understand independence and conditional probability and use them to interpret data. 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. For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*	WA.9-12.A2.6.B Given a finite sample space consisting of equally likely outcomes and containing events A and B, determine whether A and B are independent or dependent, and find the conditional probability of A given B.	On Schedule	Simple Match		3
CC.9-12.S.CP.5 Understand independence and conditional probability and use them to interpret data. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*	WA.9-12.A2.6.B Given a finite sample space consisting of equally likely outcomes and containing events A and B, determine whether A and B are independent or dependent, and find the conditional probability of A given B.	On Schedule	Simple Match		3
CC.9-12.S.CP.6 Use the rules of probability to compute probabilities of compound events in a uniform probability model. 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.*	WA.9-12.A2.6.A Apply the fundamental counting principle and the ideas of order and replacement to calculate probabilities in situations arising from two-stage experiments (compound events).	On Schedule	Simple Match		3

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.S.CP.7 Use the rules of probability to compute probabilities of compound events in a uniform probability model. Apply the Addition Rule, P(A or B) = P(A) + P(B) – P(A and B), and interpret the answer in terms of the model.*	WA.9-12.A2.6.A Apply the fundamental counting principle and the ideas of order and replacement to calculate probabilities in situations arising from two-stage experiments (compound events).	On Schedule	Partial Match	No mention of the Addition Rule.	2
CC.9-12.S.CP.8 (+) Use the rules of probability to compute probabilities of compound events in a uniform probability model. Apply the general Multiplication Rule in a uniform probability model, P(A and B) = [P(A)]x[P(B|A)] =[P(B)]x[P(A|B)], and interpret the answer in terms of the model.*	WA.9-12.A2.6.A Apply the fundamental counting principle and the ideas of order and replacement to calculate probabilities in situations arising from two-stage experiments (compound events).	On Schedule	Partial Match	No mention of the Multiplication Rule.	2
CC.9-12.S.CP.9 (+) Use the rules of probability to compute probabilities of compound events in a uniform probability model. Use permutations and combinations to compute probabilities of compound events and solve problems.*	WA.9-12.A2.6.A Apply the fundamental counting principle and the ideas of order and replacement to calculate probabilities in situations arising from two-stage experiments (compound events). WA.9-12.A2.1.F Solve problems involving combinations and permutations. WA.9-12.A2.6.C Compute permutations and combinations, and use the results to calculate probabilities.	On Schedule	Composite Match		3
CC.9-12.S.MD.1 (+) Calculate expected values and use them to solve problems. Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.*		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.S.MD.2 (+) Calculate expected values and use them to solve problems. Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.*		Unmatched	No Match		
CC.9-12.S.MD.3 (+) Calculate expected values and use them to solve problems. Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.*		Unmatched	No Match		
CC.9-12.S.MD.4 (+) Calculate expected values and use them to solve problems. Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?*		Unmatched	No Match		
CC.9-12.S.MD.5 (+) Use probability to evaluate outcomes of decisions. Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.*		Unmatched	No Match		

Common Core	Washington State	Grade Level Timing	Hanover Evaluation	Hanover Notes	Score
CC.9-12.S.MD.5a (+) Find the expected payoff for a game of chance. For example, find the expected winnings from a state lottery ticket or a game at a fast-food restaurant.*		Unmatched	No Match		
CC.9-12.S.MD.5b (+) Evaluate and compare strategies on the basis of expected values. For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.*		Unmatched	No Match		
CC.9-12.S.MD.6 (+) Use probability to evaluate outcomes of decisions. Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).*		Unmatched	No Match		
CC.9-12.S.MD.7 (+) Use probability to evaluate outcomes of decisions. Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).*		Unmatched	No Match		

K-12 Overarching Standards for Mathematics: Alignment Issues

With respect to certain overarching standards – both those present in the Common Core and in the Washington Performance Expectations – it makes little sense to speak of matches and non-matches in the traditional sense. In this section, we discuss the "alignment issues" that prevented a meaningful matching process between the standard sets based on their organizational structure.

Alignment Issues in the Forward-Analysis

The Common Core's "Standards for Mathematical Practices" consists of eight "overarching standards" for the entire K-12 level. Rather than attaching to a specific grade level, these are overarching mathematical goals for the whole of K-12 education. Washington State standards address "core processes" – which include reasoning, problem solving, and communication – at the end of each grade rather than at the end of the entire K-12 sequence. Examples of Washington State core processes for Algebra include the following:

- A1.8.B Select and apply strategies to solve problems.
- A1.8.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.
- A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve specific problems.
- A1.8.E Read and interpret diagrams, graphs, and text containing the symbols, language, and conventions of mathematics.
- A1.8.F Summarize mathematical ideas with precision and efficiency for a given audience and purpose.
- A1.8.G Synthesize information to draw conclusions, and evaluate the arguments and conclusions of others.
- A1.8.H Use inductive reasoning about algebra and the properties of numbers to make conjectures and use deductive reasoning to prove or disprove conjectures.

These core processes from Washington address many of the same standards listed in the "Standards for Mathematical Practices" from the Common Core. However, because organizational differences would make matching cumbersome and unproductive, each of these eight standards were treated as "unmatched" in the Achieve Tool (for a total of 495 standards), but were not included in the summary tables at the beginning of this document (which treat only 487 standards).

Table 12: Common Core Overarching "Standards for Mathematical Practice"

Common Core K-12 Standards for Mathematical Practice
CC.K-12.MP.1 Make sense of problems and persevere in solving them. Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.
CC.K-12.MP.2 Reason abstractly and quantitatively. Mathematically proficient students make sense of the quantities and their relationships in problem situations. Students bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.
CC.K-12.MP.3 Construct viable arguments and critique the reasoning of others. Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.
CC.K-12.MP.4 Model with mathematics. Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

Common Core K-12 Standards for Mathematical Practice
CC.K-12.MP.5 Use appropriate tools strategically. Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.
CC.K-12.MP.6 Attend to precision. Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.
CC.K-12.MP.7 Look for and make use of structure. Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7 × 8 equals the well remembered 7 × 5 + 7 × 3, in preparation for learning about the distributive property. In the expression x^2 + 9x + 14, older students can see the 14 as 2 × 7 and the 9 as 2 + 7. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see 5 – 3(x – y)^2 as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.
CC.K-12.MP.8 Look for and express regularity in repeated reasoning. Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation (y – 2)/(x –1) = 3. Noticing the regularity in the way terms cancel when expanding (x – 1)(x + 1), (x – 1)(x^2 + x + 1), and (x – 1)(x^3 + x^2 + x + 1) might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Alignment Issues in the Backward-Analysis

As previously discussed, Washington standards and the Common Core use different structures to organize their expectations for practical mathematics skills. Washington utilizes a set of "core processes" which build and repeat at the end of each grade level. In contrast, the Common Core articulates eight overarching goals for the entire K-12 sequence. This difference caused alignment issues not only in matching WPEs to the Common Core, but also in matching the Common Core to the Washington standards. Unlike the overarching standards above, however, the core processes WPEs were used – where applicable – to match

with standards from the Common Core. However, the majority could not be matched in this way. The following charts present unmatched core process standards for each grade level.

Table 13: Unmatched Core Process Standards, K-4

Letter	Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade
Intro	WA.K.5 Core Processes: Reasoning, problem solving, and communication: Students begin to build the understanding that doing mathematics involves solving problems and discussing how they solved them. Problems at this level emphasize counting and activities that lead to emerging ideas about addition and subtraction. Students begin to develop their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?"and "Why is that true?"		WA.2.5 Core Processes: Reasoning, problem solving, and communication: Students further develop the concept that doing mathematics involves solving problems and talking about what they did to solve those problems. Second-grade problems emphasize addition and subtraction with increasingly large numbers, measurement, and early concepts of multiplication and division. Students communicate their mathematical thinking and make increasingly more convincing mathematical arguments. Students participate in mathematical discussions involving questions like "How did you get that?"; "Why did you use that strategy?"; and "Why is that true?"Students continue to build their mathematical vocabulary as they use correct mathematical language appropriate to grade two when discussing and refining solutions to problems.	WA.3.6 Core Processes: Reasoning, problem solving, and communication: Students in grade three solve problems that extend their understanding of core mathematical concepts-such as geometric figures, fraction concepts, and multiplication and division of whole numbers-as they make strategic decisions that bring them to reasonable solutions. Students use pictures, symbols, or mathematical language to explain the reasoning behind their decisions and solutions. They further develop their problem-solving skills by making generalizations about the processes used and applying these generalizations to similar problem situations. These critical reasoning, problem-solving, and communication skills represent the kind of mathematical thinking that equips students to use the mathematics they know to solve a growing range of useful and important problems and to make decisions based on quantitative information.	WA.4.5 Core Processes: Reasoning, problem solving, and communication: Students in grade four solve problems that extend their understanding of core mathematical concepts-such as multiplication of multi-digit numbers, area, probability, and the relationships between fractions and decimals-as they make strategic decisions that bring them to reasonable solutions. Students use pictures, symbols, or mathematical language to explain the reasoning behind their decisions and solutions. They further develop their problem-solving skills by making generalizations about the processes used and applying these generalizations to similar problem situations. These critical reasoning, problem-solving, and communication skills represent the kind of mathematical thinking that equips students to use the mathematics they know to solve a growing range of useful and important problems and to make decisions based on quantitative information.

