SOUTH CAROLINA DEPARTMENT OF EDUCATION

Mathematics Standards Crosswalk from Mathematics Standards and WIDA ELD Standards 2020 for Mathematics

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Overview of Crosswalk between the *2025 SC CCR Mathematics Standards* and WIDA ELD Standards for Mathematics

The purpose of the crosswalk document is to illustrate the alignment between the 2025 South Carolina College- and Career-Ready (SC CCR) Mathematics Standards and the WIDA English Language Development (ELD) Standards for Mathematics while supporting integration of language and content. Organized by grade bands—K–2, 3–5, 6–8, and High School—it provides a breakdown of mathematics content by strand, standard, and indicator to reference the specific expectations at each grade-level. Aligned WIDA language expectations for math are presented to the right of the content indicators by language use (inform, explain, and argue), highlighting how functions such as describing, explaining, and justifying can be embedded in instruction. This structure helps educators connect content and language to support meaningful access for all learners, especially multilingual learners (ML).

To access the 2025 SC CCR Mathematics Standards Document in its entirety please utilize the following link. https://ed.sc.gov/instruction/standards/mathematics/standards/

To access the 2020 WIDA English Language Development (ELD) Standards Framework in its entirety please utilize the following link. https://wida.wisc.edu/teach/standards/eld

To access the Multilingual Learner Program Guiding Principles for additional programmatic information and resources for supporting MLs, please utilize the following link. https://ed.sc.gov/policy/federal-education-programs/esea-title-iii-part-a-multilingual-learner-program/

2025 SC CCR Mathematical Process Standards and WIDA ELD Standards for Mathematics

The 2025 South Carolina College- and Career-Ready (SC CCR) Mathematical Process Standards collectively define how students should engage with and develop understanding of mathematical content. These practices align closely with the WIDA ELD Standards, which prioritize students' use of language to make meaning, explain reasoning, justify solutions, and engage in discourse within authentic mathematical contexts. Because the process standards guide how instruction occurs, they naturally create opportunities for embedding WIDA language expectations throughout instruction. This crosswalk document highlights the clear alignment between the two documents. As a result, educators can intentionally integrate language development with mathematical practices, ensuring multilingual learners are supported in both accessing rigorous content and actively participating in meaningful mathematical learning experiences.

K-12 SC CCR Mathematical Process Standards

Standard 1: Problem Solving

Kindergarten – Twelfth Grade	WIDA Alignment
MPS.PS.1 Make sense of problems and persevere in solving them strategically.	• ELD-MA.Explain.Interpretive* • ELD-MA.Explain.Expressive* • ELD-MA.Argue.Interpretive* • ELD-MA.Argue.Expressive*

Standard 2: Representation & Communication

Kindergarten – Twelfth Grade	WIDA Alignment
MPS.RC.1 Explain ideas using precise and contextually appropriate mathematical language, tools, and models.	• ELD-MA.Inform.Interpretive* • ELD-MA.Inform.Expressive* • ELD-MA.Explain.Interpretive* • ELD-MA.Explain.Expressive* • ELD-MA.Argue.Interpretive* • ELD-MA.Argue.Expressive*

Standard 3: Connections

Kindergarten – Twelfth Grade	WIDA Alignment
MPS.C.1 Demonstrate a deep and flexible conceptual understanding of mathematical ideas, operations, and relationships while making real-world connections.	• ELD-MA.Explain.Interpretive* • ELD-MA.Explain.Expressive* • ELD-MA.Argue.Interpretive* • ELD-MA.Argue.Expressive*

Standard 4: Analyze & Justify

Kindergarten – Twelfth Grade	WIDA Alignment
MPS.AJ.1 Use critical thinking skills to reason both abstractly and quantitatively.	• ELD-MA.Explain.Interpretive* • ELD-MA.Explain.Expressive* • ELD-MA.Argue.Interpretive* • ELD-MA.Argue.Expressive*

Standard 5: Structure & Patterns

Kindergarten – Twelfth Grade	WIDA Alignment
MPS.SP.1 Identify and apply regularity in repeated reasoning to make generalizations.	• ELD-MA.Inform.Interpretive* • ELD-MA.Inform.Expressive* • ELD-MA.Explain.Interpretive* • ELD-MA.Explain.Expressive* • ELD-MA.Argue.Interpretive* • ELD-MA.Argue.Expressive*

**Additionally, some components of the WIDA standards may not fully align with the Mathematical Process Standards. It is also important to note that not all language functions and uses are represented at every grade level."*

K-2 Data, Probability, and Statistical Reasoning

Standard 1: Collect and organize data and communicate through multiple representations.

Kindergarten	WIDA Alignment
K.DPSR.1.1 Sort pictures or objects into at least two categories. Count to determine how many are in each category. Limit to 20 pictures or objects. **K.DPSR.1.2** Answer questions about data organized in a t-chart, object graph, or picture graph.	**ELD-MA.K.Inform.Interpretive** Interpret mathematical informational texts (with prompting and support) by • Identifying concept or object • Describing quantities and attributes **ELD-MA.K.Inform.Expressive** Construct mathematical informational texts (with prompting and support) that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

First Grade	WIDA Alignment
1.DPSR.1.1 Sort pictures or objects into at least three categories (not to exceed 10 items in each category). **1.DPSR.1.2** Create a survey question and collect data with up to three categories. Create charts and graphs with a single unit scale to display the data. Use the graph to draw conclusions. Limit to one-step add-to, take-from, and part-part-whole questions.	**ELD-MA.1.Inform.Interpretive** Interpret mathematical informational texts by • Identifying concept or entity • Describing attributes and characteristics **ELD-MA.1.Inform.Expressive** Construct mathematical informational texts that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

Second Grade	WIDA Alignment
2.DPSR.1.1 Create a survey question and collect data with up to four categories. Create tally charts, picture graphs, dot plots, and bar graphs with a single-unit scale to read the graph, answer questions, and draw conclusions. Limit to one-step add-to, take-from, part-part-whole, and comparison questions.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution **ELD-MA.2-3.Argue.Expressive** Construct mathematics arguments that • Create conjecture using definitions • Generalize commonalities across cases • Justify conclusion steps and strategies in simple patterns • Identify and respond to others' arguments

K-2 Measurement, Geometry, and Spatial Reasoning

Standard 1: Describe, estimate, measure, and compare objects in real-world situations using units of length, weight, currency, and time.

Kindergarten	WIDA Alignment
K.MGSR.1.1 Identify a penny, nickel, dime, and quarter. **K.MGSR.1.2** Directly compare two objects using words including *shorter, longer, taller, lighter, and heavier*.	**ELD-MA.K.Inform.Interpretive** Interpret mathematical informational texts (with prompting and support) by • Identifying concept or object • Describing quantities and attributes **ELD-MA.K.Inform.Expressive** Construct mathematical informational texts (with prompting and support) that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

First Grade	WIDA Alignment
1.MGSR.1.1 Order three objects by length from shortest to longest and longest to shortest using direct comparison. **1.MGSR.1.2** Use nonstandard physical objects to estimate and then measure the length of an item as the number of same size units of length with no gaps or overlaps. **1.MGSR.1.3** Use analog and digital clocks to tell and record time to the hour and half hour. **1.MGSR.1.4** Identify and write the values of a coin or a bill using a ¢ symbol for coin values or $ symbol for bills. Limit to penny, nickel, dime, quarter, one-dollar bill, five-dollar bill, and ten-dollar bill. **1.MGSR.1.5** Count a collection of like coins to determine the total value of the set. Limit to pennies, nickels, and dimes with values not to exceed a dollar.	**ELD-MA.1.Inform.Interpretive** Interpret mathematical informational texts by • Identifying concept or entity • Describing attributes and characteristics **ELD-MA.1.Inform.Expressive** Construct mathematical informational texts that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

Second Grade	WIDA Alignment
2.MGSR.1.1 Select and use appropriate tools to estimate and measure length of an object or distance to the nearest customary unit. Limit to inches, feet, and yards. **2.MGSR.1.2** Use analog and digital clocks to tell and record time in five-minute intervals, identifying AM and PM. **2.MGSR.1.3** Determine the value of mixed sets of coins or bills in mathematical and real-world situations and record the value using a ¢ or $ symbol. Limit to pennies, nickels, dimes, and quarters up to a dollar; one-dollar bills, five-dollar bills, ten-dollar bills, and twenty-dollar bills up to $100, and add-to or take-from problem types.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution **ELD-MA.2-3.Argue.Interpretive** Interpret mathematics arguments by • Identifying conjectures about what might be true • Distinguishing connections among ideas in justifications • Extracting mathematical operations and facts from solution strategies to create generalizations **ELD-MA.2-3.Argue.Expressive** Construct mathematics arguments that • Create conjecture using definitions • Generalize commonalities across cases • Justify conclusion steps and strategies in simple patterns • Identify and respond to others' arguments

Standard 2: Analyze, describe, and manipulate shapes to make sense of their relationships in mathematical and real-world situations.

