COMMON CORE STATE STANDARDS (CCSS)					LOUISIANA GRADE-LEVEL EXPECTATIONS (GLE)			
CCSS ID (Grade, Domain, Grade-Specific Standard No.)	**Grade**	**Domain**	**Cluster**	**CCSS**	**GLE ID (Content Area, Grade, GLE No.)**	**GLE**	**GLE Grade Level**	**Analyst's Comments**
K.CC.1	K	Counting and Cardinality	Know number names and the count sequence.	1. Count to 100 by ones and by tens.	M.1.1	1. Count to 100 by 1s, 5s, 10s, and 25s	1	The strongest alignment is to a Grade 1 GLE. The CCSS includes counting to 100 by 1s and by 10s. The only grade K GLE that is a potential match is M.K.1, which is count by 1s to 20. Since the CCSS is significantly above M.K.1, no on-grade match was determined.
K.CC.2	K	Counting and Cardinality	Know number names and the count sequence.	2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1).	M.1.11	11. From a given number between 1 and 100, count forward and backward	1	The strongest alignment is to a Grade 1 GLE. The CCSS is specific to the known sequence which is count to 100 from CCSS K.CC.1. The only grade K GLE that is a potential match is M.K.7, which is count from a given number between 1 and 10. Since the CCSS is significantly above GLE M.K.7, no on-grade match was determined.
K.CC.3	K	Counting and Cardinality	Know number names and the count sequence.	3. 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).	M.K.4	4. Identify the numerals for the numbers 0 through 20	K	M.K.2 also aligns. The CCSS is specific in its requirement of writing numbers/numerals. M.K.4 only requires identifying the numerals, but the intents of the CCSS and the GLE appear to be the same.
K.CC.4	K	Counting and Cardinality	Count to tell the number of objects.	4. Understand the relationship between numbers and quantities; connect counting to cardinality.	M.K.2	2. Count a set of 20 or fewer objects by establishing a 1-to-1 correspondence between number names and objects	K	
K.CC.5	K	Counting and Cardinality	Count to tell the number of objects.	5. 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.	M.K.2	2. Count a set of 20 or fewer objects by establishing a 1-to-1 correspondence between number names and objects	K	

K.CC.6	K	Counting and Cardinality	Compare numbers.	6. 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.	M.K.8	8. Compare sets containing 20 or fewer objects using the words *same/different* and *more/less/greater/fewer*	K	M.K.11 also aligns.
K.CC.7	K	Counting and Cardinality	Compare numbers.	7. Compare two numbers between 1 and 10 presented as written numerals.				No GLE match was found.
K.OA.1	K	Operations and Algebraic Thinking	Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	1. Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.	M.K.9	9. Use concrete objects to model simple real-life addition and subtraction problems	K	M.K.10 also aligns. M.K.12 also aligns.
K.OA.2	K	Operations and Algebraic Thinking	Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.	M.K.9	9. Use concrete objects to model simple real-life addition and subtraction problems	K	M.K.12 also aligns.
K.OA.3	K	Operations and Algebraic Thinking	Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	3. 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).				No GLE match was found. The CCSS includes specificity that is not found in the GLEs.
K.OA.4	K	Operations and Algebraic Thinking	Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	4. 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.				No GLE match was found. The CCSS includes specificity that is not found in the GLEs.
K.OA.5	K	Operations and Algebraic Thinking	Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	5. Fluently add and subtract within 5.				No GLE match was found.
K.NBT.1	K	Number and Operations in Base Ten	Work with numbers 11–19 to gain foundations for place value.	1. 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 (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.				No GLE match was found.

K.MD.1	K	Measurement and Data	Describe and compare measurable attributes.	1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.				No GLE match was found. The CCSS is specific in its focus on describing measurable attributes which is not found in the GLEs.
K.MD.2	K	Measurement and Data	Describe and compare measurable attributes.	2. 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.*	M.K.15	15. Use comparative and superlative vocabulary in measurement settings (e.g., *longest, shortest, most, hottest, heaviest, biggest*)	K	
K.MD.3	K	Measurement and Data	Classify objects and count the number of objects in each category.	3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.	M.K.21	21. Collect and organize concrete data using tally mark charts	K	The CCSS and the GLEs do not share similar language regarding this CCSS. However, it was determined that the CCSS and M.K.21 have a similar, if not mostly the same, intent.
K.G.1	K	Geometry	Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).	1. 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* .	M.K.16	16. Name and identify basic shapes using concrete models (e.g., circles, squares, triangles, rectangles, rhombuses, balls, boxes, cans, cones)	K	M.PK.10 also aligns. M.K.18 also aligns. The CCSS cluster statement includes hexagons which was not found in the aligned GLEs.
K.G.2	K	Geometry	Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).	2. Correctly name shapes regardless of their orientations or overall size.				No GLE match was found. M.PK.11 was considered as a possible match. However, it is not clear if the GLE means "recognize an object regardless of its position in space," or "recognize an object's position in space." Since the intent of the GLE could not be precisely determined, the GLE could not be considered a match for the CCSS.
K.G.3	K	Geometry	Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).	3. Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).				No GLE match was found. The CCSS includes specificity that is not found in the GLEs.

K.G.4	K	Geometry	Analyze, compare, create, and compose shapes.	4. 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).	M.K.17	17. Compare, contrast, and sort objects or shapes according to two attributes (e.g., shape and size, shape and color, thickness and color)	K	M.1.26 also aligns. M.2.21 also aligns. The CCSS includes specificity that is not found in any single GLE. The intent of the CCSS is above the intent of M.K.17. For this reason, the other GLE alignments are noted.
K.G.5	K	Geometry	Analyze, compare, create, and compose shapes.	5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.	M.K.20	20. Draw circles, squares, rectangles, and triangles	K	The CCSS includes modeling shapes by building shapes from components, which is not found in the GLEs. From the cluster statement, the CCSS includes hexagons, which is not found in M.K.20.
K.G.6	K	Geometry	Analyze, compare, create, and compose shapes.	6. Compose simple shapes to form larger shapes. *For example, “Can you join these two triangles with full sides touching to make a rectangle?”*	M.K.19	19. Investigate the results of combining shapes (using paper shapes, pattern blocks, tangrams, etc.)	K	
1.OA.1	1	Operations and Algebraic Thinking	Represent and solve problems involving addition and subtraction.	1. 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.	M.1.12	12. Know the basic facts for addition and subtraction [0s, 1s, counting on and back 2s, doubles, doubles ± 1, then 10s facts, and related turn-around (commutative) pairs] and use them to solve real-life problems	1	M.2.8 also aligns. M.1.15 and M.1.18 also align. The CCSS includes specific situations for word problems that are not found in the grade 1 GLEs. These situations are found in M.2.8. Inclusion of M.2.8 is required to cover the full intent of the CCSS.
1.OA.2	1	Operations and Algebraic Thinking	Represent and solve problems involving addition and subtraction.	2. 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.	M.1.12	12. Know the basic facts for addition and subtraction [0s, 1s, counting on and back 2s, doubles, doubles ± 1, then 10s facts, and related turn-around (commutative) pairs] and use them to solve real-life problems	1	M.1.15 also aligns. M.1.18 also aligns. The CCSS includes addition of three whole numbers which is not specifically found in the GLEs, but it is not specifically excluded either. Since M.1.12 includes using basic facts to solve real-life problems, it is reasonable to conclude that the CCSS and the GLE have very similar intents.

1.OA.3	1	Operations and Algebraic Thinking	Understand and apply properties of operations and the relationship between addition and subtraction.	3. 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.)*	M.1.12	12. Know the basic facts for addition and subtraction [0s, 1s, counting on and back 2s, doubles, doubles ± 1, then 10s facts, and related turn-around (commutative) pairs] and use them to solve real-life problems	1	The CCSS includes associative property (as an example) which is not found in M.1.12.
1.OA.4	1	Operations and Algebraic Thinking	Understand and apply properties of operations and the relationship between addition and subtraction.	4. Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.*	M.1.13	13. Recognize and apply addition and subtraction as inverse operations	1	
1.OA.5	1	Operations and Algebraic Thinking	Add and subtract within 20.	5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	M.1.12	12. Know the basic facts for addition and subtraction [0s, 1s, counting on and back 2s, doubles, doubles ± 1, then 10s facts, and related turn-around (commutative) pairs] and use them to solve real-life problems	1	The CCSS is the more general idea of how counting is related to addition and subtraction, whereas the GLE seems to be specifically limited to counting on and back 2s.
1.OA.6	1	Operations and Algebraic Thinking	Add and subtract within 20.	6. 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).	M.1.12	12. Know the basic facts for addition and subtraction [0s, 1s, counting on and back 2s, doubles, doubles ± 1, then 10s facts, and related turn-around (commutative) pairs] and use them to solve real-life problems	1	M.1.13 also aligns.
1.OA.7	1	Operations and Algebraic Thinking	Work with addition and subtraction equations.	7. 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.*	M.1.17	17. Use the equal sign (=) to express the relationship of equality	1	

1.OA.8	1	Operations and Algebraic Thinking	Work with addition and subtraction equations.	8. Determine the unknown whole number in an addition or subtraction equation relating to 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 = _.*	M.2.13	13. Find the missing number in an equation involving addition or subtraction (e.g., # + 4 = 7, 8 - # = 3)	2	Because the CCSS makes no mention of use of objects, pictures, and verbal information, the intent is that the unknown number can be determined based solely on the other numbers in the equation. M.1.19 was considered as a possible match, but it requires the use of objects, pictures, and verbal information, which is not the same intent as the CCSS.
1.NBT.1	1	Number and Operations in Base Ten	Extend the counting sequence.	1. 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.	M.1.1	1. Count to 100 by 1s, 5s, 10s, and 25s	1	M.1.2 also aligns. M.1.11 also aligns. The CCSS includes numbers to 120, but the GLEs include numbers to 100. The CCSS includes representing a number of objects with a written numeral which is not found in the GLEs.
1.NBT.2	1	Number and Operations in Base Ten	Understand place value.	2. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases…	M.1.5	5. Model and read place value in word, standard, and expanded form for numbers through 99	1	
1.NBT.3	1	Number and Operations in Base Ten	Understand place value.	3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.	M.1.10	10. Using a number line or chart, locate, compare, and order whole numbers less than 100 and identify the numbers coming before/after a given number and between 2 given numbers	1	M.3.2 also aligns. The CCSS includes comparing based on what is essentially place value, but M.1.10 specifically relates comparison in terms of using a number line or chart. While the fundamental intents of the CCSS and the GLE are the same, there is a higher expectation level in the CCSS than what is found in the GLE. The CCSS includes recording comparisons with the symbols >, =, and <, but use of two of these symbols does not occur until M.3.2.

1.NBT.4	1	Number and Operations in Base Ten	Use place value understanding and properties of operations to add and subtract.	4. 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.	M.1.14	14. Add and subtract 2-digit numbers using manipulatives	1	M.1.13 also aligns. The CCSS includes adding using strategies based on place value and properties of operations which is not found in M.1.14. GLE M.1.14 requires manipulatives only. The CCSS includes relating the strategy to a written method and explaining the reasoning used which is not found in the GLEs.
1.NBT.5	1	Number and Operations in Base Ten	Use place value understanding and properties of operations to add and subtract.	5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.				No GLE match was found.
1.NBT.6	1	Number and Operations in Base Ten	Use place value understanding and properties of operations to add and subtract.	6. 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.	M.1.14	14. Add and subtract 2-digit numbers using manipulatives	1	M.1.13 also aligns. The CCSS includes subtracting using strategies based on place value and properties of operations which is not found in M.1.14. GLE M.1.14 requires manipulatives only. The CCSS includes relating the strategy to a written method and explaining the reasoning used which is not found in the GLEs.
1.MD.1	1	Measurement and Data	Measure lengths indirectly and by iterating length units.	1. Order three objects by length; compare the lengths of two objects indirectly by using a third object.	M.1.23	23. Compare the measure of objects to benchmarks (e.g., the width of a child's thumb is about a centimeter, the weight of a loaf of bread is about a pound, and the mass of a textbook is about a kilogram)	1	The CCSS includes ordering three objects by length which is not specifically found in the GLEs.

1.MD.2	1	Measurement and Data	Measure lengths indirectly and by iterating length units.	2. 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.*	M.K.14	14. Measure and estimate length and capacity using non-standard units (e.g., sticks, paper clips, blocks, beans)	K	The strongest alignment is to a Kindergarten GLE.
1.MD.3	1	Measurement and Data	Tell and write time.	3. Tell and write time in hours and half-hours using analog and digital clocks.	M.1.21	21. Tell time to the hour and half-hour, and identify date, day, week, month, and year on a calendar	1	
1.MD.4	1	Measurement and Data	Represent and interpret data.	4. 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.	M.1.32	32. Given a set of data, construct and read information from bar graphs and charts	1	M.1.33 also aligns.
1.G.1	1	Geometry	Reason with shapes and their attributes.	1. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.				No GLE match was found. The CCSS includes distinguishing between defining and non-defining attributes which is not found in the GLEs.
1.G.2	1	Geometry	Reason with shapes and their attributes.	2. 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.	M.1.29	29. Visualize, predict, and create new shapes by cutting apart and combining existing 2- and 3-dimensional shapes	1	
1.G.3	1	Geometry	Reason with shapes and their attributes.	3. 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.	M.1.6	6. Use region models and sets of objects to demonstrate understanding of the concept of halves	1	The CCSS includes partitions of four equal shares which is not found in M.1.6.