Letter	Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade
A	WA.K.5.A Identify the question(s) asked in a problem.	WA.1.6.A Identify the question(s) asked in a problem.	WA.2.5.A Identify the question(s) asked in a problem and any other questions that need to be answered in order to solve the problem.	WA.3.6.A Determine the question(s) to be answered given a problem situation.	WA.4.5.A Determine the question(s) to be answered given a problem situation.
B	WA.K.5.B Identify the given information that can be used to solve a problem.	WA.1.6.B Identify the given information that can be used to solve a problem.	WA.2.5.B Identify the given information that can be used to solve a problem.	WA.3.6.B Identify information that is given in a problem and decide whether it is necessary or unnecessary to the solution of the problem.	WA.4.5.B Identify information that is given in a problem and decide whether it is essential or extraneous to the solution of the problem.
C	WA.K.5.C Recognize when additional information is required to solve a problem.	WA.1.6.C Recognize when additional information is required to solve a problem.		WA.3.6.C Identify missing information that is needed to solve a problem.	WA.4.5.C Identify missing information that is needed to solve a problem.
D		WA.1.6.D Select from a variety of problem-solving strategies and use one or more strategies to solve a problem.	WA.2.5.D Select from a variety of problem-solving strategies and use one or more strategies to solve a problem.	WA.3.6.D Determine whether a problem to be solved is similar to previously solved problems, and identify possible strategies for solving the problem.	WA.4.5.D Determine whether a problem to be solved is similar to previously solved problems, and identify possible strategies for solving the problem.
E	WA.K.5.E Answer the question(s) asked in a problem.	WA.1.6.E Answer the question(s) asked in a problem.		WA.3.6.E Select and use one or more appropriate strategies to solve a problem.	WA.4.5.E Select and use one or more appropriate strategies to solve a problem and explain why that strategy was chosen.
F	WA.K.5.F Describe how a problem was solved.	WA.1.6.F Identify the answer(s) to the question(s) in a problem.	WA.2.5.F Describe how a problem was solved.	WA.3.6.F Represent a problem situation using words, numbers, pictures, physical objects, or symbols.	WA.4.5.F Represent a problem situation using words, numbers, pictures, physical objects, or symbols.
G		WA.1.6.G Describe how a problem was solved.		WA.3.6.G Explain why a specific problem-solving strategy or procedure was used to determine a solution.	WA.4.5.G Explain why a specific problem-solving strategy or procedure was used to determine a solution.
H		WA.1.6.H Determine whether a solution to a problem is reasonable.		WA.3.6.H Analyze and evaluate whether a solution is reasonable, is mathematically correct, and answers the question.	WA.4.5.H Analyze and evaluate whether a solution is reasonable, is mathematically correct, and answers the question.
I				WA.3.6.I Summarize mathematical information, draw conclusions, and explain reasoning.	WA.4.5.I Summarize mathematical information, draw conclusions, and explain reasoning.

Letter	Kindergarten	1st Grade	2nd Grade	3rd Grade	4th Grade
J					WA.4.5.J Make and test conjectures based on data (or information) collected from explorations and experiments.

Table 14: Unmatched Core Process Standards, 5-8

Letter	5th Grade	6th Grade	7th Grade	8th Grade
Intro	WA.5.6 Core Processes: Reasoning, problem solving, and communication: Students in grade five solve problems that extend their understanding of core mathematical concepts-such as division of multi-digit numbers, perimeter, area, addition and subtraction of fractions and decimals, and use of variables in expressions and equations-as they make strategic decisions leading to reasonable solutions. Students use pictures, symbols, or mathematical language to explain the reasoning behind their decisions and solutions. They further develop their problem-solving skills by making generalizations about the processes used and applying these generalizations to similar problem situations. These critical reasoning, problem-solving, and communication skills represent the kind of mathematical thinking that equips students to use the mathematics they know to solve a growing range of useful and important problems and to make decisions based on quantitative information.	WA.6.6 Core Processes: Reasoning, problem solving, and communication: Students refine their reasoning and problem solving skills as they move more fully into the symbolic world of algebra and higher-level mathematics. They move easily among representations- numbers, words, pictures, or symbols-to understand and communicate mathematical ideas, to make generalizations, to draw logical conclusions, and to verify the reasonableness of solutions to problems. In grade six, students solve problems that involve fractions and decimals as well as rates and ratios in preparation for studying proportional relationships and algebraic reasoning in grade seven.	WA.7.6 Core Processes: Reasoning, problem solving, and communication: Students refine their reasoning and problem solving skills as they move more fully into the symbolic world of algebra and higher-level mathematics. They move easily among representations-numbers, words, pictures, or symbols-to understand and communicate mathematical ideas, to make generalizations, to draw logical conclusions, and to verify the reasonableness of solutions to problems. In grade seven, students solve problems that involve positive and negative numbers and often involve proportional relationships. As students solve these types of problems, they build a strong foundation for the study of linear functions that will come in grade eight.	WA.8.5 Core Processes: Reasoning, problem solving, and communication: Students refine their reasoning and problem solving skills as they move more fully into the symbolic world of algebra and higher level mathematics. They move easily among representations-numbers, words, pictures, or symbols-to understand and communicate mathematical ideas, to make generalizations, to draw logical conclusions, and to verify the reasonableness of solutions to problems. In grade eight, students solve problems that involve proportional relationships and linear relationships, including applications found in many contexts outside of school. These problems dealing with proportionality continue to be important in many applied contexts, and they lead directly to the study of algebra. Students also begin to deal with informal proofs for theorems that will be proven more formally in high school.
A	WA.5.6.A Determine the question(s) to be answered given a problem situation.	WA.6.6.A Analyze a problem situation to determine the question(s) to be answered.	WA.7.6.A Analyze a problem situation to determine the question(s) to be answered.	WA.8.5.A Analyze a problem situation to determine the question(s) to be answered.

Letter	5th Grade	6th Grade	7th Grade	8th Grade
B	WA.5.6.B Identify information that is given in a problem and decide whether it is essential or extraneous to the solution of the problem.	WA.6.6.B Identify relevant, missing, and extraneous information related to the solution to a problem.	WA.7.6.B Identify relevant, missing, and extraneous information related to the solution to a problem.	WA.8.5.B Identify relevant, missing, and extraneous information related to the solution to a problem.
C	WA.5.6.C Determine whether additional information is needed to solve the problem.	WA.6.6.C Analyze and compare mathematical strategies for solving problems, and select and use one or more strategies to solve a problem.	WA.7.6.C Analyze and compare mathematical strategies for solving problems, and select and use one or more strategies to solve a problem.	WA.8.5.C Analyze and compare mathematical strategies for solving problems, and select and use one or more strategies to solve a problem.
D	WA.5.6.D Determine whether a problem to be solved is similar to previously solved problems, and identify possible strategies for solving the problem.	WA.6.6.D Represent a problem situation, describe the process used to solve the problem, and verify the reasonableness of the solution.	WA.7.6.D Represent a problem situation, describe the process used to solve the problem, and verify the reasonableness of the solution.	WA.8.5.D Represent a problem situation, describe the process used to solve the problem, and verify the reasonableness of the solution.
E	WA.5.6.E Select and use one or more appropriate strategies to solve a problem, and explain the choice of strategy.	WA.6.6.E Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.	WA.7.6.E Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.	WA.8.5.E Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.
F	WA.5.6.F Represent a problem situation using words, numbers, pictures, physical objects, or symbols.	WA.6.6.F Apply a previously used problem-solving strategy in a new context.	WA.7.6.F Apply a previously used problem-solving strategy in a new context.	WA.8.5.F Apply a previously used problem-solving strategy in a new context.
G	WA.5.6.G Explain why a specific problem-solving strategy or procedure was used to determine a solution.	WA.6.6.G Extract and organize mathematical information from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	WA.7.6.G Extract and organize mathematical information from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	WA.8.5.G Extract and organize mathematical information from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.
H	WA.5.6.H Analyze and evaluate whether a solution is reasonable, is mathematically correct, and answers the question.	WA.6.6.H Make and test conjectures based on data (or information) collected from explorations and experiments.	WA.7.6.H Make and test conjectures based on data (or information) collected from explorations and experiments.	WA.8.5.H Make and test conjectures based on data (or information) collected from explorations and experiments.
I	WA.5.6.I Summarize mathematical information, draw conclusions, and explain reasoning.			
J	WA.5.6.J Make and test conjectures based on data (or information) collected from explorations and experiments.			

Table 15: Unmatched Core Process Standards, High School

Letter	Algebra 1	Geometry	Algebra 2
Intro	WA.9-12.A1.8 Core Processes: Reasoning, problem solving, and communication: Students formalize the development of reasoning in Algebra 1 as they use algebra and the properties of number systems to develop valid mathematical arguments, make and prove conjectures, and find counterexamples to refute false statements, using correct mathematical language, terms, and symbols in all situations. They extend the problem-solving practices developed in earlier grades and apply them to more challenging problems, including problems related to mathematical and applied situations. Students formalize a coherent problem-solving process in which they analyze the situation to determine the question(s) to be answered, synthesize given information, and identify implicit and explicit assumptions that have been made. They examine their solution(s) to determine reasonableness, accuracy, and meaning in the context of the original problem. The mathematical thinking, reasoning, and problem-solving processes students learn in high school mathematics can be used throughout their lives as they deal with a world in which an increasing amount of information is presented in quantitative ways and more and more occupations and fields of study rely on mathematics.	WA.9-12.G.7 Core Processes: Reasoning, problem solving, and communication: Students formalize the development of reasoning in Geometry as they become more sophisticated in their ability to reason inductively and begin to use deductive reasoning in formal proofs. They extend the problem-solving practices developed in earlier grades and apply them to more challenging problems, including problems related to mathematical and applied situations. Students use a coherent problem-solving process in which they analyze the situation to determine the question(s) to be answered, synthesize given information, and identify implicit and explicit assumptions that have been made. They examine their solution(s) to determine reasonableness, accuracy, and meaning in the context of the original problem. They use correct mathematical language, terms, symbols, and conventions as they address problems in Geometry and provide descriptions and justifications of solution processes. The mathematical thinking, reasoning, and problem-solving processes students learn in high school mathematics can be used throughout their lives as they deal with a world in which an increasing amount of information is presented in quantitative ways, and more and more occupations and fields of study rely on mathematics.	WA.9-12.A2.8 Core Processes: Reasoning, problem solving, and communication: Students formalize the development of reasoning at high school as they use algebra and the properties of number systems to develop valid mathematical arguments, make and prove conjectures, and find counterexamples to refute false statements using correct mathematical language, terms, and symbols in all situations. They extend the problem-solving practices developed in earlier grades and apply them to more challenging problems, including problems related to mathematical and applied situations. Students formalize a coherent problem-solving process in which they analyze the situation to determine the question(s) to be answered, synthesize given information, and identify implicit and explicit assumptions that have been made. They examine their solution(s) to determine reasonableness, accuracy, and meaning in the context of the original problem. The mathematical thinking, reasoning, and problem-solving processes students learn in high school mathematics can be used throughout their lives as they deal with a world in which an increasing amount of information is presented in quantitative ways and more and more occupations and fields of study rely on mathematics.
A	WA.9-12.A1.8.A Analyze a problem situation and represent it mathematically.	WA.9-12.G.7.A Analyze a problem situation and represent it mathematically.	WA.9-12.A2.8.A Analyze a problem situation and represent it mathematically.