Kindergarten	WIDA Alignment
K.MGSR.2.1 Identify and describe the attributes of triangles, squares, rectangles, circles, cubes, and spheres to include everyday situations. **K.MGSR.2.2** Describe relative positions of objects by appropriately using terms including below, above, beside, between, inside, outside, in front of, or behind.	**ELD-MA.K.Inform.Interpretive** Interpret mathematical informational texts (with prompting and support) by • Identifying concept or object • Describing quantities and attributes **ELD-MA.K.Inform.Expressive** Construct mathematical informational texts (with prompting and support) that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

First Grade	WIDA Alignment
1.MGSR.2.1 Sort a mixed set of polygons and describe the reasoning used while sorting the polygons. **1.MGSR.2.2** Identify and describe the attributes of two-dimensional shapes and three-dimensional shapes. Limit to triangle, square, rectangle, rhombus, hexagon, circle, cone, cube, cylinder, square pyramid, and sphere. **1.MGSR.2.3** Identify and describe a given shape in everyday situations to include two-dimensional shapes and three-dimensional shapes. Limit to triangle, square, rectangle, rhombus, hexagon, circle, cone, cube, cylinder, square pyramid, and sphere. **1.MGSR.2.4** Classify shapes as two-dimensional/flat or three-dimensional/solid and explain the reasoning using formal mathematical language. Limit to triangle, square, rectangle, rhombus, hexagon, circle, cone, cube, cylinder, square pyramid, and sphere. **1.MGSR.2.5** Analyze and compare a pair of two-dimensional shapes or a pair of three-dimensional shapes of assorted sizes and orientations using formal mathematical language. Limit to triangle, square, rectangle, rhombus, hexagon, circle, cone, cube, cylinder, square pyramid, and sphere.	**ELD-MA.1.Inform.Interpretive** Interpret mathematical informational texts by • Identifying concept or entity • Describing attributes and characteristics **ELD-MA.1.Inform.Expressive** Construct mathematical informational texts that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

Second Grade	WIDA Alignment
2.MGSR.2.1 Identify and describe a given shape in everyday situations to include two-dimensional shapes and three-dimensional shapes. Limit to triangle, quadrilateral, pentagon, hexagon, octagon, circle, cone, cube, cylinder, rectangular prism, square pyramid, and sphere. **2.MGSR.2.2** Classify shapes as polygons or non-polygons and defend that determination based on their attributes. **2.MGSR.2.3** Classify two-dimensional shapes as triangles or quadrilaterals and justify each classification.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution **ELD-MA.2-3.Argue.Interpretive** Interpret mathematics arguments by • Identifying conjectures about what might be true • Distinguishing connections among ideas in justifications • Extracting mathematical operations and facts from solution strategies to create generalizations **ELD-MA.2-3.Argue.Expressive** Construct mathematics arguments that • Create conjecture using definitions • Generalize commonalities across cases • Justify conclusion steps and strategies in simple patterns • Identify and respond to others' arguments

K-2 Numerical Reasoning

Standard 1: Represent multi-digit numbers in a variety of ways to build the foundation for place value understanding.

Kindergarten	WIDA Alignment
K.NR.1.1 Read, write, and represent the numerals 0 to 20 and represent the written numeral with concrete models. **K.NR.1.2** Compose and decompose numbers from 11 to 19 into tens and ones by using concrete objects, pictorial models, or drawings to demonstrate understanding that the teen numbers are composed of one set of ten ones and a few more ones.	**ELD-MA.K.Inform.Interpretive** Interpret mathematical informational texts (with prompting and support) by • Identifying concept or object • Describing quantities and attributes **ELD-MA.K.Inform.Expressive** Construct mathematical informational texts (with prompting and support) that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

First Grade	WIDA Alignment
1.NR.1.1 Read, write, and represent numbers to 100 using concrete models, drawings, standard form, base ten language, and equations in expanded form. **1.NR.1.2** Represent and explain that whole numbers 1 through 99 are organized into groups of tens and ones, and a digit has a different value depending on its placement. **1.NR.1.3** Compose and decompose whole numbers from 1 through 99 in more than one way using tens and ones. Explain and demonstrate each composition or decomposition with the use of concrete models, drawings, and/or equations. **1.NR.1.4** Apply place value reasoning to identify the number that is one more and one less, ten more, and ten less than a given number with up to two digits.	**ELD-MA.1.Inform.Interpretive** Interpret mathematical informational texts by • Identifying concept or entity • Describing attributes and characteristics **ELD-MA.1.Inform.Expressive** Construct mathematical informational texts that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

Second Grade	WIDA Alignment
2.NR.1.1 Read, write, and represent numbers up to 999 using concrete models, drawings, standard form, base ten language, and equations in expanded form. **2.NR.1.2** Represent and explain that whole numbers 1 through 999 are organized into groups of hundreds, tens, and ones, and a digit has a different value depending on its placement. **2.NR.1.3** Compose and decompose whole numbers from 1 through 999 in more than one way using hundreds, tens, and ones. Explain and demonstrate each composition or decomposition with the use of concrete models, drawings, and equations. **2.NR.1.4** Apply place value reasoning to identify the number that is 10 more, 10 less, 100 more, and 100 less than a given three-digit number through 999.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution **ELD-MA.2-3.Argue.Interpretive** Interpret mathematics arguments by • Identifying conjectures about what might be true • Distinguishing connections among ideas in justifications • Extracting mathematical operations and facts from solution strategies to create generalizations **ELD-MA.2-3.Argue.Expressive** Construct mathematics arguments that • Create conjecture using definitions • Generalize commonalities across cases • Justify conclusion steps and strategies in simple patterns • Identify and respond to others' arguments

Standard 2: Explain the relationship between numbers and quantities.

Kindergarten	WIDA Alignment
K.NR.2.1 Count forward by ones and tens to 100 and backward from 10 by ones. **K.NR.2.2** Subitize a quantity of up to 10 objects in an organized arrangement without counting, explaining how one grouped the objects within the set to determine the total quantity. **K.NR.2.3** Given a group of up to 20 objects, count the number of objects in that group and represent the number of objects with a written numeral. State the number of objects in a rearrangement of that group without recounting. **K.NR.2.4** Given a number from 0 to 20, count out that many objects.	**ELD-MA.K.Inform.Interpretive** Interpret mathematical informational texts (with prompting and support) by • Identifying concept or object • Describing quantities and attributes **ELD-MA.K.Inform.Expressive** Construct mathematical informational texts (with prompting and support) that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

First Grade	WIDA Alignment
1.NR.2.1 Count by ones forward or backward starting at any number up to 120 making accurate decade transitions. **1.NR.2.2** Skip count by fives and tens from any multiple of five to 100, identifying place value patterns in the sequence.	**ELD-MA.1.Inform.Interpretive** Interpret mathematical informational texts by • Identifying concept or entity • Describing attributes and characteristics **ELD-MA.1.Inform.Expressive** Construct mathematical informational texts that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

Second Grade	WIDA Alignment
2.NR.2.1 Count forward and backward by ones, tens, and hundreds from any number within 999 and identify patterns in the sequence.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution **ELD-MA.2-3.Argue.Expressive** Construct mathematics arguments that • Create conjecture using definitions • Generalize commonalities across cases • Justify conclusion steps and strategies in simple patterns • Identify and respond to others' arguments

Standard 3: Demonstrate the ability to compare quantities of objects and numerals representing quantities of objects.

Kindergarten	WIDA Alignment
K.NR.3.1 Compare up to 10 objects in one set to another set of up to 10 objects using the phrases *more than, fewer than*, or *the same as*.	**ELD-MA.K.Inform.Interpretive** Interpret mathematical informational texts (with prompting and support) by • Identifying concept or object • Describing quantities and attributes **ELD-MA.K.Inform.Expressive** Construct mathematical informational texts (with prompting and support) that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

First Grade	WIDA Alignment
1.NR.3.1 Compare representations of two numbers up to 100 using the phrases is *greater than, is less than, or is equal to (the same value as*).	**ELD-MA.1.Inform.Interpretive** Interpret mathematical informational texts by • Identifying concept or entity • Describing attributes and characteristics **ELD-MA.1.Inform.Expressive** Construct mathematical informational texts that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

Second Grade	WIDA Alignment
2.NR.3.1 Compare representations of whole numbers up to 999 and write a comparison statement using words and symbols. Limit to *is equal to (=), is less than (<),* and/or *is greater than (>)*. **2.NR.3.2** When given a two-digit number, identify which multiple of 10 the number is closest to.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution **ELD-MA.2-3.Argue.Expressive** Construct mathematics arguments that • Create conjecture using definitions • Generalize commonalities across cases • Justify conclusion steps and strategies in simple patterns • Identify and respond to others' arguments

Standard 4: Represent and compare partitioned shapes in multiple ways using part-whole relationships.

First Grade	WIDA Alignment
1.NR.4.1 Partition in multiple ways squares, rectangles, and circles into two or four equal-sized parts. Name the pieces as halves and fourths.	**ELD-MA.1.Inform.Interpretive** Interpret mathematical informational texts by • Identifying concept or entity • Describing attributes and characteristics **ELD-MA.1.Inform.Expressive** Construct mathematical informational texts that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

Second Grade	WIDA Alignment
2.NR.4.1 Partition in multiple ways squares, rectangles, and circles into two or four equal sized parts, and describe the parts using the words *halves, fourths, a half of*, and *a fourth of (not quarters)*. **2.NR.4.2** Explain that when partitioning a square, rectangle, or circle into two or four equal parts, the parts become smaller as the number of parts increases.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution **ELD-MA.2-3.Argue.Interpretive** Interpret mathematics arguments by • Identifying conjectures about what might be true • Distinguishing connections among ideas in justifications • Extracting mathematical operations and facts from solution strategies to create generalizations **ELD-MA.2-3.Argue.Expressive** Construct mathematics arguments that • Create conjecture using definitions • Generalize commonalities across cases • Justify conclusion steps and strategies in simple patterns • Identify and respond to others' arguments

K-2 Patterns, Algebra, and Functional Reasoning

Standard 1: Understand and apply properties of operations and the relationship between addition and subtraction to solve problems.