2.OA.1	2	Operations and Algebraic Thinking	Represent and solve problems involving addition and subtraction.	1. 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.	M.2.8	8. Recognize, select, connect, and use operations, operational words and symbols (+, -) for addition (join, part/part/whole) or subtraction (take away, comparison, missing addend, and set/subset) situations	2	M.2.12 also aligns.
2.OA.2	2	Operations and Algebraic Thinking	Add and subtract within 20.	2. Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.	M.2.7	7. Know all basic facts for addition and subtraction and use them to solve real-life problems	2	
2.OA.3	2	Operations and Algebraic Thinking	Work with equal groups of objects to gain foundations for multiplication.	3. 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.	M.3.46	46. Identify and model even and odd numbers with objects, pictures, and words	3	The CCSS contains specificity related to odd and even numbers. M.2.12 includes using equations (number sentences), but it is not aligned here since even and odd numbers are not currently in grade 2, so at this point the equations for M.2.12 would not be based on even and odd concepts.
2.OA.4	2	Operations and Algebraic Thinking	Work with equal groups of objects to gain foundations for multiplication.	4. 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.	M.2.30	30. Recognize, extend, create, and explain patterns of addition and subtraction as represented in charts and tables and in varied forms of skip-counting	2	M.3.5 also aligns. From the cluster statement, it is clear that the intent of the CCSS is foundations of multiplication. It is not clear if M.2.30 has foundations of multiplication as its primary intent. If it does, then it could stand alone in alignment to the CCSS. Otherwise, M.3.5 is needed to fully meet the intent of the CCSS.
2.NBT.1	2	Number and Operations in Base Ten	Understand place value.	1. 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…	M.2.1	1. Model, read, and write place values for numbers through 999 in word, standard, and expanded form	2	
2.NBT.2	2	Number and Operations in Base Ten	Understand place value.	2. Count within 1000; skip-count by 5s, 10s, and 100s.	M.2.6	6. From a given number, count forward and backward and count to 100 by 2s	2	The CCSS includes skip-counting by 5s, 10s, and 100s, which is not found in M.2.6. Even though this mismatch exists, the CCSS and the GLE clearly have the same intent.
2.NBT.3	2	Number and Operations in Base Ten	Understand place value.	3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	M.2.1	1. Model, read, and write place values for numbers through 999 in word, standard, and expanded form	2	The CCSS includes numbers to 1000, but the GLE only includes numbers through 999.

2.NBT.4	2	Number and Operations in Base Ten	Understand place value.	4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.	M.2.5	5. Read, write, compare, and order whole numbers through 999 using words, number lines, and models	2	M.3.2 also aligns. The CCSS includes using >, =, and < symbols. Use of these symbols is not found in grade 2. GLE M.3.2 is required to cover the use of these symbols.
2.NBT.5	2	Number and Operations in Base Ten	Use place value understanding and properties of operations to add and subtract.	5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	M.2.9	9. Add and subtract 1- and 2-digit numbers	2	
2.NBT.6	2	Number and Operations in Base Ten	Use place value understanding and properties of operations to add and subtract.	6. Add up to four two-digit numbers using strategies based on place value and properties of operations.	M.2.9	9. Add and subtract 1- and 2-digit numbers	2	
2.NBT.7	2	Number and Operations in Base Ten	Use place value understanding and properties of operations to add and subtract.	7. 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.	M.3.11	11. Add and subtract numbers of 3 digits or less	3	The strongest alignment is to a Grade 3 GLE.
2.NBT.8	2	Number and Operations in Base Ten	Use place value understanding and properties of operations to add and subtract.	8. Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	M.3.13	13. Determine when and how to estimate, and when and how to use mental math, calculators, or paper/pencil strategies to solve addition and subtraction problems	3	The strongest alignment is to a Grade 3 GLE.
2.NBT.9	2	Number and Operations in Base Ten	Use place value understanding and properties of operations to add and subtract.	9. Explain why addition and subtraction strategies work, using place value and the properties of operations.				No GLE match was found.
2.MD.1	2	Measurement and Data	Measure and estimate lengths in standard units.	1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	M.2.14	14. Measure and appropriately label measures of length and perimeter (i.e., inch, centimeter, foot), capacity (i.e., cup, quart, liter), and weight/mass (i.e., pound, kilogram)	2	M.2.17 also aligns.

2.MD.2	2	Measurement and Data	Measure and estimate lengths in standard units.	2. 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.	M.2.14	14. Measure and appropriately label measures of length and perimeter (i.e., inch, centimeter, foot), capacity (i.e., cup, quart, liter), and weight/mass (i.e., pound, kilogram)	2	M.2.20 also aligns. Because the CCSS is very specific in terms of the activity (measuring a length twice in different units), neither GLE exactly matches the CCSS, but there are enough common elements between the CCSS and the GLEs to align them.
2.MD.3	2	Measurement and Data	Measure and estimate lengths in standard units.	3. Estimate lengths using units of inches, feet, centimeters, and meters.	M.2.19	19. Estimate length in standard units (inch, foot, and centimeter)	2	The CCSS includes meters which is not found in M.2.19.
2.MD.4	2	Measurement and Data	Measure and estimate lengths in standard units.	4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.	M.2.14	14. Measure and appropriately label measures of length and perimeter (i.e., inch, centimeter, foot), capacity (i.e., cup, quart, liter), and weight/mass (i.e., pound, kilogram)	2	M.2.17 also aligns. The CCSS contains specificity related to the intended outcome of measuring, which is not found in the GLEs.
2.MD.5	2	Measurement and Data	Relate addition and subtraction to length.	5. 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.	M.2.8	8. Recognize, select, connect, and use operations, operational words and symbols (+, -) for addition (join, part/part/whole) or subtraction (take away, comparison, missing addend, and set/subset) situations	2	M.2.12 also aligns.
2.MD.6	2	Measurement and Data	Relate addition and subtraction to length.	6. 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.	M.2.5	5. Read, write, compare, and order whole numbers through 999 using words, number lines, and models	2	The CCSS includes representing whole-number sums and differences within 100 on a number line diagram which could not be found in any GLE.
2.MD.7	2	Measurement and Data	Work with time and money.	7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.	M.2.16	16. Tell time to the nearest 5 minutes, and identify the time one hour before or after a given time	2	
2.MD.8	2	Measurement and Data	Work with time and money.	8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*	M.2.4	4. Count and write the value of amounts of money up to $1.00 using ¢ and $	2	M.3.10 also aligns. The CCSS includes dollar bills which implies money amounts greater than $1.00, but M.2.4 only has money amounts up to $1.00. Both M.2.4 and M.3.10 are required to meet the full intent of the CCSS.

2.MD.9	2	Measurement and Data	Represent and interpret data.	9. 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.	M.2.14	14. Measure and appropriately label measures of length and perimeter (i.e., inch, centimeter, foot), capacity (i.e., cup, quart, liter), and weight/mass (i.e., pound, kilogram)	2	M.2.26 also aligns.
2.MD.10	2	Measurement and Data	Represent and interpret data.	10. 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.	M.1.32	32. Given a set of data, construct and read information from bar graphs and charts	1	The CCSS includes draw a picture graph and solve simple problems using information presented in a bar graph which is not found in M.1.32.
2.G.1	2	Geometry	Reason with shapes and their attributes.	1. 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.	M.1.26	26. Compare, contrast, name, and describe attributes (e.g., corner, side, straight, curved, number of sides) of shapes using concrete models [circle, rectangle (including square), rhombus, triangle]	1	The CCSS is more formal than M.1.26, likely because the GLE relies on concrete models which is a function of its grade level. M.1.26 was aligned because it seems to be closest in intent to the CCSS. The CCSS includes identifying quadrilaterals, pentagons, hexagons, and cubes, which is not found in M.1.26.
2.G.2	2	Geometry	Reason with shapes and their attributes.	2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	M.2.18	18. Use non-standard units to cover a given region	2	
2.G.3	2	Geometry	Reason with shapes and their attributes.	3. 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.	M.2.2	2. Model the concepts of thirds, fourths, fifths and sixths using regions, sets, and fraction words (e.g., one-third, three-fourths, five-sixths)	2	M.1.6 also aligns. The CCSS includes partitions of two, three, or four equal shares. M.1.6 includes halves, where M.2.2 does not, but this has minimal impact since it is 1 grade level before the CCSS. The CCSS does not include fifths and sixths, but M.2.2 does contain them.
3.OA.1	3	Operations and Algebraic Thinking	Represent and solve problems involving multiplication and division.	1. 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.*	M.3.8	8. Recognize, select, connect, and use operations, operational words, and symbols (i.e., +, -, x, ÷) to solve real-life situations	3	

3.OA.2	3	Operations and Algebraic Thinking	Represent and solve problems involving multiplication and division.	2. 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.*	M.3.8	8. Recognize, select, connect, and use operations, operational words, and symbols (i.e., +, -, x, ÷) to solve real-life situations	3	
3.OA.3	3	Operations and Algebraic Thinking	Represent and solve problems involving multiplication and division.	3. 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.	M.3.8	8. Recognize, select, connect, and use operations, operational words, and symbols (i.e., +, -, x, ÷) to solve real-life situations	3	M.3.5, M.3.6, M.3.15, M.3.16, and M.3.18 also align.
3.OA.4	3	Operations and Algebraic Thinking	Represent and solve problems involving multiplication and division.	4. 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 = ?.*	M.4.19	19. Solve one-step equations with whole number solutions	4	The CCSS focuses on determining an unknown in multiplication/division equations. Grade 3 GLEs M.3.15, M.3.16, and M.3.18 were all considered as possible matches, but these GLEs are clearly focused on equations/number sentences as representations rather than on determining an unknown in them.
3.OA.5	3	Operations and Algebraic Thinking	Understand properties of multiplication and the relationship between multiplication and division.	5. 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.)*	M.3.4	4. Use the concepts of associative and commutative properties of multiplication to simplify computations	3	M.4.17 also aligns. The CCSS includes use of properties as strategies to multiply and divide. This intent is the same found in M.3.4. However, M.3.4 does not include distributive property. M.4.17 does include distributive property, so both GLEs are required to meet the full breadth of the CCSS.
3.OA.6	3	Operations and Algebraic Thinking	Understand properties of multiplication and the relationship between multiplication and division.	6. Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*	M.3.7	7. Recognize and apply multiplication and division as inverse operations	3	

3.OA.7	3	Operations and Algebraic Thinking	Multiply and divide within 100.	7. 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 two one-digit numbers.	M.4.4	4. Know all basic facts for multiplication and division through 12 x 12 and 144 ÷ 12, and recognize factors of composite numbers less than 50	4	M.3.9 also aligns. The CCSS includes multiplying/dividing within 100. M.4.4 is the stronger of the two matches because it covers basic facts through 12 × 12. Even though this is beyond the CCSS requirement, M.3.9 omits too many basic facts to be considered for a stand-alone alignment here.
3.OA.8	3	Operations and Algebraic Thinking	Solve problems involving the four operations, and identify and explain patterns in arithmetic.	8. 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.	M.3.8	8. Recognize, select, connect, and use operations, operational words, and symbols (i.e., +, -, x, ÷) to solve real-life situations	3	M.3.18 also aligns. M.3.13 also aligns.
3.OA.9	3	Operations and Algebraic Thinking	Solve problems involving the four operations, and identify and explain patterns in arithmetic.	9. 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.*	M.3.47	47. Find patterns to complete tables, state the rule governing the shift between successive terms, and continue the pattern (including growing patterns)	3	M.3.46 also aligns. M.4.42 also aligns.
3.NBT.1	3	Number and Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	1. Use place value understanding to round whole numbers to the nearest 10 or 100.	M.2.10	10. Round numbers to the nearest 10 or 100 and identify situations in which rounding is appropriate	2	M.3.12 also aligns. The CCSS includes rounding to nearest 10 or 100, so M.2.10 is the most direct match. M.3.12 is matched also, but it extends rounding to the nearest 1,000.
3.NBT.2	3	Number and Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	2. 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.	M.3.11	11. Add and subtract numbers of 3 digits or less	3	
3.NBT.3	3	Number and Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	3. 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.	M.3.9	9. Know basic multiplication and division facts [0s, 1s, 2s, 5s, 9s, and turn-arounds (commutative facts), including multiplying by 10s]	3	The CCSS includes specificity related to mutiplying by multiples of 10. In M.3.9, "including multiplying by 10s" was interpreted as having the same meaning as what appears in the CCSS. If this interpretation is beyond the intent of the GLE, then there is no GLE match for the CCSS.

3.NF.1	3	Number and Operations – Fractions	Develop understanding of fractions as numbers.	1. 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* .	M.3.3	3. Use region and set models and symbols to represent, estimate, read, write, and show understanding of fractions through tenths	3	The grade 3 CCSS footnote 5 limits denominators to 2, 3, 4, 6, and 8. M.3.3 includes denominators beyond those specified in the grade 3 CCSS footnote.
3.NF.2	3	Number and Operations – Fractions	Develop understanding of fractions as numbers.	2. Understand a fraction as a number on the number line; represent fractions on a number line diagram.				No GLE match was found. The CCSS contains specificity related to understanding a fraction as a number on the number line which is not found in the GLEs. M.3.3 was considered as a possible match, but region and set models from the GLE are not equivalent to understanding a fraction as a number on the number line and as a foundation for understanding how its position on the number line puts it in relation to other numbers on the number line. A stand-alone region or set model shows little or no relation between numbers.
3.NF.3	3	Number and Operations – Fractions	Develop understanding of fractions as numbers.	3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.				No GLE match was found. The wording of the CCSS, including the substandards, implies a foundational understanding of fraction equivalence. This foundation should come before the mechanical steps of computing equivalent fractions. Based on this reasoning, M.5.2 was not considered. Partial alignment to the CCSS can be achieved through M.4.6 in terms of comparing two fractions from substandard d. Some consideration was also given to M.3.14 on using inequality symbols, but since the comparables (fractions in this case) are not aligned to this grade level, then the use of these symbols by themselves does not align to the CCSS.
3.MD.1	3	Measurement and Data	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	1. 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.	M.3.24	24. Find elapsed time involving hours and minutes, without regrouping, and tell time to the nearest minute	3	