Letter	Algebra 1	Geometry	Algebra 2
B	WA.9-12.A1.8.B Select and apply strategies to solve problems.	WA.9-12.G.7.B Select and apply strategies to solve problems.	WA.9-12.A2.8.B Select and apply strategies to solve problems.
C	WA.9-12.A1.8.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.	WA.9-12.G.7.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.	WA.9-12.A2.8.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.
D	WA.9-12.A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve specific problems.	WA.9-12.G.7.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve specific problems.	WA.9-12.A2.8.D Generalize a solution strategy for a single problem to a class of related problems and apply a strategy for a class of related problems to solve specific problems.
E	WA.9-12.A1.8.E Read and interpret diagrams, graphs, and text containing the symbols, language, and conventions of mathematics.	WA.9-12.G.7.E Read and interpret diagrams, graphs, and text containing the symbols, language, and conventions of mathematics.	WA.9-12.A2.8.E Read and interpret diagrams, graphs, and text containing the symbols, language, and conventions of mathematics.
F	WA.9-12.A1.8.F Summarize mathematical ideas with precision and efficiency for a given audience and purpose.	WA.9-12.G.7.F Summarize mathematical ideas with precision and efficiency for a given audience and purpose.	WA.9-12.A2.8.F Summarize mathematical ideas with precision and efficiency for a given audience and purpose.
G	WA.9-12.A1.8.G Synthesize information to draw conclusions, and evaluate the arguments and conclusions of others.	WA.9-12.G.7.G Synthesize information to draw conclusions and evaluate the arguments and conclusions of others.	WA.9-12.A2.8.G Use inductive reasoning and the properties of numbers to make conjectures, and use deductive reasoning to prove or disprove conjectures.
H	WA.9-12.A1.8.H Use inductive reasoning about algebra and the properties of numbers to make conjectures, and use deductive reasoning to prove or disprove conjectures.	WA.9-12.G.7.H Use inductive reasoning to make conjectures, and use deductive reasoning to prove or disprove conjectures.	WA.9-12.A2.8.H Synthesize information to draw conclusions and evaluate the arguments and conclusions of others.

K-12 Backwards Matching – Explanation of All Unmatched WA Standards

In this section, we list all those WPEs which were not matched to any Common Core Standards and classify the reason that each standard was unable to be matched.

Table 16: Explanation of Unmatched Washington Performance Expectations

Grade Level	Reason for No Match	Standard
K	Core Matching Difficulty	WA.K.3 Core Content: Objects and their locations: Students develop basic ideas related to geometry as they name simple two- and three-dimensional figures and find these shapes around them. They expand their understanding of space and location by describing where people and objects are. Students sort and match shapes as they begin to develop classification skills that serve them well in both mathematics and reading-matching numbers to sets, shapes to names, patterns to rules, letters to sounds, and so on.
K	Process Matching Difficulty	WA.K.5 Core Processes: Reasoning, problem solving, and communication: Students begin to build the understanding that doing mathematics involves solving problems and discussing how they solved them. Problems at this level emphasize counting and activities that lead to emerging ideas about addition and subtraction. Students begin to develop their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?"and "Why is that true?"
K	Process Matching Difficulty	WA.K.5.A Identify the question(s) asked in a problem.
K	Process Matching Difficulty	WA.K.5.B Identify the given information that can be used to solve a problem.
K	Process Matching Difficulty	WA.K.5.C Recognize when additional information is required to solve a problem.
K	Process Matching Difficulty	WA.K.5.E Answer the question(s) asked in a problem.
K	Process Matching Difficulty	WA.K.5.F Describe how a problem was solved.
1	True No Match	WA.1.1.B Name the number that is one less or one more than any number given verbally up to 120.
1	True No Match	WA.1.1.D Order objects or events using ordinal numbers.

Grade Level	Reason for No Match	Standard
1	True No Match	WA.1.3.B Identify and name two-dimensional figures, including those in real-world contexts, regardless of size or orientation.
1	True No Match	WA.1.4.E Describe the connection between the size of the measurement unit and the number of units needed to measure something.
1	True No Match	WA.1.4.F Name the days of the week and the months of the year, and use a calendar to determine a day or month.
1	Process Matching Difficulty	WA.1.6.A Identify the question(s) asked in a problem.
1	Process Matching Difficulty	WA.1.6.B Identify the given information that can be used to solve a problem.
1	Process Matching Difficulty	WA.1.6.C Recognize when additional information is required to solve a problem.
1	Process Matching Difficulty	WA.1.6.D Select from a variety of problem-solving strategies and use one or more strategies to solve a problem.
1	Process Matching Difficulty	WA.1.6.E Answer the question(s) asked in a problem.
1	Process Matching Difficulty	WA.1.6.F Identify the answer(s) to the question(s) in a problem.
1	Process Matching Difficulty	WA.1.6.G Describe how a problem was solved.
1	Process Matching Difficulty	WA.1.6.H Determine whether a solution to a problem is reasonable.
2	True No Match	WA.2.2.F Create and state a rule for patterns that can be generated by addition and extend the pattern.
2	True No Match	WA.2.3.A Identify objects that represent or approximate standard units and use them to measure length.

Grade Level	Reason for No Match	Standard
2	Core Matching Difficulty	WA.2.4* Additional Key Content: Students make predictions and answer questions about data as they apply their growing understanding of numbers and the operations of addition and subtraction. They extend their spatial understanding of Core Content in geometry developed in kindergarten and grade one by solving problems involving two- and three-dimensional geometric figures. Students are introduced to a few critical concepts that will become Core Content in grade three. Specifically, they begin to work with multiplication and division and learn what a fraction is.
2	Process Matching Difficulty	WA.2.5 Core Processes: Reasoning, problem solving, and communication: Students further develop the concept that doing mathematics involves solving problems and talking about what they did to solve those problems. Second-grade problems emphasize addition and subtraction with increasingly large numbers, measurement, and early concepts of multiplication and division. Students communicate their mathematical thinking and make increasingly more convincing mathematical arguments. Students participate in mathematical discussions involving questions like "How did you get that?"; "Why did you use that strategy?"; and "Why is that true?"Students continue to build their mathematical vocabulary as they use correct mathematical language appropriate to grade two when discussing and refining solutions to problems.
2	Process Matching Difficulty	WA.2.5.A Identify the question(s) asked in a problem and any other questions that need to be answered in order to solve the problem.
2	Process Matching Difficulty	WA.2.5.B Identify the given information that can be used to solve a problem.
2	Process Matching Difficulty	WA.2.5.C Recognize when additional information is required to solve a problem.
2	Process Matching Difficulty	WA.2.5.D Select from a variety of problem-solving strategies and use one or more strategies to solve a problem.
2	Process Matching Difficulty	WA.2.5.E Identify the answer(s) to the question(s) in a problem.
2	Process Matching Difficulty	WA.2.5.F Describe how a problem was solved.
2	Process Matching Difficulty	WA.2.5.G Determine whether a solution to a problem is reasonable.
3	True No Match	WA.3.1.A Read, write, compare, order, and represent numbers to 10,000 using numbers, words, and symbols.

Grade Level	Reason for No Match	Standard
3	True No Match	WA.3.1.D Estimate sums and differences to approximate solutions to problems and determine reasonableness of answers.
3	Core Matching Difficulty	WA.3.2 Core Content: Concepts of multiplication and division: Students learn the meaning of multiplication and division and how these operations relate to each other. They begin to learn multiplication and division facts and how to multiply larger numbers. Students use what they are learning about multiplication and division to solve a variety of problems. With a solid understanding of these two key operations, students are prepared to formalize the procedures for multiplication and division in grades four and five.
3	True No Match	WA.3.2.G Multiply any number from 11 through 19 by a single-digit number using the distributive property and place value concepts.
3	Core Matching Difficulty	WA.3.5* Additional Key Content: Students solidify and formalize a number of important concepts and skills related to Core Content studied in previous grades. In particular, students demonstrate their understanding of equivalence as an important foundation for later work in algebra. Students also reinforce their knowledge of measurement as they use standard units for temperature, weight, and capacity. They continue to develop data organization skills as they reinforce multiplication and division concepts with a variety of types of graphs.
3	True No Match	WA.3.5.A* Determine whether two expressions are equal and use "=" to denote equality.
3	True No Match	WA.3.5.B* Measure temperature in degrees Fahrenheit and degrees Celsius using a thermometer.
3	True No Match	WA.3.5.D* Estimate, measure, and compare capacity using appropriate-sized U.S. customary and metric units.
3	Process Matching Difficulty	WA.3.6 Core Processes: Reasoning, problem solving, and communication: Students in grade three solve problems that extend their understanding of core mathematical concepts-such as geometric figures, fraction concepts, and multiplication and division of whole numbers-as they make strategic decisions that bring them to reasonable solutions. Students use pictures, symbols, or mathematical language to explain the reasoning behind their decisions and solutions. They further develop their problem-solving skills by making generalizations about the processes used and applying these generalizations to similar problem situations. These critical reasoning, problem-solving, and communication skills represent the kind of mathematical thinking that equips students to use the mathematics they know to solve a growing range of useful and important problems and to make decisions based on quantitative information.
3	Process Matching Difficulty	WA.3.6.A Determine the question(s) to be answered given a problem situation.
3	Process Matching Difficulty	WA.3.6.B Identify information that is given in a problem and decide whether it is necessary or unnecessary to the solution of the problem.
3	Process Matching Difficulty	WA.3.6.C Identify missing information that is needed to solve a problem.

Grade Level	Reason for No Match	Standard
3	Process Matching Difficulty	WA.3.6.D Determine whether a problem to be solved is similar to previously solved problems, and identify possible strategies for solving the problem.
3	Process Matching Difficulty	WA.3.6.E Select and use one or more appropriate strategies to solve a problem.
3	Process Matching Difficulty	WA.3.6.F Represent a problem situation using words, numbers, pictures, physical objects, or symbols.
3	Process Matching Difficulty	WA.3.6.G Explain why a specific problem-solving strategy or procedure was used to determine a solution.
3	Process Matching Difficulty	WA.3.6.H Analyze and evaluate whether a solution is reasonable, is mathematically correct, and answers the question.
3	Process Matching Difficulty	WA.3.6.I Summarize mathematical information, draw conclusions, and explain reasoning.
3	Process Matching Difficulty	WA.3.6.J Make and test conjectures based on data (or information) collected from explorations and experiments.
4	True No Match	WA.4.2.I Solve single- and multi-step word problems involving comparison of decimals and fractions (including mixed numbers), and verify the solutions.
4	True No Match	WA.4.3.E Demonstrate that rectangles with the same area can have different perimeters, and that rectangles with the same perimeter can have different areas.
4	True No Match	WA.4.4.E* Determine the median, mode, and range of a set of data and describe what each measure indicates about the data.
4	True No Match	WA.4.4.G* Determine a simple probability from a context that includes a picture.
4	True No Match	WA.4.4.H* Display the results of probability experiments and interpret the results.