Kindergarten	WIDA Alignment
K.PAFR.1.1 Add and subtract number combinations within 5. **K.PAFR.1.2** Create a sum of 10 using objects and drawings when given one of two addends 0–9, to include real-world situations. **K.PAFR.1.3** Compose and decompose numbers up to 10 in different ways. Record using objects or drawings. **K.PAFR.1.4** Solve add-to/joining, take-from/separating, part-part-whole (total unknown), part-part-whole (both addends unknown) real-world situations to find sums and differences within 10.	**ELD-MA.K.Inform.Interpretive** Interpret mathematical informational texts (with prompting and support) by • Identifying concept or object • Describing quantities and attributes **ELD-MA.K.Inform.Expressive** Construct mathematical informational texts (with prompting and support) that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

First Grade	WIDA Alignment
1.PAFR.1.1 Determine and explain if an equation within 10 is true using a variety of equation formats. **1.PAFR.1.2** Compose and decompose numbers less than or equal to 20 in more than one way. Record each composition or decomposition as an equation. **1.PAFR.1.3** Solve add-to, take-from, and part-part-whole real-world situations to find sums and differences within 20. Situations include result or change unknown, both addends unknown, and total or one part unknown. **1.PAFR.1.4** Add and subtract number combinations flexibly and accurately within 10. **1.PAFR.1.5** Apply and explain the *Commutative Property of Addition* to find the sum (through 20) of two addends and explain that the value does not change when the order of the two numbers changes. **1.PAFR.1.6** Determine an unknown number in addition and subtraction equations within 10. **1.PAFR.1.7** Find the sum of a two-digit number and a one-digit number or a two-digit number and a multiple of 10 (1–99) using concrete models, drawings, and strategies that reflect place value understanding, the inverse relationship of addition and subtraction, and the properties of the operations to justify the sum. **1.PAFR.1.8** Find the difference between two numbers that are multiples of 10, both in the range 10–90, and write the corresponding equation. Explain the reasoning used.	**ELD-MA.1.Inform.Interpretive** Interpret mathematical informational texts by • Identifying concept or entity • Describing attributes and characteristics **ELD-MA.1.Inform.Expressive** Construct mathematical informational texts that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

Second Grade	WIDA Alignment
2.PAFR.1.1 Use a strategy to accurately find sums and differences of two-digit numbers within 100 and justify the sum or difference. **2.PAFR.1.2** Determine and explain if an equation (within 20) is true using a variety of equation formats. **2.PAFR.1.3** Solve one-step add-to, take-from, part-part-whole, and additive comparison real-world situations through 99 with the unknown in any position. **2.PAFR.1.4** For any number from 0 to 99, find the number that makes 100 when added to the given number. **2.PAFR.1.5** Add and subtract number combinations flexibly and accurately within 20. **2.PAFR.1.6** Apply the *Associative Property of Addition* to find the sum (through 20) of three addends and explain that the value can be found using various grouping strategies. **2.PAFR.1.7** Determine the unknown number in addition and subtraction equations within 20, with the unknown in any position. **2.PAFR.1.8** Sort a collection of 20 or fewer objects into two groups to determine if the number of objects is even or odd. **2.PAFR.1.9** Find the total number of objects arranged in equal groups or in a rectangular array and write an addition equation to express the total as a sum (up to 25) of equal addends.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution **ELD-MA.2-3.Argue.Interpretive** Interpret mathematics arguments by • Identifying conjectures about what might be true • Distinguishing connections among ideas in justifications • Extracting mathematical operations and facts from solution strategies to create generalizations **ELD-MA.2-3.Argue.Expressive** Construct mathematics arguments that • Create conjecture using definitions • Generalize commonalities across cases • Justify conclusion steps and strategies in simple patterns • Identify and respond to others' arguments

Standard 2: Recognize, describe, extend, and create patterns.

Kindergarten	WIDA Alignment
K.PAFR.2.1 Describe, extend, and create (to the next term) simple repeating patterns in the form of *AB, AAB, ABB, and ABC*.	**ELD-MA.K.Inform.Interpretive** Interpret mathematical informational texts (with prompting and support) by • Identifying concept or object • Describing quantities and attributes **ELD-MA.K.Inform.Expressive** Construct mathematical informational texts (with prompting and support) that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

First Grade	WIDA Alignment
1.PAFR.2.1 Create, describe, and extend (to the next term) a growing shape pattern. **1.PAFR.2.2** Create, describe, and extend (to three terms within a sequence) repeating patterns using *AB, AAB, ABB, and ABC* type patterns.	**ELD-MA.1.Inform.Interpretive** Interpret mathematical informational texts by • Identifying concept or entity • Describing attributes and characteristics **ELD-MA.1.Inform.Expressive** Construct mathematical informational texts that • Define or classify concept or entity • Describe a concept or entity • Compare/contrast concepts or entities

Second Grade	WIDA Alignment
2.PAFR.2.1 Describe, extend, and create a growing shape pattern with up to three terms within a sequence. **2.PAFR.2.2** Create, describe, and extend an appropriate one-step rule for number patterns using addition and subtraction within 100.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution **ELD-MA.2-3.Argue.Interpretive** Interpret mathematics arguments by • Identifying conjectures about what might be true • Distinguishing connections among ideas in justifications • Extracting mathematical operations and facts from solution strategies to create generalizations **ELD-MA.2-3.Argue.Expressive** Construct mathematics arguments that • Create conjecture using definitions • Generalize commonalities across cases • Justify conclusion steps and strategies in simple patterns • Identify and respond to others' arguments

3-5 Data, Probability, and Statistical Reasoning

Standard 1: Create questions, collect and analyze data, and communicate through multiple representations.

Third Grade	WIDA Alignment
3.DPSR.1.1 Collect and organize categorical and numerical data based on observations, surveys, experiments, and investigations with whole number values using tables, scaled picture graphs, scaled bar graphs, or dot plots. Use titles and labels. Limit scales to multiples of 1, 2, 5, and 10. **3.DPSR.1.2** Solve one-step, real-world situations using whole number data represented in tables, scaled picture graphs, scaled bar graphs, or dot plots. Limit scales to multiples of 1, 2, 5, and 10.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution

Fourth Grade	WIDA Alignment
4.DPSR.1.1 Collect and organize numerical and categorical data based on observations, investigations, surveys, and experiments using tables, scaled bar graphs, or dot plots. Use titles and labels. Scales to include whole numbers, halves, and fourths. **4.DPSR.1.2** Solve one-step, real-world situations using whole number and fractional data represented in tables, scaled picture graphs, scaled bar graphs, or dot plots. Limit to like denominators of 2, 3, 4, 5, 6, 8, and 10.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

Fifth Grade	WIDA Alignment
5.DPSR.1.1 Describe data by determining the range and mode, including whole numbers, fractional data, and decimal data. Limit fractions to denominators of 2, 3, 4, 5, 6, 8, and 10, and limit decimals to decimals through the thousandths place. **5.DPSR.1.2** Solve two-step, real-world situations using whole number and fractional data represented in tables, line graphs, scaled bar graphs, or dot plots. Limit fractions to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100. **5.DPSR.1.3** Analyze categorical and numerical data in graphical displays to make predictions or draw conclusions. Limit displays to tables, bar graphs, dot plots, line graphs, and circle graphs with scales of whole numbers, halves, fourths, and eighths.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

Standard 2: Represent the probability of simple events and determine possible outcomes.

Third Grade	WIDA Alignment
3.DPSR.2.1 Identify the possible outcomes of a simple event.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution

Fourth Grade	WIDA Alignment
4.DPSR.2.1 Determine the possible outcomes of a simple event and record the probability as certain, possible, or impossible.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

Fifth Grade	WIDA Alignment
5.DPSR.2.1 Determine the possible outcomes of a simple event and record the probability as certain, possible, or impossible.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

3-5 Measurement, Geometry, and Spatial Reasoning

Standard 1: Solve area, perimeter, and volume problems in real-world and mathematical situations.

Third Grade	WIDA Alignment
3.MGSR.1.1 Determine the area of squares and rectangles presented in relevant problems by covering the space with square units and counting the total number of units needed. **3.MGSR.1.2** Determine the perimeter of regular and irregular triangles and quadrilaterals with known side lengths. **3.MGSR.1.3** Determine if a real-world situation is an example of the need for finding the area or the perimeter of a figure.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution

Fourth Grade	WIDA Alignment
4.MGSR.1.1 Apply perimeter formulas for rectangles to solve real-world situations including finding the perimeter, given the side lengths, and finding an unknown side length. **4.MGSR.1.2** Apply area formulas for rectangles to solve real-world situations. Use square units to label area measurements.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

Fifth Grade	WIDA Alignment
5.MGSR.1.1 Solve problems involving area and perimeter of composite figures by decomposing with rectangles. **5.MGSR.1.2** Estimate and measure the volume of a right rectangular prism with whole-number side lengths by filling it with unit cubes.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

Standard 2: Convert within a given measurement system and measure length.

Third Grade	WIDA Alignment
3.MGSR.2.1 Determine the value of any collection of coins, not to exceed $5. Write the amount in the form of dollars and cents using the decimal notation. Limit to penny, nickel, dime, and quarter. **3.MGSR.2.2** Use analog and digital clocks to tell and record time to 1-minute intervals, identifying AM and PM. **3.MGSR.2.3** Solve problems involving addition and subtraction of time intervals to determine elapsed time to the nearest half hour. **3.MGSR.2.4** Estimate and measure length/distance to the nearest half inch and nearest whole centimeter. **3.MGSR.2.5** Determine which unit of liquid volume is most appropriate to measure in real-world situations. Limit to fluid ounces, cups, pints, quarts, gallons, milliliters, and liters.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution

Fourth Grade	WIDA Alignment
4.MGSR.2.1 Calculate the value of a collection of coins and bills in real-world situations to determine whether there is enough money to make a purchase. Justify based on comparison of money amounts. **4.MGSR.2.2** Solve real-world situations involving addition and subtraction of time intervals within 60 minutes to find elapsed time, start time, or end time. **4.MGSR.2.3** Measure length to the nearest quarter inch. **4.MGSR.2.4** Measure weight in customary units and metric units to the nearest whole unit. Limit to ounces, pounds, grams, and kilograms. **4.MGSR.2.5** Convert customary units of length, weight, and liquid volume from a larger unit to a smaller unit, given direct comparisons of the two measurements and/or the unit equivalencies within a single system of measurement. Limit to inches, feet, yards, ounces, pounds, fluid ounces, cups, pints, quarts, and gallons when given unit equivalencies.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

Fifth Grade	WIDA Alignment
5.MGSR.2.1 Given the unit equivalencies, convert within a single system of measurement from larger units to smaller units and smaller units to larger units for length, weight, liquid volume, and time. Use these conversions in solving real-world situations. Limit units to inches, feet, yards, ounces, pounds, fluid ounces, cups, pints, quarts, gallons, seconds, minutes, hours, milli-, centi-, kilo-, and base units (grams, liters, meters). **5.MGSR.2.2** Estimate and measure lengths to the nearest eighth of an inch or nearest millimeter.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

Standard 3: Extend geometric reasoning to attributes of polygons and/or polyhedrons.