3.MD.2	3	Measurement and Data	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). 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.	M.3.25	25. Select and use the appropriate standard units of measure, abbreviations, and tools to measure length and perimeter (i.e., in., cm, ft., yd., m), area (square inch, square centimeter), capacity (i.e., cup, pint, quart, gallon, liter), and weight/mass (i.e., oz., lb., g, kg, ton)	3	M.3.21 also aligns. M.3.43 also aligns.
3.MD.3	3	Measurement and Data	Represent and interpret data.	3. 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.*	M.3.42	42. Match a data set to a graph, table, or chart and vice versa	3	M.3.43 also aligns. The CCSS includes picture and bar graphs. Pictographs are in M.2.27. Bar graphs are in M.1.32. Therefore, it is assumed that both graph types would be automatically included in any later grade even though M.3.42 does not specify either. In M.3.42, the verb "match" is significantly lower than the verb "draw" from the CCSS, but the GLE and the CCSS were assumed to have similar intents.
3.MD.4	3	Measurement and Data	Represent and interpret data.	4. 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.	M.3.19	19. Measure length to the nearest yard, meter, and half-inch	3	M.3.42 also aligns. M.4.20 also aligns because it specifies measures to the nearest quarter-inch. (M.3.19 only specifies to nearest half-inch.) The CCSS includes line plots. Line plots are in M.2.26, so it is assumed that line plots would be automatically included in any later grade even though M.3.42 does not specify them. In M.3.42, the verb "match" is significantly lower than the verb "show" in the phrase "show the data by making a line plot" from the CCSS, but the GLE and the CCSS were assumed to have similar intents.
3.MD.5	3	Measurement and Data	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	5. Recognize area as an attribute of plane figures and understand concepts of area measurement.	M.3.23	23. Find the area in square units of a given rectangle (including squares) drawn on a grid or by covering the region with square tiles	3	

3.MD.6	3	Measurement and Data	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	6. Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).	M.3.23	23. Find the area in square units of a given rectangle (including squares) drawn on a grid or by covering the region with square tiles	3	
3.MD.7	3	Measurement and Data	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	7. Relate area to the operations of multiplication and addition.	M.3.5	5. Recognize and model multiplication as a rectangular array or as repeated addition	3	M.3.23 also aligns.
3.MD.8	3	Measurement and Data	Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	8. 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 areas or with the same area and different perimeters.	M.3.22	22. Find the perimeter of a geometric shape given the length of its sides	3	M.3.33 also aligns.
3.G.1	3	Geometry	Reason with shapes and their attributes.	1. 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.	M.3.29	29. Classify and describe 2- and 3-dimensional objects according to given attributes (triangle vs. quadrilateral, parallelogram vs. prism)	3	
3.G.2	3	Geometry	Reason with shapes and their attributes.	2. 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 as 1/4 of the area of the shape.*	M.3.3	3. Use region and set models and symbols to represent, estimate, read, write, and show understanding of fractions through tenths	3	
4.OA.1	4	Operations and Algebraic Thinking	Use the four operations with whole numbers to solve problems.	1. Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 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.				No GLE match was found. The CCSS contains specificity related to interpreting multiplication as a comparison, which is not found in the GLEs. There are several GLEs that include multiplication (M.4.4, M.4.10, and M.4.11), but none of them was interpreted as matching the intent of the CCSS in terms of its focus on multiplicative comparisons.

4.OA.2	4	Operations and Algebraic Thinking	Use the four operations with whole numbers to solve problems.	2. 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.				No GLE match was found. The CCSS contains specificity related to multiplying/dividing to solve word problems involving multiplicative comparison, including the use of equations, which is not found in the GLEs. There are several GLEs that include multiplication (M.4.4, M.4.10, and M.4.11) and two that include equations/number sentences (M.4.15 and M.4.19). All of these GLEs were considered as possible matches, but none of them was interpreted as matching the intent of the CCSS in terms of its focus on multiplicative comparisons.
4.OA.3	4	Operations and Algebraic Thinking	Use the four operations with whole numbers to solve problems.	3. 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.	M.5.7	7. Select, sequence, and use appropriate operations to solve multi-step word problems with whole numbers	5	M.5.8 also aligns. The CCSS is broad in terms of its inclusion of solving whole-number word problems using the four operations. M.5.7 and M.5.8 were determined to be the best matches for the CCSS because they are broader than many other GLEs that focus on specific operations and/or number types. Other potential matches include M.4.10 (because of interpreting remainders), M.4.11, M.4.14, M.4.15, and M.5.9 (because of attention to reasonableness of solutions).
4.OA.4	4	Operations and Algebraic Thinking	Gain familiarity with factors and multiples.	4. 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.	M.5.1	1. Differentiate between the terms *factor* and *multiple* , and *prime* and *composite*	5	M.4.4 also aligns. The CCSS includes factors, multiples, primes, and composites. The stronger of the two GLE matches is M.5.1 because it includes factor, multiple, prime, and composite. M.4.4 is only a starting point because it covers only factors of composite numbers less than 50. Taken alone, M.4.4 does not match the breadth or full intent of the CCSS.

4.OA.5	4	Operations and Algebraic Thinking	Generate and analyze patterns.	5. 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.*				No GLE match was found. The CCSS contains specificity not found in the GLEs. Several GLEs were considered as possible matches, including M.3.47, M.4.42, M.4.43, and M.5.33. However, none of them was interpreted as matching the intent of the CCSS in terms of generating a number or shape pattern that follows a given rule. Serious consideration was given to M.4.42 as matching the CCSS in terms of identifying apparent features of the pattern not explicit in the rule itself. However, M.4.42 was interpreted as solely focusing on even/odd number relationships. While even/odd number relationships may be an outcome of the CCSS, it is not the entire intention of the standard as it seems to be in M.4.42.
4.NBT.1	4	Number and Operations in Base Ten	Generalize place value understanding for multi-digit whole numbers.	1. 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.*	M.4.1	1. Read and write place value in word, standard, and expanded form through 1,000,000	4	M.4.2 also aligns. This CCSS standard falls under the cluster statement: "Generalize place value understanding for multi-digit whole numbers." This particular standard must therefore be interpreted in the general sense of understanding the entire base-ten system of whole numbers. The GLEs lack this generality and are much more specific. However, it would be unlikely that in teaching specific place-value concepts that some understanding of the general system would not occur.
4.NBT.2	4	Number and Operations in Base Ten	Generalize place value understanding for multi-digit whole numbers.	2. 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.	M.4.1	1. Read and write place value in word, standard, and expanded form through 1,000,000	4	M.4.2 also aligns. Footnote 2 in the grade 4 CCSS limits whole numbers as less than or equal to 1,000,000, as do the GLEs.

4.NBT.3	4	Number and Operations in Base Ten	Generalize place value understanding for multi-digit whole numbers.	3. Use place value understanding to round multi-digit whole numbers to any place.				No GLE match was found. The grade 4 CCSS limits whole numbers as less than or equal to 1,000,000. Rounding is last mentioned in M.3.12 but only to the nearest 1,000. This is significantly below the threshold of 1,000,000 for grade 4 numbers, so no match was determined.
4.NBT.4	4	Number and Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	4. Fluently add and subtract multi-digit whole numbers using the standard algorithm.	M.5.8	8. Use the whole number system (e.g., computational fluency, place value, etc.) to solve problems in real-life and other content areas	5	GLE alignment is 1 grade level later than CCSS. The grade 4 CCSS limits whole numbers as less than or equal to 1,000,000. M.3.11 was considered as a possible match, but it only includes numbers of 3 digits or less which is significantly below the threshold of 1,000,000 for grade 4 numbers.
4.NBT.5	4	Number and Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	5. 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.	M.4.11	11. Multiply 3-digit by 1-digit numbers, 2-digit by 2-digit numbers, and divide 3-digit numbers by 1-digit numbers, with and without remainders	4	M.4.17 also aligns. M.3.5 also aligns. The CCSS includes multiplying up to 4-digit numbers by a 1-digit number. M.4.11 falls short of the full breadth of the CCSS by limiting to 3-digit numbers instead of 4-digit numbers. However, the intent of the GLE clearly matches the intent of the CCSS. M.3.5 is also considered a match given its focus on modeling multiplication.
4.NBT.6	4	Number and Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	6. 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.	M.4.11	11. Multiply 3-digit by 1-digit numbers, 2-digit by 2-digit numbers, and divide 3-digit numbers by 1-digit numbers, with and without remainders	4	M.3.6 also aligns. The CCSS includes dividing up to 4-digit dividends by 1-digit divisors. M.4.11 falls short of the full breadth of the CCSS by limiting to 3-digit numbers instead of 4-digit numbers. However, the intent of the GLE clearly matches the intent of the CCSS. M.3.6 is considered a match given its focus on modeling division.

4.NF.1	4	Number and Operations – Fractions	Extend understanding of fraction equivalence and ordering.	1. Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ 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.	M.5.2	2. Recognize, explain, and compute equivalent fractions for common fractions	5	The strongest alignment is to a Grade 5 GLE.
4.NF.2	4	Number and Operations – Fractions	Extend understanding of fraction equivalence and ordering.	2. 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.	M.4.6	6. Model, read, write, compare, order, and represent fractions with denominators through twelfths using region and set models	4	M.5.4 also aligns. The CCSS contains an expectation that comparing fractions can be done through creating equivalent fractions. M.4.6 relies on use of region and set models. Since equivalent fractions do not occur until M.5.2, it is necessary to include M.5.4 to meet the full intent of the CCSS. So both M.4.6 and M.5.4 are required to meet the full intent of the CCSS.
4.NF.3	4	Number and Operations – Fractions	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	3. Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.	M.5.3	3. Add and subtract fractions with common denominators and use mental math to determine whether the answer is reasonable	5	M.6.9 also aligns. M.5.6 also aligns. The CCSS subparts include adding/subtracting mixed numbers. It does not appear that grade 5 includes adding and subtracting mixed numbers, since in M.5.5, pictorial representations are still being used for creating the numerical representation. Therefore, both M.5.3 and M.6.9 are required to meet the full intent of the CCSS.
4.NF.4	4	Number and Operations – Fractions	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.				No GLE match was found. The CCSS includes multiplying a fraction by a whole number. The closest GLE match would be M.7.5, but that GLE would likely not have a limit of fraction by whole number.
4.NF.5	4	Number and Operations – Fractions	Understand decimal notation for fractions, and compare decimal fractions.	5. 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.*	M.5.2	2. Recognize, explain, and compute equivalent fractions for common fractions	5	M.5.3 also aligns.

4.NF.6	4	Number and Operations – Fractions	Understand decimal notation for fractions, and compare decimal fractions.	6. 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.*	M.4.5	5. Read, write, and relate decimals through hundredths and connect them with corresponding decimal fractions	4	M.4.7 also aligns. The CCSS is limited to denominators of 10 and 100. M.4.7 extends to halves and fourths which would not be required by the CCSS unless they were presented in terms of tenths or hundredths.
4.NF.7	4	Number and Operations – Fractions	Understand decimal notation for fractions, and compare decimal fractions.	7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the 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.	M.6.6	6. Compare positive fractions, decimals, and positive and negative integers using symbols (i.e., <, =, >) and number lines	6	The CCSS contains specificity related to comparing decimal numbers. M.4.5 was considered as a possible match based on the word "relate" which appears in the GLE. However, other GLEs are so explicit in their use of the word "compare" that it did not seem likely that "relate" was intended to mean "compare" in this situation, so no grade 4 match was determined.
4.MD.1	4	Measurement and Data	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	1. 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), ...*	M.4.27	27. Use unit conversions within the same system to solve real-life problems (e.g., 60 sec. = 1 min., 12 objects = 1 dozen, 12 in. = 1 ft., 100 cm = 1 m, 1 pt. = 2 cups)	4	M.4.22 also aligns.
4.MD.2	4	Measurement and Data	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	2. 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.	M.5.8	8. Use the whole number system (e.g., computational fluency, place value, etc.) to solve problems in real-life and other content areas	5	M.4.27 also aligns. M.6.9 and M.4.36 also align. All four GLEs are required to cover the full breadth and intent of the CCSS.

4.MD.3	4	Measurement and Data	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	3. 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.*	M.4.25	25. Use estimates and measurements to calculate perimeter and area of rectangular objects (including squares) in U.S. (including square feet) and metric units	4	M.4.22 also aligns. The CCSS contains specificity related to applying formulas for area and perimeter of rectangles, which is not found in either GLE. However, the CCSS and the GLE seem to have the same intent.
4.MD.4	4	Measurement and Data	Represent and interpret data.	4. 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.*	M.4.36	36. Analyze, describe, interpret, and construct various types of charts and graphs using appropriate titles, axis labels, scales, and legends	4	M.6.9 also aligns. The CCSS contains specificity related to addition and subtraction of fractions which does not occur until M.6.9.
4.MD.5	4	Measurement and Data	Geometric measurement: understand concepts of angle and measure angles.	5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement…	M.3.35	35. Identify, give properties of, and distinguish among points, lines, line segments, planes, rays, and angles	3	The CCSS includes understanding concepts of angle measurement. M.3.25 likely falls short of including this understanding. A GLE related to angle measurement concepts as described by the CCSS could not be found, but by grade 4 there is indication that students understand degree measures (see M.4.31 and M.4.32).
4.MD.6	4	Measurement and Data	Geometric measurement: understand concepts of angle and measure angles.	6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	M.5.21	21. Measure angles to the nearest degree	5	The strongest alignment is to a Grade 5 GLE.
4.MD.7	4	Measurement and Data	Geometric measurement: understand concepts of angle and measure angles.	7. 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.				No GLE match was found.
4.G.1	4	Geometry	Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	M.3.36	36. Identify and draw segments, rays, and lines that are perpendicular, parallel, and intersecting	3	M.3.37 also aligns. M.4.32 also aligns.

4.G.2	4	Geometry	Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	2. 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.	M.5.24	24. Use mathematical terms to classify and describe the properties of 2-dimensional shapes, including circles, triangles, and polygons	5	The CCSS includes classifying 2D figures based on presence or absence of parallel or perpendicular lines. M.4.29 was considered as a possible match, but it includes identify and describe the properties of which falls short of classifying based on presence or absence of a particular property.
4.G.3	4	Geometry	Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	3. 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.	M.3.30	30. Apply concepts of congruence, similarity, and symmetry in real-life situations	3	The strongest alignment is to a Grade 3 GLE.
5.OA.1	5	Operations and Algebraic Thinking	Write and interpret numerical expressions.	1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	M.7.3	3. Solve order of operations problems involving grouping symbols and multiple operations	7	The strongest alignment is to a Grade 7 GLE.
5.OA.2	5	Operations and Algebraic Thinking	Write and interpret numerical expressions.	2. 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.*	M.5.7	7. Select, sequence, and use appropriate operations to solve multi-step word problems with whole numbers	5	M.5.6 also aligns. The CCSS at this grade level contains number types that are not found in the two aligned grade 5 GLEs. Therefore, the GLEs are below the full intent of the CCSS. The next available "good" GLE match is M.7.7. However, this GLE is above the full breadth of number types at CCSS grade 5.
5.OA.3	5	Operations and Algebraic Thinking	Analyze patterns and relationships.	3. 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.*				No GLE match was found. The CCSS contains specificity that is not found in the GLEs. M.5.33 and M.6.38 were considered as possible matches. However, neither GLE by itself or in combination with the other was evaluated as being at the same level of intent as the CCSS.