Grade Level	Reason for No Match	Standard
4	Process Matching Difficulty	WA.4.5 Core Processes: Reasoning, problem solving, and communication: Students in grade four solve problems that extend their understanding of core mathematical concepts-such as multiplication of multi-digit numbers, area, probability, and the relationships between fractions and decimals-as they make strategic decisions that bring them to reasonable solutions. Students use pictures, symbols, or mathematical language to explain the reasoning behind their decisions and solutions. They further develop their problem-solving skills by making generalizations about the processes used and applying these generalizations to similar problem situations. These critical reasoning, problem-solving, and communication skills represent the kind of mathematical thinking that equips students to use the mathematics they know to solve a growing range of useful and important problems and to make decisions based on quantitative information.
4	Process Matching Difficulty	WA.4.5.A Determine the question(s) to be answered given a problem situation.
4	Process Matching Difficulty	WA.4.5.B Identify information that is given in a problem and decide whether it is essential or extraneous to the solution of the problem.
4	Process Matching Difficulty	WA.4.5.C Identify missing information that is needed to solve a problem.
4	Process Matching Difficulty	WA.4.5.D Determine whether a problem to be solved is similar to previously solved problems, and identify possible strategies for solving the problem.
4	Process Matching Difficulty	WA.4.5.E Select and use one or more appropriate strategies to solve a problem and explain why that strategy was chosen.
4	Process Matching Difficulty	WA.4.5.F Represent a problem situation using words, numbers, pictures, physical objects, or symbols.
4	Process Matching Difficulty	WA.4.5.G Explain why a specific problem-solving strategy or procedure was used to determine a solution.
4	Process Matching Difficulty	WA.4.5.H Analyze and evaluate whether a solution is reasonable, is mathematically correct, and answers the question.
4	Process Matching Difficulty	WA.4.5.I Summarize mathematical information, draw conclusions, and explain reasoning.

Grade Level	Reason for No Match	Standard
4	Process Matching Difficulty	WA.4.5.J Make and test conjectures based on data (or information) collected from explorations and experiments.
5	True No Match	WA.5.1.D Estimate quotients to approximate solutions and determine reasonableness of answers in problems involving up to two-digit divisors
5	True No Match	WA.5.1.E Mentally divide two-digit numbers by one-digit divisors and explain the strategies used.
5	True No Match	WA.5.3.D Determine the formula for the area of a parallelogram by relating it to the area of a rectangle.
5	True No Match	WA.5.3.E Determine the formula for the area of a triangle by relating it to the area of a parallelogram.
5	True No Match	WA.5.3.F Determine the perimeters and areas of triangles and parallelograms.
5	True No Match	WA.5.4.B Write a rule to describe the relationship between two sets of data that are linearly related.
5	True No Match	WA.5.5.C* Construct and interpret line graphs.
5	Process Matching Difficulty	WA.5.6 Core Processes: Reasoning, problem solving, and communication: Students in grade five solve problems that extend their understanding of core mathematical concepts-such as division of multi-digit numbers, perimeter, area, addition and subtraction of fractions and decimals, and use of variables in expressions and equations-as they make strategic decisions leading to reasonable solutions. Students use pictures, symbols, or mathematical language to explain the reasoning behind their decisions and solutions. They further develop their problem-solving skills by making generalizations about the processes used and applying these generalizations to similar problem situations. These critical reasoning, problem-solving, and communication skills represent the kind of mathematical thinking that equips students to use the mathematics they know to solve a growing range of useful and important problems and to make decisions based on quantitative information.
5	Process Matching Difficulty	WA.5.6.A Determine the question(s) to be answered given a problem situation.
5	Process Matching Difficulty	WA.5.6.B Identify information that is given in a problem and decide whether it is essential or extraneous to the solution of the problem.
5	Process Matching Difficulty	WA.5.6.C Determine whether additional information is needed to solve the problem.

Grade Level	Reason for No Match	Standard
5	Process Matching Difficulty	WA.5.6.D Determine whether a problem to be solved is similar to previously solved problems, and identify possible strategies for solving the problem.
5	Process Matching Difficulty	WA.5.6.E Select and use one or more appropriate strategies to solve a problem, and explain the choice of strategy.
5	Process Matching Difficulty	WA.5.6.F Represent a problem situation using words, numbers, pictures, physical objects, or symbols.
5	Process Matching Difficulty	WA.5.6.G Explain why a specific problem-solving strategy or procedure was used to determine a solution.
5	Process Matching Difficulty	WA.5.6.H Analyze and evaluate whether a solution is reasonable, is mathematically correct, and answers the question.
5	Process Matching Difficulty	WA.5.6.I Summarize mathematical information, draw conclusions, and explain reasoning.
5	Process Matching Difficulty	WA.5.6.J Make and test conjectures based on data (or information) collected from explorations and experiments.
6	True No Match	WA.6.1.C Estimate products and quotients of fractions and decimals.
6	True No Match	WA.6.1.G Describe the effect of multiplying or dividing a number by one, by zero, by a number between zero and one, and by a number greater than one.
6	True No Match	WA.6.3.B Write ratios to represent a variety of rates.
6	True No Match	WA.6.4.B Determine the perimeter and area of a composite figure that can be divided into triangles, rectangles, and parts of circles.
6	True No Match	WA.6.4.D Recognize and draw two-dimensional representations of three-dimensional figures.
6	True No Match	WA.6.4.F Determine the surface area of a pyramid.
6	True No Match	WA.6.4.G Describe and sort polyhedra by their attributes: parallel faces, types of faces, number of faces, edges, and vertices.

Grade Level	Reason for No Match	Standard
6	True No Match	WA.6.5.A* Use strategies for mental computations with non-negative whole numbers, fractions, and decimals.
6	Process Matching Difficulty	WA.6.6 Core Processes: Reasoning, problem solving, and communication: Students refine their reasoning and problem solving skills as they move more fully into the symbolic world of algebra and higher-level mathematics. They move easily among representations- numbers, words, pictures, or symbols-to understand and communicate mathematical ideas, to make generalizations, to draw logical conclusions, and to verify the reasonableness of solutions to problems. In grade six, students solve problems that involve fractions and decimals as well as rates and ratios in preparation for studying proportional relationships and algebraic reasoning in grade seven.
6	Process Matching Difficulty	WA.6.6.A Analyze a problem situation to determine the question(s) to be answered.
6	Process Matching Difficulty	WA.6.6.B Identify relevant, missing, and extraneous information related to the solution to a problem.
6	Process Matching Difficulty	WA.6.6.C Analyze and compare mathematical strategies for solving problems, and select and use one or more strategies to solve a problem.
6	Process Matching Difficulty	WA.6.6.D Represent a problem situation, describe the process used to solve the problem, and verify the reasonableness of the solution.
6	Process Matching Difficulty	WA.6.6.E Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.
6	Process Matching Difficulty	WA.6.6.F Apply a previously used problem-solving strategy in a new context.
6	Process Matching Difficulty	WA.6.6.G Extract and organize mathematical information from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.
6	Process Matching Difficulty	WA.6.6.H Make and test conjectures based on data (or information) collected from explorations and experiments.
7	True No Match	WA.7.2.A Mentally add, subtract, multiply, and divide simple fractions, decimals, and percents.

Grade Level	Reason for No Match	Standard
7	Core Matching Difficulty	WA.7.4 Core Content: Probability and data: Students apply their understanding of rational numbers and proportionality to concepts of probability. They begin to understand how probability is determined, and they make related predictions. Students revisit how to interpret data, now using more sophisticated types of data graphs and thinking about the meaning of certain statistical measures. Statistics, including probability, is considered one of the most important and practical fields of study for making sense of quantitative information, and it plays an important part in secondary mathematics in the 21st century.
7	True No Match	WA.7.4.E Evaluate different displays of the same data for effectiveness and bias, and explain reasoning.
7	True No Match	WA.7.5.B* Write the prime factorization of whole numbers greater than 1, using exponents when appropriate.
7	Process Matching Difficulty	WA.7.6 Core Processes: Reasoning, problem solving, and communication: Students refine their reasoning and problem solving skills as they move more fully into the symbolic world of algebra and higher-level mathematics. They move easily among representations-numbers, words, pictures, or symbols-to understand and communicate mathematical ideas, to make generalizations, to draw logical conclusions, and to verify the reasonableness of solutions to problems. In grade seven, students solve problems that involve positive and negative numbers and often involve proportional relationships. As students solve these types of problems, they build a strong foundation for the study of linear functions that will come in grade eight.
7	Process Matching Difficulty	WA.7.6.A Analyze a problem situation to determine the question(s) to be answered.
7	Process Matching Difficulty	WA.7.6.B Identify relevant, missing, and extraneous information related to the solution to a problem.
7	Process Matching Difficulty	WA.7.6.C Analyze and compare mathematical strategies for solving problems, and select and use one or more strategies to solve a problem.
7	Process Matching Difficulty	WA.7.6.D Represent a problem situation, describe the process used to solve the problem, and verify the reasonableness of the solution.
7	Process Matching Difficulty	WA.7.6.E Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.
7	Process Matching Difficulty	WA.7.6.F Apply a previously used problem-solving strategy in a new context.

Grade Level	Reason for No Match	Standard
7	Process Matching Difficulty	WA.7.6.G Extract and organize mathematical information from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.
7	Process Matching Difficulty	WA.7.6.H Make and test conjectures based on data (or information) collected from explorations and experiments.
8	True No Match	WA.8.1.F Solve single- and multi-step word problems involving linear functions and verify the solutions.
8	True No Match	WA.8.2.E Quickly recall the square roots of the perfect squares from 1 through 225 and estimate the square roots of other positive numbers.
8	True No Match	WA.8.3.B Select, construct, and analyze data displays, including box-and-whisker plots, to compare two sets of data.
8	True No Match	WA.8.3.D Describe different methods of selecting statistical samples and analyze the strengths and weaknesses of each method.
8	True No Match	WA.8.3.E Determine whether conclusions of statistical studies reported in the media are reasonable.
8	True No Match	WA.8.3.F Determine probabilities for mutually exclusive, dependent, and independent events for small sample spaces.
8	True No Match	WA.8.3.G Solve single- and multi-step problems using counting techniques and Venn diagrams and verify the solutions.
8	Process Matching Difficulty	WA.8.5 Core Processes: Reasoning, problem solving, and communication: Students refine their reasoning and problem solving skills as they move more fully into the symbolic world of algebra and higher level mathematics. They move easily among representations-numbers, words, pictures, or symbols-to understand and communicate mathematical ideas, to make generalizations, to draw logical conclusions, and to verify the reasonableness of solutions to problems. In grade eight, students solve problems that involve proportional relationships and linear relationships, including applications found in many contexts outside of school. These problems dealing with proportionality continue to be important in many applied contexts, and they lead directly to the study of algebra. Students also begin to deal with informal proofs for theorems that will be proven more formally in high school.
8	Process Matching Difficulty	WA.8.5.A Analyze a problem situation to determine the question(s) to be answered.
8	Process Matching Difficulty	WA.8.5.B Identify relevant, missing, and extraneous information related to the solution to a problem.