Third Grade	WIDA Alignment
3.MGSR.3.1 Describe and draw right, acute, obtuse, and straight angles. Identify these angle types in two-dimensional figures including triangles and quadrilaterals. **3.MGSR.3.2** Identify, describe, and draw points, lines, line segments, rays, intersecting lines, perpendicular lines, and parallel lines. Identify these in two-dimensional figures.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution

Fourth Grade	WIDA Alignment
4.MGSR.3.1 Classify triangles according to side length (*isosceles, equilateral, scalene*) and angle measure (*acute, obtuse, right, equiangular*). **4.MGSR.3.2** Classify quadrilaterals in a hierarchy based on their shared attributes.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

Standard 3: Graph on the coordinate plane.

Fifth Grade	WIDA Alignment
5.MGSR.3.1 Identify the origin, *x*-axis, and *y*-axis in the coordinate system. Write, plot, and label ordered pairs, including values in a function table, in the first quadrant of the coordinate plane. **5.MGSR.3.2** Represent mathematical and real-world situations by graphing, labeling, and interpreting points in the first quadrant of the coordinate plane.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

3-5 Numerical Reasoning

Standard 1: Represent and compare numbers using relationships within the base ten number system.

Third Grade	WIDA Alignment
3.NR.1.1 Read, write, and represent whole numbers through the thousands period (0 to 999,999) on a number line and in standard, base ten language, word, and equations in expanded form. **3.NR.1.2** Compose and decompose 4-digit whole numbers in multiple ways using thousands, hundreds, tens, and ones. **3.NR.1.3** Compare two whole numbers up to 999,999 based on the place value of the digits using the symbols for *is equal to* (=), *is less than* (<), or *is greater than* (>). **3.NR.1.4** Round whole numbers from 0 to 1,000 to the nearest 10 or 100.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution

Fourth Grade	WIDA Alignment
4.NR.1.1 Read and write whole numbers through the millions period (0 to 999,999,999) in word, standard, and equations in expanded form. **4.NR.1.2** Estimate sums, differences, products, and quotients of multi-digit whole numbers, using rounding and place value to determine the reasonableness of real-world problem solutions. Write an equation for the estimate. **4.NR.1.3** Order whole numbers within 999,999 (no more than 3) in ascending or descending order and record the comparison(s) using symbols for *is less than (<)* and/or *is greater than (>)*.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

Fifth Grade	WIDA Alignment
5.NR.1.1 Read, write, and represent multi-digit numbers from 0 to 999 with decimals to the thousandths place. Use pictorial, word, standard, or expanded form with fraction or decimal notation. **5.NR.1.2** Explain how the value of a digit in a multidigit number changes if the digit moves one or more places to the left or right in the base ten system. Include decimals to the thousandths place. **5.NR.1.3** Round decimal numbers up to 999 with decimals to the thousandths place to the nearest hundredth, tenth, or whole number. **5.NR.1.4** Use patterns to explain the exponents when multiplying and dividing by powers of 10, not to exceed the thousandths place.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

Standard 2: Represent and compare fractions in multiple ways.

Third Grade	WIDA Alignment
3.NR.2.1 Identify unit fractions as the quantity formed by one part when a whole is partitioned into 2, 3, 4, 6, or 8 equal-sized parts. Express each part as a unit fraction of the whole. **3.NR.2.2** Represent fractions from 0 to 1 using concrete, set, area, and linear models, and write them in standard form and word form. Limit denominators to 2, 3, 4, 6, and 8. **3.NR.2.3** Express whole numbers as fractions and identify fractions that are equivalent to whole numbers. Limit denominators to 1, 2, 3, 4, 6, and 8. **3.NR.2.4** Compose fractions between the whole numbers 0 and 5 using unit fractions. Record the composition as a mixed number or fraction greater than 1. Limit denominators to 2, 3, 4, 6, and 8. **3.NR.2.5** Recognize two fractions are equivalent based on the same size whole. Limit denominators to 2, 3, 4, 6, and 8, and fractions should be limited to fractions between 0 and 1. **3.NR.2.6** Compare two fractions with the same numerator or same denominator based on the same size whole by reasoning about their size. Use the symbols for *is equal to* (=), *is less than* (<), or *is greater than* (>). Limit denominators to 2, 3, 4, 6, and 8, and fractions should be limited to fractions between 0 and 1.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution

Fourth Grade	WIDA Alignment
4.NR.2.1 Represent fractions with denominators of 10 and 100 in words, models, and decimal notations. **4.NR.2.2** Compare decimal numbers to the hundredths using the benchmarks 0, 0.5, and 1.0, concrete area, and linear models. Use the symbols for *is equal to (=), is less than (<),* and/or *is greater than (>)*. **4.NR.2.3** Generate equivalent fractions, including fractions greater than 1, using multiple representations. Limit fractions to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100. **4.NR.2.4** Represent the composition and decomposition of fractions with the same denominator, including mixed numbers and fractions greater than 1, using multiple representations. Limit fractions to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100. **4.NR.2.5** Explain and demonstrate how a mixed number is equivalent to a fraction greater than 1 and how a fraction greater than 1 is equivalent to a mixed number. Limit fractions to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100. **4.NR.2.6** Compare fractions and mixed numbers with like and unlike denominators applying benchmark fractions such as 0, ½ , and 1 using the symbols for *is equal to (=), is less than (<),* or *is greater than (>)*. Limit fractions to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

Fifth Grade	WIDA Alignment
5.NR.2.1 Compare fractions and mixed numbers with like and unlike denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, and 100 using equivalence to create a common denominator. Use the symbols for *is less than (<), is more than (>),* or *is equal to (=)* to record the comparison.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

3-5 Patterns, Algebra, and Functional Reasoning

Standard 1: Use multiple representations to reason and solve problems involving operational properties of whole numbers and decimals.

Third Grade	WIDA Alignment
3.PAFR.1.1 Use a strategy to compute sums and differences up to 1,000. **3.PAFR.1.2** Multiply whole numbers (factors 0–10) and divide whole numbers (divisors 1–10) using a model and write a corresponding equation. **3.PAFR.1.3** Multiply two whole numbers from 0 to 10 and divide using related facts flexibly and accurately.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution

Fourth Grade	WIDA Alignment
4.PAFR.1.1 Use a strategy to accurately compute sums and differences of whole numbers up to 100,000 and justify the sum or difference. **4.PAFR.1.2** Compute the product of a one-digit whole number times a multiple of 10 (from 10 to 90) and 100 (from 100 to 900) based on place value and properties of operations. **4.PAFR.1.3** Decompose numbers by the value of each digit to multiply whole numbers up to four digits by a one-digit number and two 2digit whole numbers. **4.PAFR.1.4** Use a strategy to divide up to a four-digit dividend by a one-digit divisor, with and without remainders. Justify the calculation.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

Fifth Grade	WIDA Alignment
5.PAFR.1.1 Use a strategy to compute the product of a two- or three-digit factor times a two-digit factor to include real-world situations. **5.PAFR.1.2** Use a strategy to compute the quotient of a multi-digit whole number dividend divided by a two-digit whole number divisor, with and without remainders, to include real-world situations. Limit the dividend to four digits. **5.PAFR.1.3** Use a strategy to compute sums and differences of decimal numbers to the hundredths. **5.PAFR.1.4** Use a strategy to multiply a one-digit whole number by a decimal to the hundredths and divide a decimal to the hundredths (dividend) by a one-digit whole number (divisor). Justify the calculation.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

Standard 2: Use multiple representations to reason and solve problems involving operational properties of fractions.

Third Grade	WIDA Alignment
3.PAFR.2.1 Determine the unknown whole number in a multiplication or division real-world situation relating three whole numbers when the unknown is a missing factor, product, dividend, divisor, or quotient. **3.PAFR.2.2** Solve one- and two-step real-world situations using addition and subtraction up to 1,000. **3.PAFR.2.3** Identify, create, and extend numerical patterns to determine the next three terms in an addition or subtraction sequence. **3.PAFR.2.4** Recognize that a whole number is a multiple of each of its factors 1–10.	**ELD-MA.2-3.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing plan for problem-solving steps • Evaluating simple pattern or structure **ELD-MA.2-3.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Describe solution and steps used to solve problem with others • State reasoning used to generate solution

Fourth Grade	WIDA Alignment
4.PAFR.2.1 Use a strategy to accurately compute sums and differences of fractions with like denominators and justify the reasonableness of the answer. Limit denominators to 2, 3, 4, 5, 6, 8, 10, 12, 25, and 100. **4.PAFR.2.2** Use fraction and decimal equivalencies to add and subtract tenths and hundredths, to include mixed numbers and fractions greater than 1. **4.PAFR.2.3** Represent and compute the product of a whole number times a unit fraction. Limit denominators to 2, 3, 4, 5, 6, 8, 10, 12, 25, and 100. **4.PAFR.2.4** Interpret a fraction as an equal sharing division situation, where a quantity (the numerator) is divided into equal parts (the denominator) to include real-world situations.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

Fifth Grade	WIDA Alignment
5.PAFR.2.1 Use a strategy to compute sums and differences of fractions and mixed numbers with unlike denominators and justify the sum or difference to include real-world situations. Limit denominators to 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100. **5.PAFR.2.2** Use a strategy to multiply a fraction by a fraction or a fraction by a whole to include real-world situations. Limit denominators to 2, 3, 4, 5, 6, 8, 10, and 12. **5.PAFR.2.3** Interpret and represent division of a whole number dividend by a unit fraction divisor and a unit fraction dividend by a whole number divisor and apply to real-world situations. Limit denominators to 2, 3, 4, 5, 6, 8, 10, and 12.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

Standard 3: Use reasoning to represent and solve algebraic and numerical situations.