5.NBT.1	5	Number and Operations in Base Ten	Understand the place value system.	1. 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.				No GLE match was found.
5.NBT.2	5	Number and Operations in Base Ten	Understand the place value system.	2. 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.	M.6.11	11. Mentally multiply and divide by powers of 10 (e.g., 25/10 = 2.5; 12.56 x 100 = 1,256)	6	The strongest alignment is to a Grade 6 GLE.
5.NBT.3	5	Number and Operations in Base Ten	Understand the place value system.	3. Read, write, and compare decimals to thousandths.	M.5.5	5. Read, explain, and write a numerical representation for positive improper fractions, mixed numbers, and decimals from a pictorial representation and vice versa	5	M.6.6 also aligns. M.6.7 and M.4.5 also align. Many GLE codes are necessary to achieve full alignment because grades 4 and 6 have similar GLEs for reading and writing decimal numbers (grade 4 to the hundredths and grade 6 to the ten-thousandths), but grade 5 does not use the same general wording and does not specify number magnitudes.
5.NBT.4	5	Number and Operations in Base Ten	Understand the place value system.	4. Use place value understanding to round decimals to any place.				No GLE match was found. Rounding is last mentioned in M.3.12 but only with whole numbers.
5.NBT.5	5	Number and Operations in Base Ten	Perform operations with multi-digit whole numbers and with decimals to hundredths.	5. Fluently multiply multi-digit whole numbers using the standard algorithm.	M.5.8	8. Use the whole number system (e.g., computational fluency, place value, etc.) to solve problems in real-life and other content areas	5	
5.NBT.6	5	Number and Operations in Base Ten	Perform operations with multi-digit whole numbers and with decimals to hundredths.	6. 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.	M.6.12	12. Divide 4-digit numbers by 2-digit numbers with the quotient written as a mixed number or a decimal	6	M.5.8 also aligns. The CCSS includes dividing 4-digit numbers by 2-digit numbers, so M.6.12 is a very strong match. M.5.8 is also included because it mentions "computational fluency" using the whole number system. M.4.11 includes dividing 3-digit numbers by 1-digit numbers, so it seemed reasonable to assume that M.5.8 would also include or could also include dividing whole numbers.

5.NBT.7	5	Number and Operations in Base Ten	Perform operations with multi-digit whole numbers and with decimals to hundredths.	7. 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.	M.6.9	9. Add and subtract fractions and decimals in real-life situations	6	M.7.5 also aligns. Both M.6.9 and M.7.5 are required to meet the full intent of the CCSS.
5.NF.1	5	Number and Operations – Fractions	Use equivalent fractions as a strategy to add and subtract fractions.	1. 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.)*	M.6.9	9. Add and subtract fractions and decimals in real-life situations	6	The CCSS includes unlike denominators. M.6.9 does not specify unlike denominators, but M.5.3 specifies "with common denominators" which was interpreted as meaning like denominators. Therefore, M.6.9 was included as a match, but M.5.3 was not.
5.NF.2	5	Number and Operations – Fractions	Use equivalent fractions as a strategy to add and subtract fractions.	2. 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.*	M.5.3	3. Add and subtract fractions with common denominators and use mental math to determine whether the answer is reasonable	5	M.5.9 also aligns. M.6.9 and M.6.10 also align. The CCSS includes unlike denominators, so both M.6.9 and M.6.10 would be required to meet the full intent of the CCSS.

5.NF.3	5	Number and Operations – Fractions	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	3. Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). 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?*	M.5.11	11. Explain concepts of ratios and equivalent ratios using models and pictures in real-life problems (e.g., understand that 2/3 means 2 divided by 3)	5	M.6.12 also aligns. Both M.5.11 and M.6.12 are required to meet the full intent of the CCSS.
5.NF.4	5	Number and Operations – Fractions	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.	M.7.5	5. Multiply and divide positive fractions and decimals	7	The strongest alignment is to a Grade 7 GLE.
5.NF.5	5	Number and Operations – Fractions	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	5. Interpret multiplication as scaling (resizing), by…	M.7.8	8. Determine the reasonableness of answers involving positive fractions and decimals by comparing them to estimates	7	The strongest alignment is to a Grade 7 GLE.
5.NF.6	5	Number and Operations – Fractions	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	6. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	M.7.7	7. Select and discuss appropriate operations and solve single- and multi-step, real-life problems involving positive fractions, percents, mixed numbers, decimals, and positive and negative integers	7	The strongest alignment is to a Grade 7 GLE.
5.NF.7	5	Number and Operations – Fractions	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.				No GLE match was found. The CCSS contains specificity in dividing unit fractions by whole numbers and whole numbers by unit fractions which is not found in the GLEs. M.7.5 and M.7.7 were considered as possible matches, but since neither is limited to unit fractions and whole numbers, their intent seems beyond that of the CCSS.

5.MD.1	5	Measurement and Data	Convert like measurement units within a given measurement system.	1. 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.	M.5.23	23. Convert between units of measurement for length, weight, and time, in U.S. and metric, within the same system	5	M.4.27 also aligns. M.5.16 also aligns.
5.MD.2	5	Measurement and Data	Represent and interpret data.	2. 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.*	M.5.28	28. Use various types of charts and graphs, including double bar graphs, to organize, display, and interpret data and discuss patterns verbally and in writing	5	Even though the CCSS is aligned to M.5.28, the full intent of the CCSS cannot be covered without addressing CCSS/GLE alignment issues in the following CCSS standards: 5.NF.1, 5.NF.2, 5.NF.3, 5.NF.4, 5.NF.5, 5.NF6, and 5.NF.7.
5.MD.3	5	Measurement and Data	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	3. Recognize volume as an attribute of solid figures and understand concepts of volume measurement.	M.4.21	21. Describe the concept of volume, and measure volume using cubic in. and cubic cm and capacity using fl. oz. and	4	The strongest alignment is to a Grade 4 GLE.
5.MD.4	5	Measurement and Data	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	4. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	M.4.22	22. Select and use the appropriate standard units of measure, abbreviations, and tools to measure length and perimeter (i.e., in., cm, ft., yd., mile, m, km), area (i.e., square inch, square foot, square centimeter), capacity (i.e., fl. oz., cup, pt., qt., gal., l, ml), weight/mass (i.e., oz., lb., g, kg, ton), and volume (i.e., cubic cm, cubic in.)	4	The strongest alignment is to a Grade 4 GLE.
5.MD.5	5	Measurement and Data	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	5. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.				No GLE match was found. The CCSS includes relating volume to the operations of multiplication and addition which is not found in the GLEs. M.4.21 and M.4.22 were considered as possible matches, but both seem to fall short of the intent of the CCSS.

5.G.1	5	Geometry	Graph points on the coordinate plane to solve real-world and mathematical problems.	1. 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).	M.5.27	27. Identify and plot points on a coordinate grid in the first quadrant	5	
5.G.2	5	Geometry	Graph points on the coordinate plane to solve real-world and mathematical problems.	2. 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.	M.5.27	27. Identify and plot points on a coordinate grid in the first quadrant	5	
5.G.3	5	Geometry	Classify two-dimensional figures into categories based on their properties.	3. 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.*	M.5.24	24. Use mathematical terms to classify and describe the properties of 2-dimensional shapes, including circles, triangles, and polygons	5	
5.G.4	5	Geometry	Classify two-dimensional figures into categories based on their properties.	4. Classify two-dimensional figures in a hierarchy based on properties.	M.5.24	24. Use mathematical terms to classify and describe the properties of 2-dimensional shapes, including circles, triangles, and polygons	5	
6.RP.1	6	Ratios and Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.	1. 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."*	M.6.13	13. Use models and pictures to explain concepts or solve problems involving ratio, proportion, and percent with whole numbers	6	

6.RP.2	6	Ratios and Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.	2. Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *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."*	M.6.20	20. Calculate, interpret, and compare rates such as $/lb., mpg, and mph	6	
6.RP.3	6	Ratios and Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.	3. 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.	M.6.13	13. Use models and pictures to explain concepts or solve problems involving ratio, proportion, and percent with whole numbers	6	M.6.20 also aligns. M.6.28, M.6.37, M.7.6, M.7.7, M.7.10, and M.7.22 also align. The CCSS is extremely broad, especially considering its 4 subparts. Therefore, many GLEs align to it. Some specific information about GLE alignment is listed below. M.6.28: The GLE aligns for using a rectangular grid and ordered pairs. The GLE goes on to limit this use to plotting simple shapes to find lengths and area, which is not part of the CCSS, but the intent of using a coordinate grid is clear. M.6.37: The GLE aligns for its use of input-output tables. The CCSS subpart a. includes making tables of equivalent ratios relating quantities with whole-number measurements which is essentially an input-output table. M.7.22: The GLE aligns for its conversion between units of area, which is included in the CCSS subpart d.

6.NS.1	6	The Number System	Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *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?*	M.7.5	5. Multiply and divide positive fractions and decimals	7	M.7.7 also aligns. M.7.14 also aligns.
6.NS.2	6	The Number System	Compute fluently with multi-digit numbers and find common factors and multiples.	2. Fluently divide multi-digit numbers using the standard algorithm.	M.6.12	12. Divide 4-digit numbers by 2-digit numbers with the quotient written as a mixed number or a decimal	6	The CCSS has no limits on number of digits in the dividend or the divisor, but the GLE is limited to 4-digit dividends and 2-digit divisors.
6.NS.3	6	The Number System	Compute fluently with multi-digit numbers and find common factors and multiples.	3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	M.6.9	9. Add and subtract fractions and decimals in real-life situations	6	M.7.5 also aligns. The CCSS includes all four basic operations with decimals, so both GLEs are required to meet the full breadth and intent of the CCSS.
6.NS.4	6	The Number System	Compute fluently with multi-digit numbers and find common factors and multiples.	4. 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).*	M.6.3	3. Find the greatest common factor (GCF) and least common multiple (LCM) for whole numbers in the context of problem-solving	6	M.7.4 also aligns. The CCSS contains limits for greatest common factor and least common multiple that are not found in the GLEs. Both GLEs are required to meet the full breadth and intent of the CCSS.

6.NS.5	6	The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	5. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	M.6.8	8. Demonstrate the meaning of positive and negative numbers and their opposites in real-life situations	6	
6.NS.6	6	The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	6. 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.	M.8.1	1. Compare rational numbers using symbols (i.e., <, ≤ , =, ≥, >) and position on a number line	8	M.6.6 also aligns. M.7.2 and M.7.29 also align. The CCSS is specific to all rational numbers and not just limited to positive rational numbers. M.8.1 is the best match for this reason. M.6.6 also aligns but does not have the same breadth as the CCSS.
6.NS.7	6	The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	7. Understand ordering and absolute value of rational numbers.	M.8.1	1. Compare rational numbers using symbols (i.e., <, ≤ , =, ≥, >) and position on a number line	8	M.6.6 also aligns. M.7.2 also aligns. The CCSS is specific to all rational numbers and not just limited to positive rational numbers. M.8.1 is the best match for this reason. M.6.6 also aligns but does not have the same breadth as the CCSS. The CCSS includes absolute value which is not found in the GLEs.
6.NS.8	6	The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	8. 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.	M.7.29	29. Plot points on a coordinate grid in all 4 quadrants and locate the coordinates of a missing vertex in a parallelogram	7	M.6.28 also aligns. The CCSS requires graphing in all four quadrants which is not found in the GLEs until M.7.29. The CCSS contains finding distances which is in M.6.28, but the GLE is likely limited to quadrant I. The CCSS includes use of absolute value to find distances, but absolute value is not found in the GLEs.

6.EE.1	6	Expressions and Equations	Apply and extend previous understandings of arithmetic to algebraic expressions.	1. Write and evaluate numerical expressions involving whole-number exponents.	M.8.2	2. Use whole number exponents (0-3) in problem-solving contexts	8	The strongest alignment is to a Grade 8 GLE. The CCSS does not limit exponent size whereas M.8.2 is limited to exponents of 0-3.
6.EE.2	6	Expressions and Equations	Apply and extend previous understandings of arithmetic to algebraic expressions.	2. Write, read, and evaluate expressions in which letters stand for numbers.	M.6.15	15. Match algebraic equations and expressions with verbal statements and vice versa	6	M.6.16 also aligns. M.7.3, M.7.12, and M.8.5 also align. The CCSS subpart b. includes identifying parts of an expression and viewing parts of an expression as a single entity which are not found in the GLEs. The CCSS includes use of order of operations which is found in M.7.3. All four GLEs are required to match the intent of the CCSS.
6.EE.3	6	Expressions and Equations	Apply and extend previous understandings of arithmetic to algebraic expressions.	3. 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.*	M.9.8	8. Use order of operations to simplify or rewrite variable expressions	9	In searching for a GLE match, there is an example in M.6.17 showing 2x + 2x = 20. There is some implication here of an expectation of generating equivalent expressions within solving equations. However, no GLE match closer than grade 9 was found where this skill is expressly identified.
6.EE.4	6	Expressions and Equations	Apply and extend previous understandings of arithmetic to algebraic expressions.	4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.*	M.9.8	8. Use order of operations to simplify or rewrite variable expressions	9	In searching for a GLE match, there is an example in M.6.17 showing 2x + 2x = 20. There is some implication here of an expectation of generating equivalent expressions within solving equations. However, no GLE match closer than grade 9 was found where this skill is expressly identified.
6.EE.5	6	Expressions and Equations	Reason about and solve one-variable equations and inequalities.	5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	M.7.16	16. Solve one- and two-step equations and inequalities (with one variable) in multiple ways	7	M.6.17 also aligns. The CCSS includes both equations and inequalities. The best match is M.7.16 since it also includes both equations and inequalities. M.6.17 only includes equations.