Grade Level	Reason for No Match	Standard
8	Process Matching Difficulty	WA.8.5.C Analyze and compare mathematical strategies for solving problems, and select and use one or more strategies to solve a problem.
8	Process Matching Difficulty	WA.8.5.D Represent a problem situation, describe the process used to solve the problem, and verify the reasonableness of the solution.
8	Process Matching Difficulty	WA.8.5.E Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.
8	Process Matching Difficulty	WA.8.5.F Apply a previously used problem-solving strategy in a new context.
8	Process Matching Difficulty	WA.8.5.G Extract and organize mathematical information from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.
8	Process Matching Difficulty	WA.8.5.H Make and test conjectures based on data (or information) collected from explorations and experiments.
9-12	Core Matching Difficulty	WA.9-12.A1.2 Core Content: Numbers, expressions, and operations: Students see the number system extended to the real numbers represented by the number line. They work with integer exponents, scientific notation, and radicals, and use variables and expressions to solve problems from purely mathematical as well as applied contexts. They build on their understanding of computation using arithmetic operations and properties and expand this understanding to include the symbolic language of algebra. Students demonstrate this ability to write and manipulate a wide variety of algebraic expressions throughout high school mathematics as they apply algebraic procedures to solve problems.
9-12	True No Match	WA.9-12.A1.2.D Determine whether approximations or exact values of real numbers are appropriate, depending on the context, and justify the selection.
9-12	True No Match	WA.9-12.A1.3.C Evaluate f(x) at a (i.e., f(a)) and solve for x in the equation f(x) = b.
9-12	True No Match	WA.9-12.A1.7.B* Find and approximate solutions to exponential equations.
9-12	True No Match	WA.9-12.A1.7.D* Solve an equation involving several variables by expressing one variable in terms of the others.

Grade Level	Reason for No Match	Standard
9-12	Process Matching Difficulty	WA.9-12.A1.8 Core Processes: Reasoning, problem solving, and communication: Students formalize the development of reasoning in Algebra 1 as they use algebra and the properties of number systems to develop valid mathematical arguments, make and prove conjectures, and find counterexamples to refute false statements, using correct mathematical language, terms, and symbols in all situations. They extend the problem-solving practices developed in earlier grades and apply them to more challenging problems, including problems related to mathematical and applied situations. Students formalize a coherent problem-solving process in which they analyze the situation to determine the question(s) to be answered, synthesize given information, and identify implicit and explicit assumptions that have been made. They examine their solution(s) to determine reasonableness, accuracy, and meaning in the context of the original problem. The mathematical thinking, reasoning, and problem-solving processes students learn in high school mathematics can be used throughout their lives as they deal with a world in which an increasing amount of information is presented in quantitative ways and more and more occupations and fields of study rely on mathematics.
9-12	Process Matching Difficulty	WA.9-12.A1.8.A Analyze a problem situation and represent it mathematically.
9-12	Process Matching Difficulty	WA.9-12.A1.8.B Select and apply strategies to solve problems.
9-12	Process Matching Difficulty	WA.9-12.A1.8.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.
9-12	Process Matching Difficulty	WA.9-12.A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve specific problems.
9-12	Process Matching Difficulty	WA.9-12.A1.8.E Read and interpret diagrams, graphs, and text containing the symbols, language, and conventions of mathematics.
9-12	Process Matching Difficulty	WA.9-12.A1.8.F Summarize mathematical ideas with precision and efficiency for a given audience and purpose.
9-12	Process Matching Difficulty	WA.9-12.A1.8.G Synthesize information to draw conclusions, and evaluate the arguments and conclusions of others.
9-12	Process Matching Difficulty	WA.9-12.A1.8.H Use inductive reasoning about algebra and the properties of numbers to make conjectures, and use deductive reasoning to prove or disprove conjectures.

Grade Level	Reason for No Match	Standard
9-12	Core Matching Difficulty	WA.9-12.G.1 Core Content: Logical arguments and proofs: Students formalize the reasoning skills they have developed in previous grades and solidify their understanding of what it means to prove a geometric statement mathematically. In Geometry, students encounter the concept of formal proof built on definitions, axioms, and theorems. They use inductive reasoning to test conjectures about geometric relationships and use deductive reasoning to prove or disprove their conclusions. Students defend their reasoning using precise mathematical language and symbols.
9-12	True No Match	WA.9-12.G.1.A Distinguish between inductive and deductive reasoning.
9-12	True No Match	WA.9-12.G.1.B Use inductive reasoning to make conjectures, to test the plausibility of a geometric statement, and to help find a counterexample.
9-12	True No Match	WA.9-12.G.1.D Write the converse, inverse, and contrapositive of a valid proposition and determine their validity.
9-12	True No Match	WA.9-12.G.1.E Identify errors or gaps in a mathematical argument and develop counterexamples to refute invalid statements about geometric relationships.
9-12	True No Match	WA.9-12.G.1.F Distinguish between definitions and undefined geometric terms and explain the role of definitions, undefined terms, postulates (axioms), and theorems.
9-12	True No Match	WA.9-12.G.2.D Describe the intersections of lines in the plane and in space, of lines and planes, and of planes in space.
9-12	True No Match	WA.9-12.G.3.G Know, prove, and apply theorems about properties of quadrilaterals and other polygons.
9-12	True No Match	WA.9-12.G.3.J Describe prisms, pyramids, parallelepipeds, tetrahedra, and regular polyhedra in terms of their faces, edges, vertices, and properties.
9-12	True No Match	WA.9-12.G.4.B Determine the coordinates of a point that is described geometrically.
9-12	True No Match	WA.9-12.G.4.D Determine the equation of a circle that is described geometrically in the coordinate plane and, given equations for a circle and a line, determine the coordinates of their intersection(s).
9-12	True No Match	WA.9-12.G.5.D Describe the symmetries of two-dimensional figures and describe transformations, including reflections across a line and rotations about a point.
9-12	True No Match	WA.9-12.G.6.D* Predict and verify the effect that changing one, two, or three linear dimensions has on perimeter, area, volume, or surface area of two- and three-dimensional figures.

Grade Level	Reason for No Match	Standard
9-12	Process Matching Difficulty	WA.9-12.G.7 Core Processes: Reasoning, problem solving, and communication: Students formalize the development of reasoning in Geometry as they become more sophisticated in their ability to reason inductively and begin to use deductive reasoning in formal proofs. They extend the problem-solving practices developed in earlier grades and apply them to more challenging problems, including problems related to mathematical and applied situations. Students use a coherent problem-solving process in which they analyze the situation to determine the question(s) to be answered, synthesize given information, and identify implicit and explicit assumptions that have been made. They examine their solution(s) to determine reasonableness, accuracy, and meaning in the context of the original problem. They use correct mathematical language, terms, symbols, and conventions as they address problems in Geometry and provide descriptions and justifications of solution processes. The mathematical thinking, reasoning, and problem-solving processes students learn in high school mathematics can be used throughout their lives as they deal with a world in which an increasing amount of information is presented in quantitative ways, and more and more occupations and fields of study rely on mathematics.
9-12	Process Matching Difficulty	WA.9-12.G.7.A Analyze a problem situation and represent it mathematically.
9-12	Process Matching Difficulty	WA.9-12.G.7.B Select and apply strategies to solve problems.
9-12	Process Matching Difficulty	WA.9-12.G.7.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.
9-12	Process Matching Difficulty	WA.9-12.G.7.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve specific problems.
9-12	Process Matching Difficulty	WA.9-12.G.7.E Read and interpret diagrams, graphs, and text containing the symbols, language, and conventions of mathematics.
9-12	Process Matching Difficulty	WA.9-12.G.7.F Summarize mathematical ideas with precision and efficiency for a given audience and purpose.
9-12	Process Matching Difficulty	WA.9-12.G.7.G Synthesize information to draw conclusions and evaluate the arguments and conclusions of others.
9-12	Process Matching Difficulty	WA.9-12.G.7.H Use inductive reasoning to make conjectures, and use deductive reasoning to prove or disprove conjectures.

Grade Level	Reason for No Match	Standard
9-12	Core Matching Difficulty	WA.9-12.A2.1 Core Content: Solving problems: The first core content area highlights the type of problems students will be able to solve by the end of Algebra 2, as they extend their ability to solve problems with additional functions and equations. When presented with a word problem, students are able to determine which function or equation models the problem and use that information to solve the problem. They build on what they learned in Algebra 1 about linear and quadratic functions and are able to solve more complex problems. Additionally, students learn to solve problems modeled by exponential and logarithmic functions, systems of equations and inequalities, inverse variations, and combinations and permutations. Turning word problems into equations that can be solved is a skill students hone throughout Algebra 2 and subsequent mathematics courses.
9-12	Core Matching Difficulty	WA.9-12.A2.2 Core Content: Numbers, expressions, and operations: Students extend their understanding of number systems to include complex numbers, which they will see as solutions for quadratic equations. They grow more proficient in their use of algebraic techniques as they continue to use variables and expressions to solve problems. As problems become more sophisticated and the level of mathematics increases, so does the complexity of the symbolic manipulations and computations necessary to solve the problems. Students refine the foundational algebraic skills they need to be successful in subsequent mathematics courses.
9-12	True No Match	WA.9-12.A2.3.A Translate between the standard form of a quadratic function, the vertex form, and the factored form; graph and interpret the meaning of each form.
9-12	True No Match	WA.9-12.A2.3.B Determine the number and nature of the roots of a quadratic function.
9-12	Core Matching Difficulty	WA.9-12.A2.5 Core Content: Additional functions and equations: Students learn about additional classes of functions including square root, cubic, logarithmic, and those involving inverse variation. Students plot points and sketch graphs to represent these functions and use algebraic techniques to solve related equations. In addition to studying the defining characteristics of each of these classes of functions, students gain the ability to construct new functions algebraically and using transformations. These extended skills and techniques serve as the foundation for further study and analysis of functions in subsequent mathematics courses.
9-12	True No Match	WA.9-12.A2.5.A Construct new functions using the transformations f(x - h), f(x) + k, cf(x), and by adding and subtracting functions, and describe the effect on the original graph(s).
9-12	True No Match	WA.9-12.A2.5.B Plot points, sketch, and describe the graphs of functions of the form f(x) = a√(x −c) + d, and solve related equations.
9-12	True No Match	WA.9-12.A2.5.C Plot points, sketch, and describe the graphs of functions of the form f(x) = a/x + b, f(x) = a/x^2 + b, and f(x) = a/(bx + c), and solve related equations.
9-12	True No Match	WA.9-12.A2.6.E Determine if a bivariate data set can be better modeled with an exponential or a quadratic function and use the model to make predictions.
9-12	True No Match	WA.9-12.A2.7.A* Solve systems of three equations with three variables.