Fourth Grade	WIDA Alignment
4.PAFR.3.1 Find all factor pairs for a whole number in the range 1–50. Determine whether the whole number is prime or composite. **4.PAFR.3.2** Describe and extend a numerical pattern that follows a rule using function tables and real-world situations. **4.PAFR.3.3** Solve real-world situations involving multiplicative comparison situations and write equations to represent the problem using a variable for the unknown. **4.PAFR.3.4** Solve two-step, real-world situations using the four operations involving whole number answers. Represent the problem using an equation with a variable as the unknown in any position.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

Fifth Grade	WIDA Alignment
5.PAFR.3.1 Determine the least common multiple (LCM) to find a common denominator. Limit denominators to 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100. **5.PAFR.3.2** Determine the greatest common factor (GCF) of two numbers both less than or equal to 50 to simplify a fraction into its standard form. **5.PAFR.3.3** Identify a rule that can describe the pattern from the data of a function table and write it as an expression. **5.PAFR.3.4** Translate a two-step real-world situation into a numerical expression using parentheses as grouping symbols and evaluate the expression.	**ELD-MA.4-5.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing problem-solving steps • Evaluating a pattern or structure that follows a given rule **ELD-MA.4-5.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or steps to solve problem • State reasoning used to generate solution **ELD-MA.4-5.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with patterns, and/or rules • Distinguishing commonalities and differences among ideas in justifications • Extracting patterns or rules from solution strategies to create generalizations **ELD-MA.4-5.Argue.Expressive** Construct mathematical arguments that • Create conjecture using definitions, patterns, and rules • Generalize commonalities and differences across cases • Justify conclusions with patterns or rules • Evaluate others' arguments

6-8 Data, Probability, and Statistical Reasoning

Standard 1: Analyze data sets to identify their statistical elements.

Sixth Grade	WIDA Alignment
6.DPSR.1.1 Identify the sample size for a numerical set of data in mathematical and real-world situations. **6.DPSR.1.2** Create box plots to represent numerical data sets in mathematical and real-world situations. **6.DPSR.1.3** Use the shape of the graph to determine whether median or mode best describes the data set. **6.DPSR.1.4** Calculate and interpret the median, mode, range, interquartile range in mathematical and real-world situations.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Seventh Grade	WIDA Alignment
7.DPSR.1.1 Create stem-and-leaf plots to represent numerical data sets in mathematical and real-world situations. **7.DPSR.1.2** Use the shape of the graph to select the measure of center (mean, median, or mode) that best describes the data set. **7.DPSR.1.3** Calculate and interpret the measures of center (*mean, median, mode*) and spread (*mean absolute deviation, interquartile range, range*) in mathematical and real-world situations. **7.DPSR.1.4** Create histograms to represent data sets and interpret histograms to answer questions or draw conclusions about data sets.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Eighth Grade	WIDA Alignment
8.DPSR.1.1 Create and analyze scatterplots to represent numerical data sets in mathematical and real-world situations. **8.DPSR.1.2** Draw inferences about two populations utilizing representative random samples of comparisons of the shape of the distribution, measures of center, and measures of variability. Limit measures *to mean, median, mode, range, mean absolute deviation,* and *interquartile range*. **8.DPSR.1.3** Describe how adding and deleting data throughout the data set can affect the mean, median, mode, and distribution of the data set. **8.DPSR.1.4** For two data sets (numerical or graphical), compare and interpret the centers, spreads, and overlap of data to draw inferences about data in mathematical and real-world situations. Limit displays to double line graphs, back-to-back stem-and-leaf plots, and double box plots.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Standard 2: Calculate and interpret probability.

Sixth Grade	WIDA Alignment
6.DPSR.2.1 Given the probability of a random event, expressed as a number from 0 to 1, state the likelihood of the event occurring. **6.DPSR.2.2** Find the probability of simple events in mathematical and real-world situations. Limit denominators to 2, 4, 5, 8, 10, 20, 25, 50, 100, and 200. **6.DPSR.2.3** Given the probability of an event, identify and calculate the complement of that event.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Seventh Grade	WIDA Alignment
7.DPSR.2.1 Identify the sample space for a simple event. **7.DPSR.2.2** Calculate and interpret the theoretical probability of a simple random event. **7.DPSR.2.3** Calculate and interpret the experimental probability of a random event related to a simple experiment. **7.DPSR.2.4** Compare and contrast the experimental and theoretical probabilities for a simple experiment.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Eighth Grade	WIDA Alignment
8.DPSR.2.1 Determine the sample space for a compound event. **8.DPSR.2.2** Calculate and interpret the probability of compound independent and dependent events.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

6-8 Measurement, Geometry, and Spatial Reasoning

Standard 1: Determine the measurements of geometric figures.

Sixth Grade	WIDA Alignment
6.MGSR.1.1 Find the area of a triangle, square, rectangle, parallelogram, and trapezoid. **6.MGSR.1.2** Create nets to represent three-dimensional shapes. **6.MGSR.1.3** Calculate the surface area of right rectangular prisms, right triangular prisms, right rectangular pyramids, and right triangular pyramids using two-dimensional nets. **6.MGSR.1.4** Find the area of composite figures by decomposing them into triangles and rectangles to solve mathematical and real-world situations. **6.MGSR.1.5** Calculate the volume of a right rectangular prism using the formula ($V = Bh$) in mathematical and real-world situations.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Seventh Grade	WIDA Alignment
7.MGSR.1.1 Identify the parts of a circle. Limit the parts to *center, radius, diameter,* and *chord*. **7.MGSR.1.2** Describe the relationship between the *radius, diameter*, and *circumference* of a circle. **7.MGSR.1.3** Solve mathematical and real-world situations involving circumference or area of circles. **7.MGSR.1.4** Determine if three given side lengths can form a triangle using the *Triangle Inequality Theorem*. **7.MGSR.1.5** In mathematical and real-world situations, find the volume of right prisms and right pyramids having triangular or quadrilateral bases. **7.MGSR.1.6** In mathematical and real-world situations, find the surface area of right prisms and right pyramids having triangular or quadrilateral bases.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Eighth Grade	WIDA Alignment
8.MGSR.1.1 Given the geometric formulas, find the volume of cones, cylinders, and spheres in mathematical and real-world situations. **8.MGSR.1.2** Find the distance between any two points in the coordinate plane using the *Pythagorean Theorem*. **8.MGSR.1.3** Given the *Pythagorean Theorem*, determine unknown side lengths in right triangles in mathematical and real-world situations. **8.MGSR.1.4** Determine if a given set of sides forms a right triangle.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Standard 2: Determine angle and/or side relationships.

Sixth Grade	WIDA Alignment
6.MGSR.2.1 Determine if two angles are complementary or supplementary. **6.MGSR.2.2** Determine the measure of angles using a protractor.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Seventh Grade	WIDA Alignment
7.MGSR.2.1 Determine the measure of the third angle given the measure of the other two angles of a triangle using the *Triangle Sum Theorem*. **7.MGSR.2.2** Solve mathematical and real-world situations involving dimensions and areas of geometric figures including scale drawings and scale factors. **7.MGSR.2.3** Identify the relationships and measures among angles formed by two intersecting lines, given the measure of one angle. Limit to supplementary, complementary, vertical, and adjacent relationships. **7.MGSR.2.4** Write and solve equations to solve mathematical and real-world situations involving the relationships among angles formed by two intersecting lines. Limit to supplementary, complementary, vertical, and adjacent relationships.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Eighth Grade	WIDA Alignment
8.MGSR.2.1 Determine missing angle measurements created when parallel lines are cut by a transversal. **8.MGSR.2.2** Determine if two-dimensional figures are congruent or similar. **8.MGSR.2.3** Identify the congruent corresponding angles of similar polygons. **8.MGSR.2.4** Discover and apply the *Exterior Angle Theorem* of triangles to find a missing angle. **8.MGSR.2.5** Apply proportional reasoning to find the missing side lengths of two similar figures.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Standard 3: Graph on the coordinate plane.

Sixth Grade	WIDA Alignment
6.MGSR.3.1 Plot ordered pairs in all four quadrants and identify points on a graph by writing ordered pairs. **6.MGSR.3.2** Graph a polygon on a coordinate plane given the coordinates of the vertices.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution

Seventh Grade	WIDA Alignment
7.MGSR.3.1 Find distances between ordered pairs on the coordinate plane, limited to the same *x*-coordinate or the same *y*-coordinate.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution

Eighth Grade	WIDA Alignment
8.MGSR.3.1 Identify the transformation as rotation, reflection, and/or translation. Limit rotations to multiples of 90 degrees centered on the origin. **8.MGSR.3.2** Identify congruent angles and congruent line segments of a preimage and its image. **8.MGSR.3.3** Translate geometric figures vertically and/or horizontally. **8.MGSR.3.4** Reflect geometric figures with respect to the *x*-axis and/or *y*-axis. **8.MGSR.3.5** Rotate geometric figures 90, 180, and 270 degrees, both clockwise and counterclockwise, about the origin of a coordinate plane. **8.MGSR.3.6** Create a dilation using a given scale factor and describe the effect of a dilation. **8.MGSR.3.7** Describe the effect of a series of transformations, including *dilations, translations, rotations, and reflections*, on two-dimensional figures using coordinates on the coordinate plane.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

6-8 Numerical Reasoning

Standard 1: Translate among multiple representations of rational numbers.