6.EE.6	6	Expressions and Equations	Reason about and solve one-variable equations and inequalities.	6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	M.6.15	15. Match algebraic equations and expressions with verbal statements and vice versa	6	
6.EE.7	6	Expressions and Equations	Reason about and solve one-variable equations and inequalities.	7. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.	M.7.16	16. Solve one- and two-step equations and inequalities (with one variable) in multiple ways	7	The CCSS is limited to 1-step equations, but it includes non-negative rational numbers. No GLE match with these specific requirements could be found. M.6.17 was considered for a possible match, but it is limited to 2-step equations with positive integer solutions. The best match was determined to be M.7.16 because of its inclusion of 1-step equations, but placing no limits on number types.
6.EE.8	6	Expressions and Equations	Reason about and solve one-variable equations and inequalities.	8. Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.	M.7.14	14. Write a real-life meaning of a simple algebraic equation or inequality, and vice versa	7	M.7.17 also aligns. M.7.15 also aligns.
6.EE.9	6	Expressions and Equations	Represent and analyze quantitative relationships between dependent and independent variables.	9. 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.*	M.8.11	11. Translate real-life situations that can be modeled by linear or exponential relationships to algebraic expressions, equations, and inequalities	8	M.8.13 also aligns. M.8.14, M.8.15, and M.7.18 also align. The CCSS does not include a limit on the types of relationships. For purposes of alignment, linear relationships were the only relationship type considered.

6.G.1	6	Geometry	Solve real-world and mathematical problems involving area, surface area, and volume.	1. Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	M.7.20	20. Determine the perimeter and area of composite plane figures by subdivision and area addition	7	M.6.19 also aligns. The CCSS includes area of polygons by composing and decomposing which is not found until M.7.20, which makes it the strongest match.
6.G.2	6	Geometry	Solve real-world and mathematical problems involving area, surface area, and volume.	2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l\ w\ h$ and $V = b\ h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	M.8.17	17. Determine the volume and surface area of prisms and cylinders	8	The CCSS includes specificity about fractional edge lengths which is not found in the GLEs.
6.G.3	6	Geometry	Solve real-world and mathematical problems involving area, surface area, and volume.	3. 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.	M.7.29	29. Plot points on a coordinate grid in all 4 quadrants and locate the coordinates of a missing vertex in a parallelogram	7	M.6.28 also aligns. The CCSS requires graphing in all four quadrants which is not found in the GLEs until M.7.29. The CCSS includes finding side lengths which is in M.6.28, but the GLE is likely limited to quadrant I.
6.G.4	6	Geometry	Solve real-world and mathematical problems involving area, surface area, and volume.	4. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	M.6.25	25. Relate polyhedra to their 2-dimensional shapes by drawing or sketching their faces	6	M.8.17 also aligns. The CCSS includes surface area so both GLEs are required to meet the full intent of the CCSS. The CCSS would include some pyramids which is not found in M.8.17.
6.SP.1	6	Statistics and Probability	Develop understanding of statistical variability.	1. 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.*				No GLE match was found.

6.SP.2	6	Statistics and Probability	Develop understanding of statistical variability.	2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	M.7.32	32. Describe data in terms of patterns, clustered data, gaps, and outliers	7	The CCSS and GLEs do not share a complete set of common wording regarding this standard. M.7.32 was determined to be an acceptable, but not complete, match to the CCSS.
6.SP.3	6	Statistics and Probability	Develop understanding of statistical variability.	3. Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	M.6.32	32. Calculate and discuss mean, median, mode, and range of a set of discrete data to solve real-life problems	6	The CCSS includes recognizing that a measure of variation describes how data set values vary with a single number, which is not found in the GLEs. M.6.32 only covers measures of center.
6.SP.4	6	Statistics and Probability	Summarize and describe distributions.	4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	M.8.37	37. Collect and organize data using box-and-whisker plots and use the plots to interpret quartiles and range	8	The CCSS includes dot plots and histograms which are not found in the GLEs. M.8.37 only covers box-and-whisker plots.
6.SP.5	6	Statistics and Probability	Summarize and describe distributions.	5. Summarize numerical data sets in relation to their context, such as by…	M.6.32	32. Calculate and discuss mean, median, mode, and range of a set of discrete data to solve real-life problems	6	M.7.32 also aligns. M.8.40 also aligns. The CCSS includes reporting number of observations, describing nature of attribute under investigation, giving quantitative measures of variability, and relating choice of measure of variability to shape of distribution and context. None of these is specifically found in the GLEs.
7.RP.1	7	Ratios and Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems.	1. 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.*	M.7.10	10. Determine and apply rates and ratios	7	M.8.9 also aligns. The CCSS is specifically limited to rates/ratios of fractions which is not found in the GLEs.
7.RP.2	7	Ratios and Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems.	2. Recognize and represent proportional relationships between quantities.	M.7.11	11. Use proportions involving whole numbers to solve real-life problems	7	M.7.18 also aligns. M.8.7 also aligns. The CCSS is very broad when considering its four subparts. No GLE was found that completely matches the CCSS. The matched GLEs seem to share, at least in part, the same intent as the CCSS.

7.RP.3	7	Ratios and Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems.	3. 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.*	M.7.7	7. Select and discuss appropriate operations and solve single- and multi-step, real-life problems involving positive fractions, percents, mixed numbers, decimals, and positive and negative integers	7	M.7.10 also aligns. M.7.11 also aligns.
7.NS.1	7	The Number System	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	1. 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.	M.9.5	5. Demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil)	9	The CCSS includes all rational numbers. The closest match is M.9.5.
7.NS.2	7	The Number System	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	2. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	M.9.5	5. Demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil)	9	M.7.5 also aligns. M.7.1 also aligns. The CCSS includes all rational numbers. The closest match is M.9.5. GLE M.7.5 only includes positive fractions and decimals. The CCSS includes converting rational numbers to decimal form which is found in M.7.1. However, the CCSS includes all rational numbers whereas M.7.1 would only include positive fractions and decimals.
7.NS.3	7	The Number System	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	3. Solve real-world and mathematical problems involving the four operations with rational numbers.	M.9.5	5. Demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil)	9	The CCSS includes all rational numbers. The closest match is M.9.5. The CCSS includes solving real-world problems with rational numbers, but M.9.5 focuses on computational fluency with rational numbers and falls short of the full breadth and intent of the CCSS.
7.EE.1	7	Expressions and Equations	Use properties of operations to generate equivalent expressions.	1. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	M.9.8	8. Use order of operations to simplify or rewrite variable expressions	9	The strongest alignment is to a Grade 9 GLE.
7.EE.2	7	Expressions and Equations	Use properties of operations to generate equivalent expressions.	2. Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*				No GLE match was found.

7.EE.3	7	Expressions and Equations	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *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.*	M.9.5	5. Demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil)	9	M.7.1 also aligns. M.7.8 also aligns. The CCSS includes solving multi-step real-life and mathematical problems. This specificity is not found in the GLEs. M.9.5 includes only computational fluency with rational numbers. The CCSS includes all rational numbers. M.7.1 would be limited to positive numbers only, while M.7.8 is limited to positive fractions and decimals.
7.EE.4	7	Expressions and Equations	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	4. 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.	M.8.11	11. Translate real-life situations that can be modeled by linear or exponential relationships to algebraic expressions, equations, and inequalities	8	M.8.12 also aligns. M.7.16 also aligns. The CCSS subparts are specific to 2-step equations and inequalities with rational numbers. Grade 7 does not include all rational numbers or writing equations beyond simple ones. So M.8.11 and M.8.12 are the closest GLE matches.
7.G.1	7	Geometry	Draw, construct, and describe geometrical figures and describe the relationships between them.	1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	M.8.30	30. Construct, interpret, and use scale drawings in real-life situations	8	The strongest alignment is to a Grade 8 GLE.
7.G.2	7	Geometry	Draw, construct, and describe geometrical figures and describe the relationships between them.	2. Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	M.7.24	24. Identify and draw angles (using protractors), circles, diameters, radii, altitudes, and 2-dimensional figures with given specifications	7	

7.G.3	7	Geometry	Draw, construct, and describe geometrical figures and describe the relationships between them.	3. Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.				No GLE match was found.
7.G.4	7	Geometry	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	4. 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.	M.7.28	28. Determine the radius, diameter, circumference, and area of a circle and apply these measures in real-life problems	7	The CCSS includes giving an informal derivation of the relationship between circumference and area which is not found in the GLEs.
7.G.5	7	Geometry	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	5. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	M.8.28	28. Apply concepts, properties, and relationships of adjacent, corresponding, vertical, alternate interior, complementary, and supplementary angles	8	The strongest alignment is to a Grade 8 GLE.
7.G.6	7	Geometry	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	6. 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.	M.7.20	20. Determine the perimeter and area of composite plane figures by subdivision and area addition	7	M.8.17 also aligns. The CCSS includes volume and surface area which is not found until grade 8 GLE M.8.17. Both GLEs are required to match the breadth and intent of the CCSS.
7.SP.1	7	Statistics and Probability	Use random sampling to draw inferences about a population.	1. Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.	M.8.41	41. Select random samples that are representative of the population, including sampling with and without replacement, and explain the effect of sampling on bias	8	The strongest alignment is to a Grade 8 GLE.
7.SP.2	7	Statistics and Probability	Use random sampling to draw inferences about a population.	2. 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.*				No GLE match was found.

7.SP.3	7	Statistics and Probability	Draw informal comparative inferences about two populations.	3. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *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.*				No GLE match was found.
7.SP.4	7	Statistics and Probability	Draw informal comparative inferences about two populations.	4. 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.*				No GLE match was found.
7.SP.5	7	Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	5. Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	M.5.32	32. Represent probabilities as common fractions and recognize that probabilities fall between 0 and 1, inclusive	5	GLE alignment is 2 grade levels before CCSS.
7.SP.6	7	Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	6. Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *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.*	M.7.37	37. Determine probability from experiments and from data displayed in tables and graphs	7	M.8.44 also aligns. The CCSS includes both approximating the probability of a chance event (experimental probability) and predicting approximate relative frequency. Both M.7.37 and M.8.44 are required to meet the full breadth and intent of the CCSS.

7.SP.7	7	Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	7. 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.	M.7.37	37. Determine probability from experiments and from data displayed in tables and graphs	7	M.7.38 also aligns. The CCSS and the GLEs use different descriptions, but they seem to share similar intent.
7.SP.8	7	Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	8. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	M.8.45	45. Calculate, illustrate, and apply single- and multiple-event probabilities, including mutually exclusive, independent events and non-mutually exclusive, dependent events	8	M.9.30 also aligns. M.9.31 also aligns.
8.NS.1	8	The Number System	Know that there are numbers that are not rational, and approximate them by rational numbers.	1. 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. [New wording per October 29, 2010 version of CCSS.]	M.9.1	1. Identify and describe differences among natural numbers, whole numbers, integers, rational numbers, and irrational numbers	9	The strongest alignment is to a Grade 9 GLE.
8.NS.2	8	The Number System	Know that there are numbers that are not rational, and approximate them by rational numbers.	2. 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 $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*				No GLE match was found. The CCSS includes specificity which is not found in the GLEs.
8.EE.1	8	Expressions and Equations	Work with radicals and integer exponents.	1. Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.*	M.9.2	2. Evaluate and write numerical expressions involving integer exponents	9	The strongest alignment is to a Grade 9 GLE.
8.EE.2	8	Expressions and Equations	Work with radicals and integer exponents.	2. Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	M.7.13	13. Determine the square root of perfect squares and mentally approximate other square roots by identifying the two whole numbers between which they fall	7	The CCSS includes representing solutions of simple square/cube root equations, evaluating small perfect cubes, and knowing that square root 2 is irrational. None of these is specifically found in the GLEs.

8.EE.3	8	Expressions and Equations	Work with radicals and integer exponents.	3. 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.*	M.9.3	3. Apply scientific notation to perform computations, solve problems, and write representations of numbers	9	M.8.4 also aligns. The CCSS includes use of both positive and negative exponents, so M.9.3 is the closest match since M.8.4 is limited to positive exponents.
8.EE.4	8	Expressions and Equations	Work with radicals and integer exponents.	4. 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.	M.9.3	3. Apply scientific notation to perform computations, solve problems, and write representations of numbers	9	M.8.4 also aligns. M.9.21 also aligns. The CCSS includes use of both positive and negative exponents, so M.9.3 is the closest match since M.8.4 is limited to positive exponents.
8.EE.5	8	Expressions and Equations	Understand the connections between proportional relationships, lines, and linear equations.	5. 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.*	M.9.23	23. Use coordinate methods to solve and interpret problems (e.g., slope as rate of change, intercept as initial value, intersection as common solution, midpoint as equidistant)	9	M.9.25 also aligns. M.8.15 also aligns.
8.EE.6	8	Expressions and Equations	Understand the connections between proportional relationships, lines, and linear equations.	6. Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.				No GLE match was found.

8.EE.7	8	Expressions and Equations	Analyze and solve linear equations and pairs of simultaneous linear equations.	7. Solve linear equations in one variable.	M.8.12	12. Solve and graph solutions of multi-step linear equations and inequalities	8	The CCSS subparts include specificity about equations with one solution, infinitely many solutions, and no solutions, and use of rational number coefficients, which is not found in M.8.12. The CCSS includes equations that require expanding expressions and collecting like terms. Simplification of expressions is not found until M.9.8. However, in M.6.17, there is an example of where collecting like terms would occur. Thus it is unclear at what point expanding expressions and collecting like terms occurs in the GLEs and if it is included specifically in M.8.12.
8.EE.8	8	Expressions and Equations	Analyze and solve linear equations and pairs of simultaneous linear equations.	8. Analyze and solve pairs of simultaneous linear equations.	M.9.16	16. Interpret and solve systems of linear equations using graphing, substitution, elimination, with and without technology, and matrices using technology	9	M.9.23 also aligns.
8.F.1	8	Functions	Define, evaluate, and compare functions.	1. 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.	M.9.35	35. Determine if a relation is a function and use appropriate function notation	9	The strongest alignment is to a Grade 9 GLE.
8.F.2	8	Functions	Define, evaluate, and compare functions.	2. 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.*	M.9.39	39. Compare and contrast linear functions algebraically in terms of their rates of change and intercepts	9	The CCSS does not limit types of functions, even though the example provided is linear, and includes algebraic, graphical, numerical, and verbal representations. M.9.39 is limited to comparing and contrasting linear functions algebraically, so it is below the full breadth of the CCSS.
8.F.3	8	Functions	Define, evaluate, and compare functions.	3. Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *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.*	M.9.38	38. Identify and describe the characteristics of families of linear functions, with and without technology	9	The CCSS includes giving examples of functions that are not linear which is not found in M.9.38.