Grade Level	Reason for No Match	Standard
9-12	Process Matching Difficulty	WA.9-12.A2.8 Core Processes: Reasoning, problem solving, and communication: Students formalize the development of reasoning at high school as they use algebra and the properties of number systems to develop valid mathematical arguments, make and prove conjectures, and find counterexamples to refute false statements using correct mathematical language, terms, and symbols in all situations. They extend the problem-solving practices developed in earlier grades and apply them to more challenging problems, including problems related to mathematical and applied situations. Students formalize a coherent problem-solving process in which they analyze the situation to determine the question(s) to be answered, synthesize given information, and identify implicit and explicit assumptions that have been made. They examine their solution(s) to determine reasonableness, accuracy, and meaning in the context of the original problem. The mathematical thinking, reasoning, and problem-solving processes students learn in high school mathematics can be used throughout their lives as they deal with a world in which an increasing amount of information is presented in quantitative ways and more and more occupations and fields of study rely on mathematics.
9-12	Process Matching Difficulty	WA.9-12.A2.8.A Analyze a problem situation and represent it mathematically.
9-12	Process Matching Difficulty	WA.9-12.A2.8.B Select and apply strategies to solve problems.
9-12	Process Matching Difficulty	WA.9-12.A2.8.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.
9-12	Process Matching Difficulty	WA.9-12.A2.8.D Generalize a solution strategy for a single problem to a class of related problems and apply a strategy for a class of related problems to solve specific problems.
9-12	Process Matching Difficulty	WA.9-12.A2.8.E Read and interpret diagrams, graphs, and text containing the symbols, language, and conventions of mathematics.
9-12	Process Matching Difficulty	WA.9-12.A2.8.F Summarize mathematical ideas with precision and efficiency for a given audience and purpose.
9-12	Process Matching Difficulty	WA.9-12.A2.8.G Use inductive reasoning and the properties of numbers to make conjectures, and use deductive reasoning to prove or disprove conjectures.
9-12	Process Matching Difficulty	WA.9-12.A2.8.H Synthesize information to draw conclusions and evaluate the arguments and conclusions of others.

Grade Level	Reason for No Match	Standard
9-12	Duplicate – A1.1	WA.9-12.M1.1 Core Content: Solving problems: Students learn to solve many new types of problems in Mathematics 1, and this first core content area highlights the types of problems students will be able to solve after they master the concepts and skills in this course. Throughout Mathematics 1, students spend considerable time with linear functions and are introduced to other types of functions, including exponential functions and functions defined piecewise. They learn that specific functions model situations described in word problems, and thus they learn the broader notion that functions are used to solve various types of problems. The ability to write an equation that represents a problem is an important mathematical skill in itself, and each new function provides students the tool to solve yet another class of problems. Many problems that initially appear to be very different from each other can actually be represented by identical equations. This is an important and unifying principle of algebra-that the same algebraic techniques can be applied to a wide variety of different situations.
9-12	Duplicate – A2.1.A	WA.9-12.M1.1.A Select and justify functions and equations to model and solve problems.
9-12	Duplicate – A1.1C	WA.9-12.M1.1.C Solve problems that can be represented by a system of two linear equations or inequalities.
9-12	Duplicate – A1.3	WA.9-12.M1.2 Core Content: Characteristics and behaviors of functions: Students formalize and deepen their understanding of functions, the defining characteristics and uses of functions, and the mathematical language used to describe functions. They learn that functions are often specified by an equation of the form y = f(x), where any allowable x-value yields a unique y-value. Mathematics 1 has a particular focus on linear functions, equations, and systems of equations and on functions that can be defined piecewise, particularly step functions and functions that contain the absolute value of an expression. Students compare and contrast non-linear functions, such as quadratic and exponential, with linear functions. They learn about the representations and basic transformations of these functions and the practical and mathematical limitations that must be considered when working with functions and when using functions to model situations.
9-12	Duplicate – A1.3.A	WA.9-12.M1.2.A Determine whether a relationship is a function and identify the domain, range, roots, and independent and dependent variables.
9-12	Duplicate – A1.3.B	WA.9-12.M1.2.B Represent a function with a symbolic expression, as a graph, in a table, and using words, and make connections among these representations.
9-12	Duplicate – A1.3.C	WA.9-12.M1.2.C Evaluate f(x) at a (i.e., f(a)) and solve for x in the equation f(x) = b.
9-12	True No Match	WA.9-12.M1.2.D Plot points, sketch, and describe the graphs of functions of the form f(x) = (a/x) + b.

Grade Level	Reason for No Match	Standard
9-12	Core Matching Difficulty	WA.9-12.M1.3 Core Content: Linear functions, equations, and relationships: Students understand that linear functions can be used to model situations involving a constant rate of change. They build on the work done in middle school to solve systems of linear equations and inequalities in two variables, learning to interpret the intersection of lines as the solution. While the focus is on solving equations, students also learn graphical and numerical methods for approximating solutions to equations. They use linear functions to analyze relationships, represent and model problems, and answer questions. These algebraic skills are applied in other Core Content areas across high school courses.
9-12	Duplicate – A1.4.A	WA.9-12.M1.3.A Write and solve linear equations and inequalities in one variable.
9-12	Duplicate – A1.4.E	WA.9-12.M1.3.B Describe how changes in the parameters of linear functions and functions containing an absolute value of a linear expression affect their graphs and the relationships they represent.
9-12	Duplicate – A1.4.C	WA.9-12.M1.3.C Identify and interpret the slope and intercepts of a linear function, including equations for parallel and perpendicular lines.
9-12	Duplicate – A1.4.B	WA.9-12.M1.3.D Write and graph an equation for a line given the slope and the y-intercept, the slope and a point on the line, or two points on the line, and translate between forms of linear equations.
9-12	Duplicate – A1.4.D	WA.9-12.M1.3.E Write and solve systems of two linear equations and inequalities in two variables.
9-12	Duplicate – A1.6.D	WA.9-12.M1.3.F Find the equation of a linear function that best fits bivariate data that are linearly related, interpret the slope and y-intercept of the line, and use the equation to make predictions.
9-12	Duplicate – A1.6.E	WA.9-12.M1.3.G Describe the correlation of data in scatterplots in terms of strong or weak and positive or negative.
9-12	Duplicate – G.4.A	WA.9-12.M1.3.H Determine the equation of a line in the coordinate plane that is described geometrically, including a line through two given points, a line through a given point parallel to a given line, and a line through a given point perpendicular to a given line.
9-12	Core Matching Difficulty	WA.9-12.M1.4 Core Content: Proportionality, similarity, and geometric reasoning: Students extend and formalize their knowledge of two-dimensional geometric figures and their properties, with a focus on properties of lines, angles, and triangles. They explain their reasoning using precise mathematical language and symbols. Students study basic properties of parallel and perpendicular lines, their respective slopes in the coordinate plane, and the properties of the angles formed when parallel lines are intersected by a transversal. They prove related theorems and apply them to solve problems that are purely mathematical and that arise in applied contexts. Students formalize their prior work with similarity and proportionality by making and proving conjectures about triangle similarity.
9-12	Duplicate – G1.A	WA.9-12.M1.4.A Distinguish between inductive and deductive reasoning.

Grade Level	Reason for No Match	Standard
9-12	Duplicate – G1.B	WA.9-12.M1.4.B Use inductive reasoning to make conjectures, to test the plausibility of a geometric statement, and to help find a counterexample.
9-12	Duplicate – G1.C	WA.9-12.M1.4.C Use deductive reasoning to prove that a valid geometric statement is true.
9-12	Duplicate – G2.A	WA.9-12.M1.4.E Know, prove, and apply theorems about parallel and perpendicular lines.
9-12	Duplicate – G2.B	WA.9-12.M1.4.F Know, prove, and apply theorems about angles, including angles that arise from parallel lines intersected by a transversal.
9-12	Duplicate – G3.C	WA.9-12.M1.4.G Explain and perform basic compass and straightedge constructions related to parallel and perpendicular lines.
9-12	Duplicate – A1.6.A	WA.9-12.M1.5.A Use and evaluate the accuracy of summary statistics to describe and compare data sets.
9-12	Duplicate – A1.6.C	WA.9-12.M1.5.B Describe how linear transformations affect the center and spread of univariate data.
9-12	Duplicate – A1.5.B	WA.9-12.M1.5.C Make valid inferences and draw conclusions based on data.
9-12	Duplicate – A1.2	WA.9-12.M1.6 Core Content: Numbers, expressions, and operations: Students see the number system extended to the real numbers represented by the number line. They use variables and expressions to solve problems from purely mathematical as well as applied contexts. They build on their understanding of and ability to compute with arithmetic operations and properties and expand this understanding to include the symbolic language of algebra. Students demonstrate this ability to write and manipulate a wide variety of algebraic expressions throughout high school mathematics as they apply algebraic procedures to solve problems.
9-12	Duplicate – A1.2.A	WA.9-12.M1.6.A Know the relationship between real numbers and the number line, and compare and order real numbers with and without the number line.
9-12	Duplicate – A1.2.D	WA.9-12.M1.6.B Determine whether approximations or exact values of real numbers are appropriate, depending on the context, and justify the selection.
9-12	Duplicate – A1.2.B	WA.9-12.M1.6.C Recognize the multiple uses of variables, determine all possible values of variables that satisfy prescribed conditions, and evaluate algebraic expressions that involve variables.
9-12	Duplicate – A1.7.D	WA.9-12.M1.6.D Solve an equation involving several variables by expressing one variable in terms of the others.
9-12	Duplicate – A1.7	WA.9-12.M1.7* Additional Key Content: Students develop a basic understanding of arithmetic and geometric sequences and of exponential functions, including their graphs and other representations. They use exponential functions to analyze relationships, represent and model problems, and answer questions in situations that are modeled by these nonlinear functions. Students learn graphical and numerical methods for approximating solutions to exponential equations. Students interpret the meaning of problem solutions and explain limitations related to solutions.