Sixth Grade	WIDA Alignment
6.NR.1.1 Convert positive rational numbers into equivalent forms among terminating decimals, fractions (including mixed numbers), and percentages. Limit fractions to denominators of 2, 4, 5, 8, 10, 20, 25, 50, 100, and 200.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Seventh Grade	WIDA Alignment
7.NR.1.1 Convert rational numbers into equivalent forms among fractions (including mixed numbers), decimals, and percentages. Exclude the conversion of repeating decimals to fractions.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution

Eighth Grade	WIDA Alignment
8.NR.1.1 Convert any form of a rational number to any other form including fractions (mixed numbers), decimals, and percentages.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution

Standard 2: Utilize rational numbers in mathematical and real-world situations.

Sixth Grade	WIDA Alignment
6.NR.2.1 Compare two positive rational numbers and write statements using the symbols for *is equal to (=)*, *is not equal to (≠)*, *is less than (<)*, and/or *is greater than (>)* in mathematical and real-world situations. Limit fractions to denominators of 2, 4, 5, 8, 10, 20, 25, 50, 100, and 200. **6.NR.2.2** Sort a set of positive rational numbers in ascending and/or descending order in mathematical and real-world situations. Limit sets to no more than 5 numbers. Limit fractions to denominators of 2, 4, 5, 8, 10, 20, 25, 50, 100, and 200. **6.NR.2.3** Represent quantities with integers in real-world situations and explain the meaning of zero. **6.NR.2.4** Identify and compare the opposite value and absolute value of positive and negative rational numbers.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Seventh Grade	WIDA Alignment
7.NR.2.1 Compare two rational numbers and write statements using *is equal to* (=), *is not equal to* (≠), *is less than* (<), *is greater than* (>), *is greater than or equal to* (≥), and/or *is less than or equal to* (≤) in mathematical and real-world situations.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Eighth Grade	WIDA Alignment
8.NR.2.1 Compare real numbers and write statements using *is equal to* (=), *is not equal to* (≠), *is less than* (<), *is greater than* (>), *is greater than or equal to* (≥), or is *less than or equal to* (≤). **8.NR.2.2** Classify and order the subsets of real numbers in the number system including natural, whole, integer, rational, and irrational numbers.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

6-8 Patterns, Algebra, and Functional Reasoning

Standard 1: Use tables, graphs, verbal descriptions, or equations to represent a function.

Sixth Grade	WIDA Alignment
6.PAFR.1.1 Use tables, graphs, verbal descriptions, and equations to represent the relationship between independent and dependent variables of functions. **6.PAFR.1.2** Identify the independent and dependent variable of a function in mathematical and real-world situations.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution

Seventh Grade	WIDA Alignment
7.PAFR.1.1 Apply proportional reasoning to solve problems in mathematical and real-world situations involving ratios and percentages. **7.PAFR.1.2** Create a model with functions that address a proportional relationship in real-world situations. **7.PAFR.1.3** Identify the constant of proportionality within proportional relationships.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Eighth Grade	WIDA Alignment
8.PAFR.1.1 Define an equation in slope-intercept form ($y = mx + b$) as being a linear function. **8.PAFR.1.2** Identify and describe the constant rate of change and the *y*-intercept of a linear function. **8.PAFR.1.3** Determine if a graph, table, mapping, or verbal description is a function (linear or nonlinear) or not a function. **8.PAFR.1.4** Describe the key features of given functions, including *domain, range, intervals of increasing or decreasing, constant, discrete, continuous,* and *intercepts*. **8.PAFR.1.5** Use multiple representations including mappings, tables, graphs, verbal description, and equations (only when linear) of two functions to compare the functions and draw conclusions. **8.PAFR.1.6** Translate among the multiple representations, including mappings, tables, graphs, verbal description, and equations (only when linear) of a function.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution

Standard 2: Write, simplify, and evaluate algebraic expressions; write and solve algebraic equations and inequalities.

Sixth Grade	WIDA Alignment
6.PAFR.2.1 Identify parts of an algebraic expression using the mathematical terms *sum*, *difference*, *term*, *variable*, *product*, *factor*, *quotient*, *coefficient*, and *constant*. **6.PAFR.2.2** Write and evaluate numerical expressions containing powers. Limit to positive whole number bases and positive whole number exponents. **6.PAFR.2.3** Evaluate numerical expressions with positive whole number bases and positive whole number exponents using the Order of Operations. **6.PAFR.2.4** Write and evaluate expressions using variables to represent quantities in mathematical and real-world situations. **6.PAFR.2.5** Write and solve one-step equations and inequalities with one variable involving positive rational numbers in mathematical and real-world situations. **6.PAFR.2.6** Interpret the concept of a ratio as the relationship between two quantities, including part-to-part and part-to-whole. **6.PAFR.2.7** Explain the relationship between ratios and rates, including unit rates. **6.PAFR.2.8** Solve ratio and rate problems in real-world situations. **6.PAFR.2.9** Use one-step dimensional analysis to convert units within the metric or customary systems.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Seventh Grade	WIDA Alignment
7.PAFR.2.1 Write and solve multi-step equations and inequalities in one variable involving rational numbers in mathematical and real-world situations. **7.PAFR.2.2** Write and evaluate expressions in one variable that model mathematical and real-world situations. **7.PAFR.2.3** Compute unit rates, including those involving complex fractions with like or different units. **7.PAFR.2.4** Use dimensional analysis to convert units between metric and customary systems.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Eighth Grade	WIDA Alignment
8.PAFR.2.1 Solve multi-step one-variable equations and inequalities with variables on both sides with rational coefficients. **8.PAFR.2.2** Describe single-variable equations as having one solution, no solution, or an infinite number of solutions. **8.PAFR.2.3** Identify the rate of change for a linear function as the slope of the line. **8.PAFR.2.4** Explain why the slope, *m*, is the same between any two distinct points on a linear graph. **8.PAFR.2.5** Given a table or a graph, identify the slope and the y-intercept of a line and write a linear equation to express that line.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Standard 3: Apply mathematical patterns, properties, and algorithms to the set of rational numbers to find sums, differences, products, and quotients and to write equivalent expressions.

Sixth Grade	WIDA Alignment
6.PAFR.3.1 Represent the solutions of inequalities on a number line and explain that the solution set may contain an infinite number of solutions. Limited to the symbols for *is less than* (<) and *is greater than* (>). **6.PAFR.3.2** Identify the multiplicative inverse of a number and multiply multiplicative inverses to find their product is equal to 1. **6.PAFR.3.3** Identify the additive inverse of a number and add additive inverses to find their sum is equal to zero. **6.PAFR.3.4** Apply the properties of operations to create equivalent algebraic expressions and justify the properties used. Limit properties to the *Identity, Inverse, Commutative, Associative,* and *Distributive Properties*. **6.PAFR.3.5** Add, subtract, multiply, and divide integers in mathematical and real-world situations. **6.PAFR.3.6** Add, subtract, multiply, and divide positive fractions, including mixed numbers in mathematical and real-world situations. **6.PAFR.3.7** Add, subtract, multiply, and divide multi-digit positive decimals, up to the thousandths place, to solve problems in mathematical and real-world situations.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Seventh Grade	WIDA Alignment
7.PAFR.3.1 Simplify numerical expressions that include integer exponents using the laws of exponents: the *Product of Powers, Quotient of Powers, Power of a Power, Power of a Product, Power of a Quotient, Zero Power, and Negative Exponent*. **7.PAFR.3.2** Identify linear expressions that are equivalent. **7.PAFR.3.3** Recognize that algebraic expressions may have a variety of equivalent forms and determine an appropriate form for a given real-world situation. **7.PAFR.3.4** Factor linear expressions with integer coefficients using the greatest common factor (GCF). **7.PAFR.3.5** Apply all operations with rational numbers to solve problems in mathematical and real-world situations.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Eighth Grade	WIDA Alignment
8.PAFR.3.1 Analyze patterns of perfect squares and perfect cubes to evaluate square roots and cube roots. Limit to square roots less than or equal to 400 and cube roots less than or equal to 1,000. **8.PAFR.3.2** Approximate non-perfect square roots and cube roots to nearest tenth. Limit to square roots less than or equal to 400 and cube roots less than or equal to 1,000. **8.PAFR.3.3** Apply laws of exponents to simplify algebraic expressions involving no more than three variables and integer exponents.	**ELD-MA.6-8.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing possible was to represent and solve a problem • Evaluating model and rationale for underlying relationships in selected problem-solving approach **ELD-MA.6-8.Explain.Expressive** Construct mathematical explanations that • Introduce concept or entity • Share solution with others • Describe data and/or problem-solving strategy • State reasoning used to generate solution **ELD-MA.6-8.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results • Distinguishing commonalities among strategies used • Evaluating relationships between evidence and mathematical facts to create generalizations **ELD-MA.6-8.Argue.Expressive** Construct mathematical arguments that • Create conjecture, using definitions and previously established results • Generalize logic across cases • Justify conclusions with evidence and mathematical facts • Evaluate and critique others' arguments

Geometry with Statistics- Data, Probability, and Statistical Reasoning

Standard 1: Summarize, represent, and interpret data on two categorical and quantitative variables.

Geometry with Statistics	WIDA Alignment
GS.DPSR.1.1 Represent data for two quantitative variables on a scatterplot and describe how the variables are related. **GS.DPSR.1.2** Use two representative points from the data to find an approximate line of fit and compare it to the line of best fit. **GS.DPSR.1.3** Conduct an investigation for a statistical question, interpret statistical significance in the context of a situation, and answer investigative questions appropriately.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-SC 9-12 Argue Interpretive** Interpret scientific arguments by • Identifying appropriate and sufficient evidence from data, models, and/or information from investigations of a phenomenon or design solutions • Comparing reasoning and claims based on evidence from competing arguments or design solutions • Evaluating currently accepted explanations, new evidence, limitations (trade-offs), constraints, and ethical issues

Standard 2: Analyze and interpret models for two quantitative variables.