8.F.4	8	Functions	Use functions to model relationships between quantities.	4. 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.	M.8.11	11. Translate real-life situations that can be modeled by linear or exponential relationships to algebraic expressions, equations, and inequalities	8	M.8.15 also aligns. M.9.37 also aligns.
8.F.5	8	Functions	Use functions to model relationships between quantities.	5. Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	M.8.15	15. Describe and compare situations with constant or varying rates of change	8	M.8.46 also aligns. The CCSS and the GLEs do not contain the same language, but they do seem to have similar intents. The CCSS is limited to qualitative descriptions from analyzing a graph. This limit is not found in the GLEs. The CCSS includes sketching a graph which is not found in the GLEs.
8.G.1	8	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	1. Verify experimentally the properties of rotations, reflections, and translations…	M.8.25	25. Predict, draw, and discuss the resulting changes in lengths, orientation, angle measures, and coordinates when figures are translated, reflected across horizontal or vertical lines, and rotated on a grid	8	
8.G.2	8	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	2. Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	M.8.24	24. Demonstrate conceptual and practical understanding of symmetry, similarity, and congruence and identify similar and congruent figures	8	M.8.25 also aligns. The CCSS contains specificity in defining congruent figures in terms of transformations. This specificity is not found in the GLEs.
8.G.3	8	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	3. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	M.8.25	25. Predict, draw, and discuss the resulting changes in lengths, orientation, angle measures, and coordinates when figures are translated, reflected across horizontal or vertical lines, and rotated on a grid	8	M.8.26 also aligns.

8.G.4	8	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	4. Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	M.8.24	24. Demonstrate conceptual and practical understanding of symmetry, similarity, and congruence and identify similar and congruent figures	8	M.8.26 also aligns. M.8.25 also aligns. The CCSS contains specificity in defining similar figures in terms of transformations. This specificity is not found in the GLEs.
8.G.5	8	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	5. Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.*	M.8.28	28. Apply concepts, properties, and relationships of adjacent, corresponding, vertical, alternate interior, complementary, and supplementary angles	8	M.10.10 also aligns. The CCSS includes angle sum and exterior angle of triangles and angle-angle criterion for triangle similarity, which is not found in the GLEs. M.10.10 appears to cover several general topics that could possibly include all of the same topics from the CCSS, but it could not be determined with complete certainty. M.7.30 was considered as a possible match, but the GLE includes applying the knowledge that the interior angles in a triangle have a 180 degree angle sum. This is significantly different from the CCSS in using informal arguments to establish the angle sum in triangles.
8.G.6	8	Geometry	Understand and apply the Pythagorean Theorem.	6. Explain a proof of the Pythagorean Theorem and its converse.	M.8.31	31. Use area to justify the Pythagorean theorem and apply the Pythagorean theorem and its converse in real-life problems	8	
8.G.7	8	Geometry	Understand and apply the Pythagorean Theorem.	7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	M.8.31	31. Use area to justify the Pythagorean theorem and apply the Pythagorean theorem and its converse in real-life problems	8	
8.G.8	8	Geometry	Understand and apply the Pythagorean Theorem.	8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	M.10.16	16. Represent and solve problems involving distance on a number line or in the plane	10	M.8.31 also aligns. The CCSS includes specificity about applying Pythagorean theorem to find distance in a coordinate system, which is not found in the GLEs. While M.8.31 could be extended to use in the coordinate plane, there is no indication of that being its intent. Therefore, M.10.16 is the stronger match.

8.G.9	8	Geometry	Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	9. Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	M.8.17	17. Determine the volume and surface area of prisms and cylinders	8	M.10.7 also aligns. Both GLEs are required to meet the full breadth of the CCSS.
8.SP.1	8	Statistics and Probability	Investigate patterns of association in bivariate data.	1. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	M.9.29	29. Create a scatter plot from a set of data and determine if the relationship is linear or nonlinear	9	M.9.28 also aligns.
8.SP.2	8	Statistics and Probability	Investigate patterns of association in bivariate data.	2. Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	M.8.38	38. Sketch and interpret a trend line (i.e., line of best fit) on a scatterplot	8	
8.SP.3	8	Statistics and Probability	Investigate patterns of association in bivariate data.	3. 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.*	M.10.5	5. Write the equation of a line of best fit for a set of 2-variable real-life data presented in table or scatter plot form, with or without technology	10	The CCSS only includes using the equation, but does not provide clarity as to whether the equation is provided or must be first determined. However, M.10.5 is the closest match in terms of any use of equations relating to scatter plots and bivariate data sets.
8.SP.4	8	Statistics and Probability	Investigate patterns of association in bivariate data.	4. 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?*				No GLE match was found.

N-RN.1	HS	The Real Number System	Extend the properties of exponents to rational exponents.	1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, we define* $5^{1/3}$ *to be the cube root of 5 because we want* $(5^{1/3})^3 = 5^{(1/3)3}$ *to hold, so* $(5^{1/3})^3$ *must equal 5.*				No GLE match was found. The CCSS contains specificity not found in the GLEs. Rational exponents first occur in M.11-12.2, but the CCSS and the GLE do not have the same intent.
N-RN.2	HS	The Real Number System	Extend the properties of exponents to rational exponents.	2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.	M.11–12.2	2. Evaluate and perform basic operations on expressions containing rational exponents	11–12	
N-RN.3	HS	The Real Number System	Use properties of rational and irrational numbers.	3. Explain why the sum or product of two 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.				No GLE match was found. The CCSS contains specificity not found in the GLEs. Irrational numbers first occur in M.9.1, but the CCSS and the GLE do not have the same intent.
N-Q.1	HS	Quantities	Reason quantitatively and use units to solve problems.	1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	M.9.21	21. Determine appropriate units and scales to use when solving measurement problems	9	
N-Q.2	HS	Quantities	Reason quantitatively and use units to solve problems.	2. Define appropriate quantities for the purpose of descriptive modeling.				No GLE match was found.
N-Q.3	HS	Quantities	Reason quantitatively and use units to solve problems.	3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	M.9.19	19. Use significant digits in computational problems	9	M.9.20 also aligns. M.9.4 also aligns.
N-CN.1	HS	The Complex Number System	Perform arithmetic operations with complex numbers.	1. Know there is a complex number i such that $i^2 = –1$, and every complex number has the form $a + bi$ with a and b real.	M.11–12.1	1. Read, write, and perform basic operations on complex numbers	11–12	
N-CN.2	HS	The Complex Number System	Perform arithmetic operations with complex numbers.	2. Use the relation $i^2 = –1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	M.11–12.1	1. Read, write, and perform basic operations on complex numbers	11–12	
N-CN.3	HS	The Complex Number	Perform arithmetic operations with complex numbers.	3. (+) Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.	M.11–12.1	1. Read, write, and perform basic operations on complex numbers	11–12	

N-CN.4	HS	The Complex Number System	Represent complex numbers and their operations on the complex plane.	4. (+) 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.				No GLE match was found.
N-CN.5	HS	The Complex Number System	Represent complex numbers and their operations on the complex plane.	5. (+) Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. *For example,* $(1 - \sqrt{3}i)^3 = 8$ *because* $(1 - \sqrt{3}i)$ *has modulus 2 and argument* 120°.				No GLE match was found.
N-CN.6	HS	The Complex Number System	Represent complex numbers and their operations on the complex plane.	6. (+) 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.				No GLE match was found.
N-CN.7	HS	The Complex Number System	Use complex numbers in polynomial identities and equations.	7. Solve quadratic equations with real coefficients that have complex solutions.	M.11–12.9	9. Solve quadratic equations by factoring, completing the square, using the quadratic formula, and graphing	11–12	The CCSS includes quadratics that have complex solutions. This specificity is not found in M.11-12.9. However, since complex numbers are found in M.11-12.1 and use of the quadratic formula is found in M.11-12.9, complex solutions are assumed to be covered by M.11-12.9.
N-CN.8	HS	The Complex Number	Use complex numbers in polynomial identities and equations.	8. (+) Extend polynomial identities to the complex numbers. *For example, rewrite* $x^2 + 4$ as $(x + 2i)(x - 2i)$.				No GLE match was found.
N-CN.9	HS	The Complex Number	Use complex numbers in polynomial identities and equations.	9. (+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.				No GLE match was found.
N-VM.1	HS	Vector and Matrix Quantities	Represent and model with vector quantities.	1. (+) 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., $\boldsymbol{v}$, $\lvert\boldsymbol{v}\rvert$, $\lVert\boldsymbol{v}\rVert$, $\boldsymbol{v}$).				No GLE match was found. M.11-12.16 was considered as a potential match. However, it is not clear if the GLE and the CCSS have similar intents.
N-VM.2	HS	Vector and Matrix Quantities	Represent and model with vector quantities.	2. (+) Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.				No GLE match was found.

N-VM.3	HS	Vector and Matrix Quantities	Represent and model with vector quantities.	3. (+) Solve problems involving velocity and other quantities that can be represented by vectors.				No GLE match was found.
N-VM.4	HS	Vector and Matrix Quantities	Perform operations on vectors.	4. (+) Add and subtract vectors.				No GLE match was found.
N-VM.5	HS	Vector and Matrix Quantities	Perform operations on vectors.	5. (+) Multiply a vector by a scalar.				No GLE match was found.
N-VM.6	HS	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	6. (+) Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.				No GLE match was found. The CCSS was interpreted to mean matrices are created to represent data. M.10.22 was considered as a potential match, but the GLE was interpreted to mean the matrix did not have to be created, but just provided for purposes of interpretation and summary. Therefore, the CCSS does not have the same intent as the GLE.
N-VM.7	HS	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	7. (+) Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.				No GLE match was found.
N-VM.8	HS	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	8. (+) Add, subtract, and multiply matrices of appropriate dimensions.				No GLE match was found.
N-VM.9	HS	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	9. (+) Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.				No GLE match was found.
N-VM.10	HS	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	10. (+) 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.				No GLE match was found.
N-VM.11	HS	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	11. (+) 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.				No GLE match was found.

N-VM.12	HS	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	12. (+) Work with 2 × 2 matrices as a transformations of the plane, and interpret the absolute value of the determinant in terms of area.	M.11–12.16	16. Represent translations, reflections, rotations, and dilations of plane figures using sketches, coordinates, vectors, and matrices	11–12	
A-SSE.1	HS	Seeing Structure in Expressions	Interpret the structure of expressions	1. Interpret expressions that represent a quantity in terms of its context.				No GLE match was found.
A-SSE.2	HS	Seeing Structure in Expressions	Interpret the structure of expressions	2. 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* $(x^2 - y^2)(x^2 +$				No GLE match was found.
A-SSE.3	HS	Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems	3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	M.9.8	8. Use order of operations to simplify or rewrite variable expressions	9	M.11–12.5 also aligns.
A-SSE.4	HS	Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems	4. 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.*	M.11–12.26	26. Represent and solve problems involving n^{th} terms and sums for arithmetic and geometric series	11–12	The CCSS includes deriving the formula for the sum of a finite geometric series, which is not found in the GLE.
A-APR.1	HS	Arithmetic with Polynomials and Rational Expressions	Perform arithmetic operations on polynomials	1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	M.9.8	8. Use order of operations to simplify or rewrite variable expressions	9	The CCSS is specific to polynomials as a system and operations on them. GLE M.9.8 does not contain this specificity.
A-APR.2	HS	Arithmetic with Polynomials and Rational Expressions	Understand the relationship between zeros and factors of polynomials	2. 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 $p(x)$.				No GLE match was found.
A-APR.3	HS	Arithmetic with Polynomials and Rational Expressions	Understand the relationship between zeros and factors of polynomials	3. 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.	M.11–12.6	6. Analyze functions based on zeros, asymptotes, and local and global characteristics of the function	11–12	
A-APR.4	HS	Arithmetic with Polynomials and Rational Expressions	Use polynomial identities to solve problems	4. 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.*				No GLE match was found.

A-APR.5	HS	Arithmetic with Polynomials and Rational Expressions	Use polynomial identities to solve problems	5. (+) Know and apply the Binomial Theorem for 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.				No GLE match was found.
A-APR.6	HS	Arithmetic with Polynomials and Rational Expressions	Rewrite rational expressions	6. 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.				No GLE match was found.
A-APR.7	HS	Arithmetic with Polynomials and Rational Expressions	Rewrite rational expressions	7. (+) 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.				No GLE match was found.
A-CED.1	HS	Creating Equations	Create equations that describe numbers or relationships	1. 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.*	M.9.9	9. Model real-life situations using linear expressions, equations, and inequalities	9	M.9.11 also aligns. M.11-12.10 also aligns.
A-CED.2	HS	Creating Equations	Create equations that describe numbers or relationships	2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	M.9.9	9. Model real-life situations using linear expressions, equations, and inequalities	9	M.11–12.10 also aligns. M.9.15 also aligns.
A-CED.3	HS	Creating Equations	Create equations that describe numbers or relationships	3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.*	M.9.9	9. Model real-life situations using linear expressions, equations, and inequalities	9	M.9.14 also aligns. M.9.16 also aligns. The CCSS does not limit equations or inequalities to linear as does the GLEs.
A-CED.4	HS	Creating Equations	Create equations that describe numbers or relationships	4. 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.*				No GLE match was found.