Grade Level	Reason for No Match	Standard
9-12	True No Match	WA.9-12.M1.7.A* Sketch the graph for an exponential function of the form y = abn where n is an integer, describe the effects that changes in the parameters a and b have on the graph, and answer questions that arise in situations modeled by exponential functions.
9-12	Duplicate – A1.7.B	WA.9-12.M1.7.B* Find and approximate solutions to exponential equations.
9-12	Duplicate – A1.2.C	WA.9-12.M1.7.C* Interpret and use integer exponents and square and cube roots, and apply the laws and properties of exponents to simplify and evaluate exponential expressions.
9-12	Duplicate A1.7.C	WA.9-12.M1.7.D* Express arithmetic and geometric sequences in both explicit and recursive forms, translate between the two forms, explain how rate of change is represented in each form, and use the forms to find specific terms in the sequence.
9-12	Duplicate – Process	WA.9-12.M1.8.A Analyze a problem situation and represent it mathematically.
9-12	Duplicate – Process	WA.9-12.M1.8.B Select and apply strategies to solve problems.
9-12	Duplicate – Process	WA.9-12.M1.8.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.
9-12	Duplicate – Process	WA.9-12.M1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve specific problems.
9-12	Duplicate – Process	WA.9-12.M1.8.E Read and interpret diagrams, graphs, and text containing the symbols, language, and conventions of mathematics.
9-12	Duplicate – Process	WA.9-12.M1.8.F Summarize mathematical ideas with precision and efficiency for a given audience and purpose.
9-12	Duplicate – Process	WA.9-12.M1.8.G Synthesize information to draw conclusions, and evaluate the arguments and conclusions of others.
9-12	Duplicate – Process	WA.9-12.M1.8.H Use inductive reasoning to make conjectures, and use deductive reasoning to prove or disprove conjectures.
9-12	Core Matching Difficulty	WA.9-12.M2.1 Core Content: Modeling situations and solving problems: This first core content area highlights the types of problems students will be able to solve by the end of Mathematics 2. Students extend their ability to model situations and solve problems with additional functions and equations in this course. Additionally, they deepen their understanding and proficiency with functions they encountered in Mathematics 1 and use these functions to solve more complex problems. When presented with a word problem, students determine which function or equation models the problem and then use that information to write an equation to solve the problem. Turning word problems into equations that can be solved is a skill students hone throughout the course.
9-12	Duplicate – A1.1.A	WA.9-12.M2.1.A Select and justify functions and equations to model and solve problems.
9-12	Duplicate – A2.1.B	WA.9-12.M2.1.B Solve problems that can be represented by systems of equations and inequalities.

Grade Level	Reason for No Match	Standard
9-12	Duplicate – A2.1.C	WA.9-12.M2.1.C Solve problems that can be represented by quadratic functions, equations, and inequalities.
9-12	Duplicate – A2.1.E	WA.9-12.M2.1.D Solve problems that can be represented by exponential functions and equations.
9-12	Duplicate – A2.1.F	WA.9-12.M2.1.E Solve problems involving combinations and permutations.
9-12	Core Matching Difficulty	WA.9-12.M2.2 Core Content: Quadratic functions, equations, and relationships: Students learn that exponential and quadratic functions can be used to model some situations where linear functions may not be the best model. They use graphical and numerical methods with exponential functions of the form y = ab^x and quadratic functions to analyze relationships, represent and model problems, and answer questions. Students extend their algebraic skills and learn various methods of solving quadratic equations over real or complex numbers, including using the quadratic formula, factoring, graphing, and completing the square. They learn to translate between forms of quadratic equations, applying the vertex form to evaluate maximum and minimum values and find symmetry of the graph, and they learn to identify which form should be used in a particular situation. They interpret the meaning of problem solutions and explain their limitations. Students recognize common examples of situations that can be modeled by quadratic functions, such as maximizing area or the height of an object moving under the force of gravity. They compare the characteristics of quadratic functions to those of linear and exponential functions. The understanding of these particular types of functions, together with students' understanding of linear functions, provides students with a powerful set of tools to use mathematical models to deal with problems and situations in advanced mathematics courses, in the workplace, and in everyday life.
9-12	Duplicate – A1.5.A	WA.9-12.M2.2.A Represent a quadratic function with a symbolic expression, as a graph, in a table, and with a description, and make connections among the representations.
9-12	Duplicate – A1.5.B	WA.9-12.M2.2.B Sketch the graph of a quadratic function, describe the effects that changes in the parameters have on the graph, and interpret the x-intercepts as solutions to a quadratic equation.
9-12	Duplicate – A2.3.A	WA.9-12.M2.2.C Translate between the standard form of a quadratic function, the vertex form, and the factored form; graph and interpret the meaning of each form.
9-12	Duplicate – A2.3.B	WA.9-12.M2.2.E Determine the number and nature of the roots of a quadratic function.
9-12	Duplicate – A1.5.D	WA.9-12.M2.2.F Solve quadratic equations that have real roots by completing the square and by using the quadratic formula.
9-12	Duplicate – A2.3.C	WA.9-12.M2.2.G Solve quadratic equations and inequalities, including equations with complex roots.
9-12	Duplicate – A.2.6.E	WA.9-12.M2.2.H Determine if a bivariate data set can be better modeled with an exponential or a quadratic function and use the model to make predictions.

Grade Level	Reason for No Match	Standard
9-12	Core Matching Difficulty	WA.9-12.M2.3 Core Content: Conjectures and proofs: Students extend their knowledge of two-dimensional geometric figures and their properties to include quadrilaterals and other polygons, with special emphasis on necessary and sufficient conditions for triangle congruence. They work with geometric constructions, using dynamic software as a tool for exploring geometric relationships and formulating conjectures and using compass-and-straightedge and paper-folding constructions as contexts in which students demonstrate their knowledge of geometric relationships. Students define the basic trigonometric ratios and use them to solve problems in a variety of applied situations. They formalize the reasoning skills they have developed in previous grades and solidify their understanding of what it means to mathematically prove a geometric statement. Students encounter the concept of formal proof built on definitions, axioms, and theorems. They use inductive reasoning to test conjectures about geometric relationships and use deductive reasoning to prove or disprove their conclusions. Students defend their reasoning using precise mathematical language and symbols. Finally, they apply their knowledge of linear functions to make and prove conjectures about geometric figures on the coordinate plane.
9-12	True No Match	WA.9-12.M2.3.A Use deductive reasoning to prove that a valid geometric statement is true.
9-12	Duplicate – G.1.E	WA.9-12.M2.3.B Identify errors or gaps in a mathematical argument and develop counterexamples to refute invalid statements about geometric relationships.
9-12	Duplicate – G.1.D	WA.9-12.M2.3.C Write the converse, inverse, and contrapositive of a valid proposition and determine their validity.
9-12	Duplicate – G.1.F	WA.9-12.M2.3.D Distinguish between definitions and undefined geometric terms and explain the role of definitions, undefined terms, postulates (axioms), and theorems.
9-12	Duplicate – G.3.A	WA.9-12.M2.3.E Know, explain, and apply basic postulates and theorems about triangles and the special lines, line segments, and rays associated with a triangle.
9-12	Duplicate – G.2.B	WA.9-12.M2.3.F Determine and prove triangle congruence and other properties of triangles.
9-12	Duplicate – G.3.D	WA.9-12.M2.3.G Know, prove, and apply the Pythagorean Theorem and its converse.
9-12	Duplicate – G.3.C	WA.9-12.M2.3.I Use the properties of special right triangles (30°-60°-90° and 45°-45°-90°) to solve problems.
9-12	Duplicate – G.3.B	WA.9-12.M2.3.K Know, prove, and apply theorems about properties of quadrilaterals and other polygons.
9-12	Duplicate – G.4.B	WA.9-12.M2.3.L Determine the coordinates of a point that is described geometrically.
9-12	Duplicate – G.3.F	WA.9-12.M2.3.M Verify and apply properties of triangles and quadrilaterals in the coordinate plane.

Grade Level	Reason for No Match	Standard
9-12	Duplicate – A2.C	WA.9-12.M2.4 Core Content: Probability: Students formalize their study of probability, computing both combinations and permutations to calculate the likelihood of an outcome in uncertain circumstances and applying the binominal theorem to solve problems. They apply their understanding of probability to a wide range of practical situations, including those involving permutations and combinations. Understanding probability helps students become knowledgeable consumers who make sound decisions about high-risk games, financial issues, etc.
9-12	Duplicate – A2.6.B	WA.9-12.M2.4.B Given a finite sample space consisting of equally likely outcomes and containing events A and B, determine whether A and B are independent or dependent, and find the conditional probability of A given B.
9-12	Duplicate – A2.6.C	WA.9-12.M2.4.C Compute permutations and combinations, and use the results to calculate probabilities.
9-12	Duplicate – A.2.6.D	WA.9-12.M2.4.D Apply the binomial theorem to solve problems involving probability.
9-12	Duplicate – A1.2.E	WA.9-12.M2.5.A* Use algebraic properties to factor and combine like terms in polynomials.
9-12	Duplicate – G.6.E	WA.9-12.M2.5.B* Use different degrees of precision in measurement, explain the reason for using a certain degree of precision, and apply estimation strategies to obtain reasonable measurements with appropriate precision for a given purpose.
9-12	Duplicate – G.6.F	WA.9-12.M2.5.C* Solve problems involving measurement conversions within and between systems, including those involving derived units, and analyze solutions in terms of reasonableness of solutions and appropriate units.
9-12	Duplicate – A2.7.B	WA.9-12.M2.5.D* Find the terms and partial sums of arithmetic and geometric series.
9-12	Core Matching Difficulty	WA.9-12.M2.6 Core Processes: Reasoning, problem solving, and communication: Students formalize the development of reasoning in Mathematics 2 as they use algebra, geometry, and probability to make and defend generalizations. They justify their reasoning with accepted standards of mathematical evidence and proof, using correct mathematical language, terms, and symbols in all situations. They extend the problem-solving practices developed in earlier grades and apply them to more challenging problems, including problems related to mathematical and applied situations. Students formalize a coherent problem-solving process in which they analyze the situation to determine the question(s) to be answered, synthesize given information, and identify implicit and explicit assumptions that have been made. They examine their solution(s) to determine reasonableness, accuracy, and meaning in the context of the original problem. The mathematical thinking, reasoning, and problem-solving processes students learn in high school mathematics can be used throughout their lives as they deal with a world in which an increasing amount of information is presented in quantitative ways and more and more occupations and fields of study rely on mathematics.
9-12	Process Matching Difficulty	WA.9-12.M2.6.A Analyze a problem situation and represent it mathematically.
9-12	Process Matching Difficulty	WA.9-12.M2.6.B Select and apply strategies to solve problems.