Geometry with Statistics	WIDA Alignment
GS.DPSR.2.1 Distinguish between correlation and causation.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 3: Solve problems involving the probability of compound events in real-world situations.

Geometry with Statistics	WIDA Alignment
GS.DPSR.3.1 Describe categories of events as subsets of a sample space using unions, intersections, or complements of other events. **GS.DPSR.3.2** Apply the *Addition Rule* to find the probability of both mutually exclusive and not mutually exclusive events and interpret the answers in context. **GS.DPSR.3.3** Apply the *Multiplication Rule* to determine the probability of independent events and interpret the answers in context.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Geometry with Statistics- Measurement, Geometry and Spatial Reasoning

Standard 1: Compute area and volume of figures by determining how the figure might be obtained from simpler figures by dissection and recombination.

Geometry with Statistics	WIDA Alignment
GS.MGSR.1.1 Apply area and volume formulas of two- and three-dimensional figures to solve real-world situations. **GS.MGSR.1.2** Identify the shape of a two-dimensional cross-section of a three-dimensional figure. **GS.MGSR.1.3** Use cross-sections of three-dimensional figures to model and solve mathematical and real-world situations.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 2: Apply rigid geometric transformations to figures, describing their attributes and symmetries.

Geometry with Statistics	WIDA Alignment
GS.MGSR.2.1 Describe the results of transformations on a given figure using geometric terminology from the definitions of the transformations. **GS.MGSR.2.2** Describe and apply a sequence of transformations that maps a preimage onto its image.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 3: Determine that two figures are congruent by demonstrating that a rigid motion or a sequence of rigid motions maps one figure onto the other.

Geometry with Statistics	WIDA Alignment
GS.MGSR.3.1 Identify types of symmetry of polygons, including line, point, rotational, and self-congruence, and use symmetry to analyze mathematical situations. **GS.MGSR.3.2** Demonstrate that triangles and quadrilaterals are congruent by a combination of translations, rotations, and reflections. **GS.MGSR.3.3** Recognize the criteria for showing triangles are congruent using a sequence of rigid motions that map one triangle to another and justify that the two triangles are congruent by applying the *Side-Side-Side, Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, and Hypotenuse-Leg* congruence conditions.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 4: Determine that two figures are similar by demonstrating a similarity transformation or a sequence of similarity transformations that maps one figure onto the other.

Geometry with Statistics	WIDA Alignment
GS.MGSR.5.1 Justify and apply the attributes of angle relationships/lines in mathematical and real-world situations. **GS.MGSR.5.2** Apply the attributes of triangles in mathematical and real-world situations. **GS.MGSR.5.3** Apply the attributes of quadrilaterals, including diagonals, sides, and angles, to prove that a given quadrilateral is a parallelogram in	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 6: Discover and apply relationships in similar right triangles.

Geometry with Statistics	WIDA Alignment
GS.MGSR.6.1 Discover and apply the converse of the *Pythagorean Theorem*. **GS.MGSR.6.2** Discover and apply the constant ratios of the sides in 30-60-90 and 45-45-90 right triangles. **GS.MGSR.6.3** Define the trigonometric ratios using the properties of similar right triangles. **GS.MGSR.6.4** Determine the sine, cosine, and tangent of an acute angle in a right triangle in the context of mathematical and real-world situations. **GS.MGSR.6.5** Apply trigonometric ratios (sine, cosine, tangent) and the *Pythagorean Theorem* to solve right triangle problems in real-life situations.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 7: Investigate and apply relationships among segments and angles in circles.

Geometry with Statistics	WIDA Alignment
GS.MGSR.7.1 Use angle and segment relationships in circles to solve mathematical and real-world situations. **GS.MGSR.7.2** Investigate and apply relationships in circles, inscribed angles, radii, secants, and chords; among inscribed angles, central angles, and circumscribed angles; and between radii and tangents to circles.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Geometry with Statistics- Numerical Reasoning

Standard 1: Represent all points on the number line as irrational and rational numbers in the real number system.

Geometry with Statistics	WIDA Alignment
GS.NR.1.1 Rewrite numerical expressions of irrational and rational numbers involving radicals, including addition, subtraction, multiplication, and division, to recognize geometric patterns.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Geometry with Statistics- Patterns, Algebra and Functional Reasoning

Standard 1: Analyze the structure of an equation or inequality to determine an efficient strategy to find a solution, if one exists, then justify the solution.

Geometry with Statistics	WIDA Alignment
GS.PAFR.1.1 Discover and apply the formulas for the length of an arc and the area of a sector in a circle to develop mathematical models and solve mathematical and real-world situations. **GS.PAFR.1.2** Analyze and apply the derivations of the formulas for the circumference of a circle, area of a circle, and volume of a cylinder, pyramid, and cone to model real phenomena and solve mathematical and real-world situations.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 2: Interpret the structure of expressions, equations, and inequalities to analyze and make predictions in different contexts.

Geometry with Statistics	WIDA Alignment
GS.PAFR.2.1 Apply surface area and volume formulas for prisms, cylinders, pyramids, cones, spheres, and/or compositions of figures to solve problems and justify results. **GS.PAFR.2.2** Analyze slopes of lines to determine whether lines are parallel, perpendicular, or neither. **GS.PAFR.2.3** Determine the equation of a line passing through a given point that is parallel or perpendicular to a given line.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 3: Determine the exact or approximate solutions of equations and inequalities using graphs on the coordinate plane.

Geometry with Statistics	WIDA Alignment
GS.PAFR.3.1 Use coordinates to prove simple geometric theorems algebraically. **GS.PAFR.3.2** Determine distance and midpoint of segments in a coordinate plane to find areas of triangles and quadrilaterals, when given coordinates.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Algebra 1- Data, Probability, and Statistical Reasoning

Standard 1: Use statistical reasoning to summarize, represent, and interpret data on two categorical and quantitative variables.

Algebra 1	WIDA Alignment
A1.DPSR.1.1 Summarize categorical data in two-way frequency tables, interpret relative frequencies in real-world situations, and informally determine possible associations and trends in the data. **A1.DPSR.1.2** Summarize quantitative data in a table and on a scatterplot and describe how the variables are associated. Limit to linear data. **A1.DPSR.1.3** Find a linear function for a scatterplot that suggests a linear association. **A1.DPSR.1.4** For linear associations, use technology to determine the correlation coefficient, evaluate the strength of the association, and find the line of best fit.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 2: Analyze and interpret models for two categorical and quantitative variables.

Algebra 1	WIDA Alignment
A1.DPSR.2.1 Use two-way frequency tables to make inferences and interpret the data in terms of real-world or mathematical situations. **A1.DPSR.2.2** Interpret the slope and the intercept of a linear model in the context of the data. **A1.DPSR.2.3** Use a linear model to interpolate and extrapolate unknown values close to the data set.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Algebra 1- Measurement, Geometry and Spatial Reasoning

Standard 1: Use geometric concepts and measurement opportunities to model mathematical and real-world situations.

Algebra 1	WIDA Alignment
A1.MGSR.1.1 Identify any limitations specific to a real-world situation.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Algebra 1- Numerical Reasoning

Standard 1: Represent all points on the number line as irrational and rational numbers in the real number system.

Algebra 1	WIDA Alignment
A1.NR.1.1 Rewrite numerical and algebraic expressions of irrational and rational numbers involving radicals, including addition, subtraction, multiplication, and division. Limit to square and cube roots.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 2: Represent exponents and radical expressions in different ways.

Algebra 1	WIDA Alignment
A1.NR.2.1 Translate between rational exponents and radical expressions of irrational and rational numbers. Use properties of addition, subtraction, multiplication, and division to simplify radical and rational expressions. Limit to square and cube roots.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Algebra 1- Patterns, Algebra and Functional Reasoning

Standard 1: Transform and/or solve equations and expressions in one variable that model real-world and mathematical situations, interpret the solutions, and determine whether they are reasonable.

Algebra 1	WIDA Alignment
A1.PAFR.1.1 Transform an equation in one variable to create new equations that have the same solution as the original and justify the steps taken. **A1.PAFR.1.2** Solve literal equations and formulas for a specified variable including equations and formulas that arise in a variety of disciplines. **A1.PAFR.1.3** Solve mathematical and real-world situations using linear, quadratic, exponential (same bases), and linear absolute value equations in one variable. **A1.PAFR.1.4** Add, subtract, and multiply polynomials with initial terms up to a degree of 2.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 2: Create, solve, and transform equations and inequalities in two or more variables to represent relationships between quantities and graph the equations on coordinate axes using appropriate labels, units, and scales.

Algebra 1	WIDA Alignment
A1.PAFR.2.1 Transform linear, quadratic, exponential, and linear absolute value functions to equivalent forms to identify slope and y- intercept for linear, vertex, and roots (if any) for quadratic and linear absolute value, and *y*-intercept for exponential. **A1.PAFR.2.2** Solve quadratic equations by completing the square, factoring, and the quadratic formula, explaining the connection between the zeros of the function derived from the equation, its linear factors (if it factors), the *x*-intercepts of its graph (if they exist), and the solutions (if any) to the corresponding quadratic equation. **A1.PAFR.2.3** Solve and graph linear, quadratic, exponential, and linear absolute value equations given in tabular, symbolic, and/or verbal forms using intercepts, domain and range, intervals of increasing and decreasing, vertex (maximum and minimum), end-behavior, and symmetry, and interpret these in terms of mathematical and real-world situations. **A1.PAFR.2.4** Create, solve, and graph linear inequalities in two variables. **A1.PAFR.2.5** Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Algebra 1	WIDA Alignment
A1.PAFR.2.6 Create symbolic representations of linear and exponential functions, including arithmetic and geometric sequences, given graphs, verbal descriptions, and tables. **A1.PAFR.2.7** Use graphs to obtain exact and/or approximate solutions of equations, inequalities, and systems of linear equations in two variables (given or obtained by using technology). **A1.PAFR.2.8** Solve an equation of the form $f(x) = g(x)$ graphically by identifying the x- coordinate(s) of the point(s) of intersection of the graphs of $y = f(x)$ and $y = g(x)$. **A1.PAFR.2.9** Solve systems of linear equations algebraically and graphically. **A1.PAFR.2.10** Analyze the growth/decay rate between linear and exponential functions specifically between consecutive integers.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments **ELD-MA.9-12.Argue.Expressive** Construct mathematics arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 3: Represent and interpret functions symbolically and graphically.