A-REI.1	HS	Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning	1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.				No GLE match was found.
A-REI.2	HS	Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning	2. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.				No GLE match was found. The CCSS includes solving radical equations which is not found in any GLE. The CCSS includes solving rational equations. M.11-12.10 includes solving problems involving rational equations using technology. Since the CCSS is only focused on solving simple equations instead of problems and mentions no use of technology, it was determined that the CCSS and the GLE do not have the same intent.
A-REI.3	HS	Reasoning with Equations and Inequalities	Solve equations and inequalities in one variable	3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	M.8.12	12. Solve and graph solutions of multi-step linear equations and inequalities	8	GLE alignment is before HS CCSS. The CCSS includes solving equations with variable coefficients which is not specifically found in the GLE.
A-REI.4	HS	Reasoning with Equations and Inequalities	Solve equations and inequalities in one variable	4. Solve quadratic equations in one variable.	M.11–12.9	9. Solve quadratic equations by factoring, completing the square, using the quadratic formula, and graphing	11–12	The CCSS subparts include specificity not found in the GLE, but the CCSS and the GLE have the same intent.
A-REI.5	HS	Reasoning with Equations and Inequalities	Solve systems of equations	5. Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.				No GLE match was found.
A-REI.6	HS	Reasoning with Equations and Inequalities	Solve systems of equations	6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	M.9.16	16. Interpret and solve systems of linear equations using graphing, substitution, elimination, with and without technology, and matrices using technology	9	

A-REI.7	HS	Reasoning with Equations and Inequalities	Solve systems of equations	7. 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* $x^2 + y^2 = 3$.				No GLE match was found.
A-REI.8	HS	Reasoning with Equations and Inequalities	Solve systems of equations	8. (+) Represent a system of linear equations as a single matrix equation in a vector variable.	M.9.16	16. Interpret and solve systems of linear equations using graphing, substitution, elimination, with and without technology, and matrices using technology	9	
A-REI.9	HS	Reasoning with Equations and Inequalities	Solve systems of equations	9. (+) 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).	M.9.16	16. Interpret and solve systems of linear equations using graphing, substitution, elimination, with and without technology, and matrices using technology	9	
A-REI.10	HS	Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically	10. 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).	M.9.13	13. Translate between the characteristics defining a line (i.e., slope, intercepts, points) and both its equation and graph	9	M.11–12.4 also aligns. The CCSS and the GLEs do not share common language regarding this CCSS. However, the CCSS and GLEs were determined to have similar, if not the same, intent.
A-REI.11	HS	Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically	11. Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.	M.11–12.10	10. Model and solve problems involving quadratic, polynomial, exponential, logarithmic, step function, rational, and absolute value equations using technology	11–12	The CCSS includes linear functions which are not found in the GLE. The CCSS and the GLE do not share common language regarding this CCSS. It was determined that the GLE provides the best match to this CCSS as it would be reasonable for the content of the CCSS to be found in the GLE.
A-REI.12	HS	Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically	12. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	M.9.14	14. Graph and interpret linear inequalities in one or two variables and systems of linear inequalities	9	

F-IF.1	HS	Interpreting Functions	Understand the concept of a function and use function notation	1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x. The graph of f is the graph of the equation $y = f(x)$.	M.9.35	35. Determine if a relation is a function and use appropriate function notation	9	M.9.36 also aligns.
F-IF.2	HS	Interpreting Functions	Understand the concept of a function and use function notation	2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	M.11–12.25	25. Apply the concept of a function and function notation to represent and evaluate functions	11–12	
F-IF.3	HS	Interpreting Functions	Understand the concept of a function and use function notation	3. 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 ≥ 1.*	M.11–12.26	26. Represent and solve problems involving n^{th} terms and sums for arithmetic and geometric series	11–12	M.10.26 also aligns. The CCSS and the GLEs use different language but were determined to have similar, if not the same, intent.
F-IF.4	HS	Interpreting Functions	Interpret functions that arise in applications in terms of the context	4. 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.*	M.11–12.6	6. Analyze functions based on zeros, asymptotes, and local and global characteristics of the function	11–12	
F-IF.5	HS	Interpreting Functions	Interpret functions that arise in applications in terms of the context	5. 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.*	M.9.36	36. Identify the domain and range of functions	9	
F-IF.6	HS	Interpreting Functions	Interpret functions that arise in applications in terms of the context	6. 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.	M.11–12.6	6. Analyze functions based on zeros, asymptotes, and local and global characteristics of the function	11–12	

F-IF.7	HS	Interpreting Functions	Analyze functions using different representations	7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.	M.11–12.6	6. Analyze functions based on zeros, asymptotes, and local and global characteristics of the function	11–12	M.11–12.4 also aligns. M.11-12.7 and M.9.15 also align. The CCSS includes specificity that is not found in the GLEs. However, the CCSS and the GLEs seem to have similar intents.
F-IF.8	HS	Interpreting Functions	Analyze functions using different representations	8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	M.11–12.6	6. Analyze functions based on zeros, asymptotes, and local and global characteristics of the function	11–12	M.11–12.9 also aligns. M.11-12.4 also aligns. The CCSS includes specificity related to rewriting expressions defining functions which is not found in the GLEs. However, the CCSS and the GLEs were interpreted as having similar intents.
F-IF.9	HS	Interpreting Functions	Analyze functions using different representations	9. 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.*	M.11–12.27	27. Compare and contrast the properties of families of polynomial, rational, exponential, and logarithmic functions, with and without technology	11–12	
F-BF.1	HS	Building Functions	Build a function that models a relationship between two quantities	1. Write a function that describes a relationship between two quantities.	M.11–12.24	24. Model a given set of real-life data with a non-linear function	11–12	M.11–12.29 also aligns.
F-BF.2	HS	Building Functions	Build a function that models a relationship between two quantities	2. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.	M.11–12.26	26. Represent and solve problems involving n^{th} terms and sums for arithmetic and geometric series	11–12	The CCSS and the GLE use different language but were determined to have similar, if not the same, intent.
F-BF.3	HS	Building Functions	Build new functions from existing functions	3. 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.*	M.11–12.7	7. Explain, using technology, how the graph of a function is affected by change of degree, coefficient, and constants in polynomial, rational, radical, exponential, and logarithmic functions	11–12	M.11–12.28 also aligns. M.9.40 also aligns.
F-BF.4	HS	Building Functions	Build new functions from existing functions	4. Find inverse functions.				No GLE match was found.

F-BF.5	HS	Building Functions	Build new functions from existing functions	5. (+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.	M.11–12.3	3. Describe the relationship between exponential and logarithmic equations	11–12	The CCSS includes using the relationship between exponents and logarithms to solve problems, but the GLE is limited to describing the relationship between exponential and logarithmic equations. However, the CCSS and the GLE were determined to have similar intent.
F-LE.1	HS	Linear, [Quadratic,] and Exponential Models	Construct and compare linear, [quadratic,] and exponential models and solve problems.	1. Distinguish between situations that can be modeled with linear functions and with exponential functions.	M.8.46	46. Distinguish between and explain when real-life numerical patterns are linear/arithmetic (i.e., grows by addition) or exponential/geometric (i.e., grows by multiplication)	8	M.9.37 also aligns. M.11-12.19 and M.11-12.29 also align. GLE alignment is before HS CCSS.
F-LE.2	HS	Linear, [Quadratic,] and Exponential Models	Construct and compare linear, [quadratic,] and exponential models and solve problems.	2. 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).	M.9.15	15. Translate among tabular, graphical, and algebraic representations of functions and real-life situations	9	M.11–12.24 also aligns. M.11-12.4, M.11-12.10, M.11-12.19, M.11-12.26, and M.11-12.29 also align.
F-LE.3	HS	Linear, [Quadratic,] and Exponential Models	Construct and compare linear, [quadratic,] and exponential models and solve problems.	3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	M.11–12.6	6. Analyze functions based on zeros, asymptotes, and local and global characteristics of the function	11–12	
F-LE.4	HS	Linear, [Quadratic,] and Exponential Models	Construct and compare linear, [quadratic,] and exponential models and solve problems.	4. 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.				No GLE match was found. The CCSS includes specificity that is not found in the GLEs. M.11-12.3 was considered as a potential match. M.11-12.3 includes describing the relationship between exponential and logarithmic equations, but the intent of the CCSS was determined to be beyond that of the GLE.
F-LE.5	HS	Linear, [Quadratic,] and Exponential Models	Construct and compare linear, [quadratic,] and exponential models and solve problems.	5. Interpret the parameters in a linear or exponential function in terms of a context.				No GLE match was found. The CCSS includes specificity that is not found in the GLEs.
F-TF.1	HS	Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle	1. Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.	M.11–12.12	12. Explain the unit circle basis for radian measure and show its relationship to degree measure of angles	11–12	

F-TF.2	HS	Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle	2. 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.	M.11–12.13	13. Identify and apply the unit circle definition to trigonometric functions and use this definition to solve real-life problems	11–12	
F-TF.3	HS	Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle	3. (+) Use special triangles to determine geometrically the values of sine, cosine, tangent for π/3, π/4 and π/6, and use the unit circle to express the values of sine, cosines, and tangent for x, π+x, and 2π–x in terms of their values for x, where x is any real number.	M.11–12.13	13. Identify and apply the unit circle definition to trigonometric functions and use this definition to solve real-life problems	11–12	
F-TF.4	HS	Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle	4. (+) Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.	M.11–12.13	13. Identify and apply the unit circle definition to trigonometric functions and use this definition to solve real-life problems	11–12	
F-TF.5	HS	Trigonometric Functions	Model periodic phenomena with trigonometric functions	5. Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.				No GLE match was found. The CCSS includes choosing trigonometric functions to model periodic phenomena. M.11-12.8 includes trigonometric functions but only categorizing graphs and their equations as such. The CCSS and the GLE were determined not to have similar intent.
F-TF.6	HS	Trigonometric Functions	Model periodic phenomena with trigonometric functions	6. (+) Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.				No GLE match was found.
F-TF.7	HS	Trigonometric Functions	Model periodic phenomena with trigonometric functions	7. (+) 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.				No GLE match was found.
F-TF.8	HS	Trigonometric Functions	Prove and apply trigonometric identities	8. Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find sin(θ), cos(θ), or tan(θ) given sin(θ), cos(θ), or tan(θ) and the quadrant of the angle. [New wording per October 29, 2010 version of CCSS.]				No GLE match was found. The CCSS is specific in the content of the proof. M.10.19 includes proofs, but does not include a complete list of specific proof content. Therefore, the CCSS and the GLE were not considered a match in this case.

F-TF.9	HS	Trigonometric Functions	Prove and apply trigonometric identities	9. (+) Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.				No GLE match was found. The CCSS is specific in the content of the proof. M.10.19 includes proofs, but does not include a complete list of specific proof content. Therefore, the CCSS and the GLE were not considered a match in this case. The CCSS includes using addition/subtraction formulas for sine, cosine, and tangent to solve problems, which is not found in the GLEs.
G-CO.1	HS	Congruence	Experiment with transformations in the plane	1. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.				No GLE match was found. The CCSS contains specificity that is not found in the GLEs.
G-CO.2	HS	Congruence	Experiment with transformations in the plane	2. Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).	M.8.25	25. Predict, draw, and discuss the resulting changes in lengths, orientation, angle measures, and coordinates when figures are translated, reflected across horizontal or vertical lines, and rotated on a grid	8	M.8.26 also aligns. M.10.14, M.10.15, M.11-12.16. GLE alignment is before HS CCSS.
G-CO.3	HS	Congruence	Experiment with transformations in the plane	3. Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.				No GLE match was found. The CCSS contains specificity that is not found in the GLEs.
G-CO.4	HS	Congruence	Experiment with transformations in the plane	4. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.				No GLE match was found. The CCSS contains specificity that is not found in the GLEs.
G-CO.5	HS	Congruence	Experiment with transformations in the plane	5. Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	M.8.25	25. Predict, draw, and discuss the resulting changes in lengths, orientation, angle measures, and coordinates when figures are translated, reflected across horizontal or vertical lines, and rotated on a grid	8	M.8.26 also aligns. M.10.14, M.10.15, M.11-12.16. GLE alignment is before HS CCSS.

G-CO.6	HS	Congruence	Understand congruence in terms of rigid motions	6. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	M.8.25	25. Predict, draw, and discuss the resulting changes in lengths, orientation, angle measures, and coordinates when figures are translated, reflected across horizontal or vertical lines, and rotated on a grid	8	M.11–12.16 also aligns. GLE alignment is before HS CCSS. The CCSS includes using the definition of congruence in terms of rigid motions to decide if two figures are congruent, which is not found in the GLEs. M.8.24 was considered as a potential match because it includes identifying congruent figures. However, it is not clear if this is tied to the definition of congruence in terms of rigid motions.
G-CO.7	HS	Congruence	Understand congruence in terms of rigid motions	7. Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.				No GLE match was found. The CCSS contains specificity that is not found in the GLEs.
G-CO.8	HS	Congruence	Understand congruence in terms of rigid motions	8. Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.				No GLE match was found. The CCSS contains specificity that is not found in the GLEs.
G-CO.9	HS	Congruence	Prove geometric theorems	9. 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.*	M.10.19	19. Develop formal and informal proofs (e.g., Pythagorean theorem, flow charts, paragraphs)	10	The CCSS contains specific content of proofs. The CCSS was only aligned to the GLEs at the proof level, rather than also at the specific content level.
G-CO.10	HS	Congruence	Prove geometric theorems	10. Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°; 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.*	M.10.19	19. Develop formal and informal proofs (e.g., Pythagorean theorem, flow charts, paragraphs)	10	The CCSS contains specific content of proofs. The CCSS was only aligned to the GLEs at the proof level, rather than also at the specific content level.

G-CO.11	HS	Congruence	Prove geometric theorems	11. 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.*	M.10.19	19. Develop formal and informal proofs (e.g., Pythagorean theorem, flow charts, paragraphs)	10	The CCSS contains specific content of proofs. The CCSS was only aligned to the GLEs at the proof level, rather than also at the specific content level.
G-CO.12	HS	Congruence	Make geometric constructions	12. 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.*	M.10.9	9. Construct 2- and 3-dimensional figures when given the name, description, or attributes, with and without technology	10	
G-CO.13	HS	Congruence	Make geometric constructions	13. Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	M.10.9	9. Construct 2- and 3-dimensional figures when given the name, description, or attributes, with and without technology	10	
G-SRT.1	HS	Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations	1. Verify experimentally the properties of dilations given by a center and a scale factor…	M.8.26	26. Predict, draw, and discuss the resulting changes in lengths, orientation, and angle measures that occur in figures under a similarity transformation (dilation)	8	The strongest alignment is to a Grade 8 GLE.
G-SRT.2	HS	Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations	2. Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.	M.8.26	26. Predict, draw, and discuss the resulting changes in lengths, orientation, and angle measures that occur in figures under a similarity transformation (dilation)	8	The strongest alignment is to a Grade 8 GLE.