Grade Level	Reason for No Match	Standard
9-12	Process Matching Difficulty	WA.9-12.M2.6.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.
9-12	Process Matching Difficulty	WA.9-12.M2.6.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve specific problems.
9-12	Process Matching Difficulty	WA.9-12.M2.6.E Read and interpret diagrams, graphs, and text containing the symbols, language, and conventions of mathematics.
9-12	Process Matching Difficulty	WA.9-12.M2.6.F Summarize mathematical ideas with precision and efficiency for a given audience and purpose.
9-12	Process Matching Difficulty	WA.9-12.M2.6.G Synthesize information to draw conclusions and evaluate the arguments and conclusions of others.
9-12	Process Matching Difficulty	WA.9-12.M2.6.H Use inductive reasoning to make conjectures, and use deductive reasoning to prove or disprove conjectures.
9-12	Core Matching Difficulty	WA.9-12.M3.1 Core Content: Solving problems: This first core content area highlights the types of problems students will be able to solve by the end of Mathematics 3, as they extend their ability to solve problems with additional functions and equations. Additionally, they deepen their understanding of and skills related to functions they encountered in Mathematics 1 and 2, and they use these functions to solve more complex problems. When presented with a contextual problem, students identify a function or equation that models the problem and use that information to write an equation to solve the problem. For example, in addition to using graphs to approximate solutions to problems modeled by exponential functions, they use knowledge of logarithms to solve exponential equations. Turning word problems into equations that can be solved is a skill students hone throughout the course.
9-12	Duplicate – A1.1.A	WA.9-12.M3.1.A Select and justify functions and equations to model and solve problems.
9-12	Duplicate – A2.1.B	WA.9-12.M3.1.B Solve problems that can be represented by systems of equations and inequalities.
9-12	Duplicate – A2.1.C	WA.9-12.M3.1.C Solve problems that can be represented by quadratic functions, equations, and inequalities.
9-12	Duplicate – A2.1.D	WA.9-12.M3.1.D Solve problems that can be represented by exponential and logarithmic functions and equations.
9-12	Duplicate – A2.1.E	WA.9-12.M3.1.E Solve problems that can be represented by inverse variations of the forms f(x) = (a/x) + b, f(x) = (a/x^2) + b, and f(x) = a/(bx + c).

Grade Level	Reason for No Match	Standard
9-12	Duplicate – G.5.A	WA.9-12.M3.2.A Sketch results of transformations and compositions of transformations for a given two-dimensional figure on the coordinate plane, and describe the rule(s) for performing translations or for performing reflections about the coordinate axes or the line y = x.
9-12	Duplicate – G.5.B	WA.9-12.M3.2.B Determine and apply properties of transformations.
9-12	Duplicate – G.5.C	WA.9-12.M3.2.C Given two congruent or similar figures in a coordinate plane, describe a composition of translations, reflections, rotations, and dilations that superimposes one figure on the other.
9-12	Duplicate – A2.5.A	WA.9-12.M3.2.E Construct new functions using the transformations f(x - h), f(x) + k, cf(x), and by adding and subtracting functions, and describe the effect on the original graph(s).
9-12	Duplicate – A2.4.A	WA.9-12.M3.3.A Know and use basic properties of exponential and logarithmic functions and the inverse relationship between them.
9-12	Duplicate – A2.4.B	WA.9-12.M3.3.B Graph an exponential function of the form f(x) = ab^x and its inverse logarithmic function.
9-12	Duplicate – A2.4.C	WA.9-12.M3.3.C Solve exponential and logarithmic equations.
9-12	Duplicate – A2.5.B	WA.9-12.M3.3.D Plot points, sketch, and describe the graphs of functions of the form f(x) = a √(x − c) + d, and solve related equations.
9-12	Duplicate – A2.5.C	WA.9-12.M3.3.E Plot points, sketch, and describe the graphs of functions of the form f(x) = (a/x^2) + b, and f(x) = a/(bx + c), and solve related equations.
9-12	True No Match	WA.9-12.M3.3.F Plot points, sketch, and describe the graphs of cubic polynomial functions of the form f(x) = ax^3 + d as an example of higher order polynomials and solve related equations.
9-12	Duplicate – A2.7.A	WA.9-12.M3.3.G Solve systems of three equations with three variables.
9-12	Core Matching Difficulty	WA.9-12.M3.4 Core Content: Quantifying variability: Students extend their use of statistics as they graph bivariate data and analyze the graph to make predictions. They calculate and interpret measures of variability, confidence intervals, and margins of error for population proportions. Dual goals underlie the content in the section: Students prepare for the further study of statistics and also become thoughtful consumers of data.
9-12	Duplicate – A2.6.G	WA.9-12.M3.4.B Calculate and interpret margin of error and confidence intervals for population proportions.
9-12	Core Matching Difficulty	WA.9-12.M3.5 Core Content: Three-dimensional geometry: Students formulate conjectures about three-dimensional figures. They use deductive reasoning to establish the truth of conjectures or to reject them on the basis of counterexamples. They extend and formalize their work with perimeter, area, surface area, and volume of two- and three-dimensional figures, focusing on mathematical derivations of these formulas and their applications in complex problems. They use properties of geometry and measurement to solve both purely mathematical and applied problems. They also extend their knowledge of distance and angle measurements in a plane to measurements on a sphere.
9-12	True No Match	WA.9-12.M3.5.A Describe the intersections of lines in the plane and in space, of lines and planes, and of planes in space.

Grade Level	Reason for No Match	Standard
9-12	Duplicate – G.3.J	WA.9-12.M3.5.B Describe prisms, pyramids, parallelepipeds, tetrahedra, and regular polyhedra in terms of their faces, edges, vertices, and properties.
9-12	Duplicate – G.3.K	WA.9-12.M3.5.C Analyze cross-sections of cubes, prisms, pyramids, and spheres and identify the resulting shapes.
9-12	Duplicate – G.6.C	WA.9-12.M3.5.D Apply formulas for surface area and volume of three-dimensional figures to solve problems.
9-12	Duplicate – G.6.D	WA.9-12.M3.5.E Predict and verify the effect that changing one, two, or three linear dimensions has on perimeter, area, volume, or surface area of two- and three-dimensional figures.
9-12	Duplicate – G.6.B	WA.9-12.M3.5.F Analyze distance and angle measures on a sphere and apply these measurements to the geometry of the earth.
9-12	Duplicate – A2.2.A	WA.9-12.M3.6.A Explain how whole, integer, rational, real, and complex numbers are related, and identify the number system(s) within which a given algebraic equation can be solved.
9-12	Duplicate – A2.2.B	WA.9-12.M3.6.B Use the laws of exponents to simplify and evaluate numeric and algebraic expressions that contain rational exponents.
9-12	Duplicate – A1.2.F	WA.9-12.M3.6.C Add, subtract, multiply, and divide polynomials.
9-12	Duplicate – A2.2.C	WA.9-12.M3.6.D Add, subtract, multiply, divide, and simplify rational and more general algebraic expressions.
9-12	Core Matching Difficulty	WA.9-12.M3.7* Additional Key Content: Students formulate conjectures about circles. They use deductive reasoning to establish the truth of conjectures or to reject them on the basis of counterexamples. Students explain their reasoning using precise mathematical language and symbols. They apply their knowledge of geometric figures and their properties to solve a variety of both purely mathematical and applied problems.
9-12	Duplicate – G.3.H	WA.9-12.M3.7.A* Know, prove, and apply basic theorems relating circles to tangents, chords, radii, secants, and inscribed angles.
9-12	Duplicate – G.4.D	WA.9-12.M3.7.B* Determine the equation of a circle that is described geometrically in the coordinate plane and, given equations for a circle and a line, determine the coordinates of their intersection(s).
9-12	Duplicate – G.3.I	WA.9-12.M3.7.C* Explain and perform constructions related to the circle.
9-12	Duplicate – G.6.A	WA.9-12.M3.7.D* Derive and apply formulas for arc length and area of a sector of a circle.

Grade Level	Reason for No Match	Standard
9-12	Process Matching Difficulty	WA.9-12.M3.8 Core Processes: Reasoning, problem solving, and communication: Students formalize the development of reasoning in Mathematics 3 as they use algebra, geometry, and statistics to make and defend generalizations. They justify their reasoning with accepted standards of mathematical evidence and proof, using correct mathematical language, terms, and symbols in all situations. They extend the problem-solving practices developed in earlier grades and apply them to more challenging problems, including problems related to mathematical and applied situations. Students formalize a coherent problem-solving process in which they analyze the situation to determine the question(s) to be answered, synthesize given information, and identify implicit and explicit assumptions that have been made. They examine their solution(s) to determine reasonableness, accuracy, and meaning in the context of the original problem. The mathematical thinking, reasoning, and problem-solving processes students learn in high school mathematics can be used throughout their lives as they deal with a world in which an increasing amount of information is presented in quantitative ways and more and more occupations and fields of study rely on mathematics.
9-12	Process Matching Difficulty	WA.9-12.M3.8.A Analyze a problem situation and represent it mathematically.
9-12	Process Matching Difficulty	WA.9-12.M3.8.B Select and apply strategies to solve problems.
9-12	Process Matching Difficulty	WA.9-12.M3.8.C Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.
9-12	Process Matching Difficulty	WA.9-12.M3.8.D Generalize a solution strategy for a single problem to a class of related problems and apply a strategy for a class of related problems to solve specific problems.
9-12	Process Matching Difficulty	WA.9-12.M3.8.E Read and interpret diagrams, graphs, and text containing the symbols, language, and conventions of mathematics.
9-12	Process Matching Difficulty	WA.9-12.M3.8.F Summarize mathematical ideas with precision and efficiency for a given audience and purpose.
9-12	Process Matching Difficulty	WA.9-12.M3.8.G Synthesize information to draw conclusions and evaluate the arguments and conclusions of others.
9-12	Process Matching Difficulty	WA.9-12.M3.8.H Use inductive reasoning and the properties of numbers to make conjectures, and use deductive reasoning to prove or disprove conjectures.

Hanover Research

Hanover Research is a membership-based full-service research company that provides custom research and enhanced research capacity for a variety of school districts, institutions of higher education, and other non-profit and for-profit members across the United States and internationally.

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