G-SRT.3	HS	Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations	3. Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.				No GLE match was found. The CCSS is specific to establishing the AA criterion for two triangles to be similar using similarity transformations. M.8.26 includes similarity transformations, but it is not clear if the GLE extends to establishing the AA criterion for triangle similarity.
G-SRT.4	HS	Similarity, Right Triangles, and Trigonometry	Prove theorems involving similarity	4. 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.*	M.10.19	19. Develop formal and informal proofs (e.g., Pythagorean theorem, flow charts, paragraphs)	10	The CCSS contains specific content of proofs. The CCSS was only aligned to the GLEs at the proof level, rather than also at the specific content level.
G-SRT.5	HS	Similarity, Right Triangles, and Trigonometry	Prove theorems involving similarity	5. Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	M.10.18	18. Determine angle measures and side lengths of right and similar triangles using trigonometric ratios and properties of similarity, including congruence	10	M.10.19 also aligns. M.10.4 also aligns.
G-SRT.6	HS	Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios and solve problems involving right triangles	6. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	M.10.3	3. Define *sine* , *cosine* , and *tangent* in ratio form and calculate them using technology	10	
G-SRT.7	HS	Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios and solve problems involving right triangles	7. Explain and use the relationship between the sine and cosine of complementary angles.				No GLE match was found. The CCSS contains specificity that is not found in the GLEs.
G-SRT.8	HS	Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios and solve problems involving right triangles	8. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	M.10.8	8. Model and use trigonometric ratios to solve problems involving right triangles	10	M.10.12 also aligns. M.10.18 also aligns.
G-SRT.9	HS	Similarity, Right Triangles, and Trigonometry	Apply trigonometry to general triangles	9. (+) 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.				No GLE match was found.

G-SRT.10	HS	Similarity, Right Triangles, and Trigonometry	Apply trigonometry to general triangles	10. (+) Prove the Laws of Sines and Cosines and use them to solve problems.	M.11–12.14	14. Use the Law of Sines and the Law of Cosines to solve problems involving triangle measurements	11–12	M.10.19 also aligns. The CCSS contains specific content of proofs. The CCSS was aligned to M.10.19 at the proof level only. The GLEs do not contain specificity in terms of proving the Laws of Sines and Cosines.
G-SRT.11	HS	Similarity, Right Triangles, and Trigonometry	Apply trigonometry to general triangles	11. (+) 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).	M.11–12.14	14. Use the Law of Sines and the Law of Cosines to solve problems involving triangle measurements	11–12	
G-C.1	HS	Circles	Understand and apply theorems about circles	1. Prove that all circles are similar.	M.10.19	19. Develop formal and informal proofs (e.g., Pythagorean theorem, flow charts, paragraphs)	10	The CCSS contains specific content of proofs. The CCSS was only aligned to the GLEs at the proof level, rather than also at the specific content level.
G-C.2	HS	Circles	Understand and apply theorems about circles	2. 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.*	M.10.13	13. Solve problems and determine measurements involving chords, radii, arcs, angles, secants, and tangents of a circle	10	
G-C.3	HS	Circles	Understand and apply theorems about circles	3. Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	M.10.9	9. Construct 2- and 3-dimensional figures when given the name, description, or attributes, with and without technology	10	M.10.19 also aligns. The CCSS contains specific content of proofs. The prove portion of the CCSS was only aligned to the GLEs at the proof level, rather than also at the specific content level.
G-C.4	HS	Circles	Understand and apply theorems about circles	4. (+) Construct a tangent line from a point outside a given circle to the circle.	M.10.9	9. Construct 2- and 3-dimensional figures when given the name, description, or attributes, with and without technology	10	
G-C.5	HS	Circles	Find arc lengths and areas of sectors of circles	5. Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.				No GLE match was found.

G-GPE.1	HS	Expressing Geometric Properties with Equations	Translate between the geometric description and the equation for a conic section	1. 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.				No GLE match was found. The CCSS contains specificity related to a conic section that is not found in the GLEs. M.11-12.15 includes identifying and describing conics, but the CCSS and the GLE were determined to have different intents.
G-GPE.2	HS	Expressing Geometric Properties with Equations	Translate between the geometric description and the equation for a conic section	2. Derive the equation of a parabola given a focus and directrix.				No GLE match was found. The CCSS contains specificity related to a conic section that is not found in the GLEs. M.11-12.15 includes identifying and describing conics, but the CCSS and the GLE were determined to have different intents.
G-GPE.3	HS	Expressing Geometric Properties with Equations	Translate between the geometric description and the equation for a conic section	3. (+) Derive the equations of ellipses and hyperbolas given foci and directrices.				No GLE match was found. The CCSS contains specificity related to conic sections that is not found in the GLEs. M.11-12.15 includes identifying and describing conics, but the CCSS and the GLE were determined to have different intents.
G-GPE.4	HS	Expressing Geometric Properties with Equations	Use coordinates to prove simple geometric theorems algebraically	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).*	M.10.19	19. Develop formal and informal proofs (e.g., Pythagorean theorem, flow charts, paragraphs)	10	The CCSS contains specific content of proofs. The CCSS was only aligned to the GLEs at the proof level, rather than also at the specific content level.
G-GPE.5	HS	Expressing Geometric Properties with Equations	Use coordinates to prove simple geometric theorems algebraically	5. 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).	M.10.19	19. Develop formal and informal proofs (e.g., Pythagorean theorem, flow charts, paragraphs)	10	M.10.6 also aligns. The CCSS contains specific content of proofs. The prove portion of the CCSS was only aligned to the GLEs at the proof level, rather than also at the specific content level.
G-GPE.6	HS	Expressing Geometric Properties with Equations	Use coordinates to prove simple geometric theorems algebraically	6. Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	M.10.16	16. Represent and solve problems involving distance on a number line or in the plane	10	

G-GPE.7	HS	Expressing Geometric Properties with Equations	Use coordinates to prove simple geometric theorems algebraically	7. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.	M.10.16	16. Represent and solve problems involving distance on a number line or in the plane	10	
G-GMD.1	HS	Geometric Measurement and Dimension	Explain volume formulas and use them to solve problems	1. Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. *Use dissection arguments, Cavalieri's principle, and informal limit arguments.*	M.10.19	19. Develop formal and informal proofs (e.g., Pythagorean theorem, flow charts, paragraphs)	10	The CCSS contains specific content of informal arguments which were considered to be informal proofs. The CCSS was only aligned to the GLEs at the proof level, rather than also at the specific content level.
G-GMD.2	HS	Geometric Measurement and Dimension	Explain volume formulas and use them to solve problems	2. (+) Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.	M.10.19	19. Develop formal and informal proofs (e.g., Pythagorean theorem, flow charts, paragraphs)	10	The CCSS contains specific content of informal arguments which were considered to be informal proofs. The CCSS was only aligned to the GLEs at the proof level, rather than also at the specific content level.
G-GMD.3	HS	Geometric Measurement and Dimension	Explain volume formulas and use them to solve problems	3. Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.	M.10.7	7. Find volume and surface area of pyramids, spheres, and cones	10	M.8.17 also aligns. Both M.10.7 and M.8.17 are required to match the full breadth of the CCSS.
G-GMD.4	HS	Geometric Measurement and Dimension	Visualize relationships between two-dimensional and three-dimensional objects	4. Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.				No GLE match was found. The CCSS contains specificity that is not found in the GLEs. M.11-12.15 was considered as a possible match since a conic is the result of a plane intersecting a cone. However, it was determined that the CCSS and the GLE do not have the same intent.
G-MG.1	HS	Modeling with Geometry	Apply geometric concepts in modeling situations	1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).				No GLE match was found.
G-MG.2	HS	Modeling with Geometry	Apply geometric concepts in modeling situations	2. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).				No GLE match was found. The CCSS contains specificity that is not found in the GLEs. M.8.18 was considered as a possible match because it includes density. However, it was determined that the CCSS and the GLE do not have the same intent or the same breadth.

G-MG.3	HS	Modeling with Geometry	Apply geometric concepts in modeling situations	3. Apply geometric methods to solve design problems (e.g., design an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).				No GLE match was found.
S-ID.1	HS	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable	1. Represent data with plots on the real number line (dot plots, histograms, and box plots).	M.8.37	37. Collect and organize data using box-and-whisker plots and use the plots to interpret quartiles and range	8	GLE alignment is before HS CCSS. The CCSS includes dot plots and histograms which are not found in the GLEs.
S-ID.2	HS	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable	2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.				No GLE match was found. The CCSS includes comparing center and spread of data sets using statistics appropriate to the shape of the distribution. M.9.27 was considered as a possible match, but the GLE is limited to determining most appropriate measure of central tendency based on distribution of the data set, which is below the full breadth and intent of the CCSS.
S-ID.3	HS	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable	3. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).	M.9.28	28. Identify trends in data and support conclusions by using distribution characteristics such as patterns, clusters, and outliers	9	
S-ID.4	HS	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable	4. 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.	M.11–12.21	21. Describe and interpret displays of normal and non-normal distributions	11–12	
S-ID.5	HS	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables	5. Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.	M.10.22	22. Interpret and summarize a set of experimental data presented in a table, bar graph, line graph, scatter plot, matrix, or circle graph	10	

S-ID.6	HS	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables	6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.	M.9.29	29. Create a scatter plot from a set of data and determine if the relationship is linear or nonlinear	9	M.10.5 also aligns. M.10.20 and M.11-12.19 also align.
S-ID.7	HS	Interpreting Categorical and Quantitative Data	Interpret linear models	7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	M.8.38	38. Sketch and interpret a trend line (i.e., line of best fit) on a scatterplot	8	The CCSS is specific to interpreting slope and intercept of a linear model in the context of the data. No GLE was found that includes this specificity. M.8.38 is the closest match, but only so in terms of using a trend line. The CCSS does not provide clarity as to whether the linear model is graphical or algebraic, or both.
S-ID.8	HS	Interpreting Categorical and Quantitative Data	Interpret linear models	8. Compute (using technology) and interpret the correlation coefficient of a linear fit.	M.11–12.20	20. Interpret and explain, with the use of technology, the regression coefficient and the correlation coefficient for a set of data	11–12	
S-ID.9	HS	Interpreting Categorical and Quantitative Data	Interpret linear models	9. Distinguish between correlation and causation.				No GLE match was found.
S-IC.1	HS	Making Inferences and Justifying Conclusions	Understand and evaluate random processes underlying statistical experiments	1. Understand statistics as a process for making inferences about population parameters based on a random sample from that population.	M.11–12.17	17. Discuss the differences between samples and populations	11–12	M.11–12.22 also aligns.
S-IC.2	HS	Making Inferences and Justifying Conclusions	Understand and evaluate random processes underlying statistical experiments	2. 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?*	M.11–12.22	22. Explain the limitations of predictions based on organized sample sets of data	11–12	M.9.30 also aligns. M.10.25 also aligns.
S-IC.3	HS	Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies	3. Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.	M.11–12.18	18. Devise and conduct well-designed experiments/surveys involving randomization and considering the effects of sample size and bias	11–12	

S-IC.4	HS	Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies	4. 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.	M.11–12.18	18. Devise and conduct well-designed experiments/surveys involving randomization and considering the effects of sample size and bias	11–12	M.11–12.22 also aligns. The CCSS includes specificity in estimating a population mean or proportion and developing a margin of error, which are not found in the GLEs.
S-IC.5	HS	Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies	5. Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.				No GLE match was found. The CCSS contains specificity that is not found in the GLEs.
S-IC.6	HS	Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies	6. Evaluate reports based on data.				No GLE match was found.
S-CP.1	HS	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data	1. 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”).	M.9.31	31. Define probability in terms of sample spaces, outcomes, and events	9	
S-CP.2	HS	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data	2. 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.				No GLE match was found. The CCSS includes specificity about independent events which is not found in the GLEs. M.8.45 includes calculating, illustrating, and applying probabilities of independent events, but it is not clear if the GLE would include the same level of specificity found in the CCSS. Therefore, the CCSS and the GLE were determined to have different intents.
S-CP.3	HS	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data	3. Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.	M.10.21	21. Determine the probability of conditional and multiple events, including mutually and non-mutually exclusive events	10	

S-CP.4	HS	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data	4. Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. *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.*	M.10.22	22. Interpret and summarize a set of experimental data presented in a table, bar graph, line graph, scatter plot, matrix, or circle graph	10	M.10.21 also aligns.
S-CP.5	HS	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data	5. 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.*				No GLE match was found. The CCSS contains specificity that is not found in the GLEs.
S-CP.6	HS	Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model	6. Find the conditional probability of *A* given *B* as the fraction of *B*'s outcomes that also belong to *A* , and interpret the answer in terms of the model.	M.10.21	21. Determine the probability of conditional and multiple events, including mutually and non-mutually exclusive events	10	
S-CP.7	HS	Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model	7. 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.	M.10.21	21. Determine the probability of conditional and multiple events, including mutually and non-mutually exclusive events	10	The CCSS contains specific reference to the Addition Rule which is not found in the GLE.
S-CP.8	HS	Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model	8. (+) Apply the general Multiplication Rule in a uniform probability model, P(A and B) = P(A)P(B|A) = P(B)P(A|B), and interpret the answer in terms of the model.	M.10.21	21. Determine the probability of conditional and multiple events, including mutually and non-mutually exclusive events	10	The CCSS contains specific reference to the Multiplication Rule which is not found in the GLE.
S-CP.9	HS	Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model	9. (+) Use permutations and combinations to compute probabilities of compound events and solve problems.	M.9.32	32. Compute probabilities using geometric models and basic counting techniques such as combinations and permutations	9	

S-MD.1	HS	Using Probability to Make Decisions	Calculate expected values and use them to solve problems	1. (+) 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.				No GLE match was found.
S-MD.2	HS	Using Probability to Make Decisions	Calculate expected values and use them to solve problems	2. (+) Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.				No GLE match was found.
S-MD.3	HS	Using Probability to Make Decisions	Calculate expected values and use them to solve problems	3. (+) 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.*				No GLE match was found.
S-MD.4	HS	Using Probability to Make Decisions	Calculate expected values and use them to solve problems	4. (+) 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?*				No GLE match was found.
S-MD.5	HS	Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions	5. (+) Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.				No GLE match was found.
S-MD.6	HS	Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions	6. (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	M.10.25	25. Use discrete math to model real life situations (e.g., fair games, elections)	10	
S-MD.7	HS	Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions	7. (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).	M.10.25	25. Use discrete math to model real life situations (e.g., fair games, elections)	10	