Algebra 1	WIDA Alignment
A1.PAFR.3.1 Recognize that $f(x)$ denotes the output of function f that corresponds to the input x, and this corresponds to the set of all the ordered pairs (*x, y*) that satisfy the equation *y = f(x)* both tabularly and graphically. **A1.PAFR.3.2** Use the definition of a function to analyze the domain and range of a function in relation to its graph, mapping, table, verbal, and/or symbolic description and, where applicable, using interval and set notation. **A1.PAFR.3.3** Translate among graphical, tabular, verbal, and symbolic representations in function notation, to identify intercepts, intervals where the function is increasing, decreasing, constant, maximums and minimums, and symmetries and explain their meanings in real-world and mathematical situations. **A1.PAFR.3.4** Interpret how lead coefficients impact the shape of a function's graph.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 4: Reason with parent functions in varying representations to find families of functions that all have similar distinguishing attributes common to the family and use common characteristics to aid in rewriting and identifying linear, linear absolute value, quadratic, and exponential functions.

Algebra 1	WIDA Alignment
A1.PAFR.4.1 Describe the effect of the transformations $kf(x)$, $f(x)+k$, $f(x-k)$, and combinations of such transformations on the graph of parent function $y = f(x)$ for any real number k; find the value of k given the graphs; and write the equation of a transformed parent function given its graph. **A1.PAFR.4.2** Given a real-world or mathematical situation, determine the parent graph that best models the situation. **A1.PAFR.4.3** Given different representations of two different functions, compare key features including intercepts, domain and range, intervals of increasing and decreasing, constant, average rate of change, and maximum and minimum values.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Algebra 2 with Probability- Data, Probability, and Statistical Reasoning

Standard 1: Understand independence and conditional probability and use them to interpret data.

Algebra 2 with Probability	WIDA Alignment
A2P.DPSR.1.1 Describe events as subsets of a sample space using characteristics or categories of the outcomes, or as *unions, intersections, or complements of other events*. **A2P.DPSR.1.2** Explain whether two events, A and B, are independent if and only 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. **A2P.DPSR.1.3** Determine whether the conditional probability of A given B as P(A and B)/P(B) and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B in mathematical and real-world situations. **A2P.DPSR.1.4** Recognize and explain the concepts of conditional probability and independence.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 2: Use the rules of probability to compute probabilities of compound events in a uniform probability model.

Algebra 2 with Probability	WIDA Alignment
A2P.DPSR.2.1 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. **A2P.DPSR.2.2** 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. **A2P.DPSR.2.3** 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. **A2P.DPSR.2.4** Use permutations and combinations to determine the number of possible outcomes in a sample space.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Algebra 2 with Probability- Measurement, Geometry and Spatial Reasoning

Standard 1: Explore and analyze sine and cosine functions using the unit circle, right triangle definitions, and models of periodic phenomena.

Algebra 2 with Probability	WIDA Alignment
A2P.MGSR.1.1 Build the unit circle for sine and cosine functions using right triangle definitions. **A2P.MGSR.1.2** Use models of periodic phenomena to evaluate and analyze the graph of sine and cosine functions.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Algebra 2 with Probability- Numerical Reasoning

Standard 1: Recognize that the complex number system extends the real number system to allow for solution to all polynomial equations.

Algebra 2 with Probability	WIDA Alignment
A2P.NR.1.1 Understand that there is an imaginary unit i such that $i^2 = -1$ and explain the structure of a complex number as $a + bi$, where a and b are real. **A2P.NR.1.2** Add, subtract, and multiply complex numbers.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 2: Represent and manipulate data using matrices.

Algebra 2 with Probability	WIDA Alignment
A2P.NR.2.1 Perform operations with matrices including addition, subtraction, and scalar multiplication.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Algebra 2 with Probability- Patterns, Algebra and Functional Reasoning

Standard 1: Explore and analyze quadratic and polynomial functions and inequalities and use them to model real-world situations.

Algebra 2 with Probability	WIDA Alignment
A2P.PAFR.1.1 Graph, identify roots, and analyze quadratic functions in mathematical and real-world situations. **A2P.PAFR.1.2** Solve quadratic inequalities that model mathematical and real-world situations. **A2P.PAFR.1.3** Graph and analyze polynomial functions in mathematical and real-world situations. **A2P.PAFR.1.4** Solve polynomial inequalities that model mathematical and real-world situations. **A2P.PAFR.1.5** Recognize perfect squares and perfect cubes and use them to describe the structure of polynomials.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles

Standard 2: Explore and analyze rational and radical functions and use them to model real-world phenomena.

Algebra 2 with Probability	WIDA Alignment
A2P.PAFR.2.1 Graph rational and radical functions and describe their key features. Limit to square roots and cube roots only. **A2P.PAFR.2.2** Perform arithmetic operations on rational expressions, including problems in context, and express rational expressions in irreducible form. **A2P.PAFR.2.3** Create and solve rational and radical equations in one variable, including those that model real-life situations, and verify solutions to identify extraneous solutions if they appear.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 3: Explore and analyze exponential functions and use them to model real-world phenomena.

Algebra 2 with Probability	WIDA Alignment
A2P.PAFR.3.1 Create, solve, and graph exponential functions, including those that model real-life situations. **A2P.PAFR.3.2** Find the sum of the terms of arithmetic and geometric sequences.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 4: Reason with parent functions to find families of functions that all have similar distinguishing attributes common to the family and use common characteristics to aid in rewriting and identifying functions.

Algebra 2 with Probability	WIDA Alignment
A2P.PAFR.4.1 Identify the effect on the graph of replacing f(x) by $kf\ (x)$, $f(x)$+k, $f(x$-$k)$, $f(kx)$ for any real number k including multiple transformations; write an equation of a transformed parent function given its graph. Extend to equations involving rational, polynomial, radical, exponential, and piecewise.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 5: Explore and analyze piecewise functions and linear absolute value inequalities and use them to model real-world phenomena.

Algebra 2 with Probability	WIDA Alignment
A2P.PAFR.5.1 Graph piecewise functions and describe their key features. **A2P.PAFR.5.2** Solve linear absolute value inequalities.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 6: Represent and interpret functions symbolically and graphically.

Algebra 2 with Probability	WIDA Alignment
A2P.PAFR.6.1 Find the inverse of functions and verify graphically. **A2P.PAFR.6.2** Calculate and interpret the average rate of change of the function over a specified interval, given a function in graphical, symbolic, or numerical form. **A2P.PAFR.6.3** Use linear programming to solve systems of equations and inequalities by addressing the constraints that arise in real-world situations.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Pre-Calculus- Measurement, Geometry and Spatial Reasoning

Standard 1: Use statistical reasoning to summarize, represent, and interpret data on two categorical and quantitative variables.

Pre-Calculus	WIDA Alignment
PC.MGSR.1.1 Identify and graph different conic sections given the equations in standard form. **PC.MGSR.1.2** Identify different conic sections in general form and complete the square to convert the equation of a conic section into standard form. **PC.MGSR.1.3** Define polar coordinates and relate polar coordinates to Cartesian coordinates.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Expressive** Construct mathematics arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 2: Solve problems and model periodic phenomena with trigonometric expressions and functions.

Pre-Calculus	WIDA Alignment
PC.MGSR.2.1 Determine the area of a triangle to solve problems. **PC.MGSR.2.2** Prove and apply the *Law of Sines* and the *Law of Cosines* to find unknown measurements in right and non-right triangles. **PC.MGSR.2.3** Derive the formulas for the length of an arc and the area of a sector in a circle and apply these formulas to solve mathematical and real-world situations. **PC.MGSR.2.4** Determine geometrically the values of the sine, cosine, and tangent for $\frac{\pi}{6}$, $\frac{\pi}{4}$, and $\frac{\pi}{3}$ by special triangles, and use the unit circle to express the values of sine, cosine, and tangent for $\pi - x$, $\pi + x$, and $2\pi - x$ in terms of their values for x, where x is any real number. **PC.MGSR.2.5** Define the six trigonometric ratios in terms of *x, y*, and *r* using the unit circle centered at the origin of the coordinate plane and interpret radian measures of angles as a rotation both counterclockwise and clockwise around the unit circle. **PC.MGSR.2.6** Explain symmetry, both odd and even, and periodicity of trigonometric functions.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Pre-Calculus-Numerical Reasoning

Standard 1: Represent and manipulate data using matrices.

Pre-Calculus	WIDA Alignment
PC.NR.1.1 Identify the identity and zero matrices for any dimension and add, subtract, and multiply matrices. **PC.NR.1.2** Find the additive and multiplicative inverses of square matrices. **PC.NR.1.3** Explain the role of the determinant in determining if a square matrix has a multiplicative inverse. **PC.NR.1.4** Find the determinant of a square matrix if and only if the matrix has a multiplicative inverse.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 2: Represent and model with vector quantities.

Pre-Calculus	WIDA Alignment
PC.NR.2.1 Represent vector quantities as directed line segments and represent magnitude and direction of vectors in component form. **PC.NR.2.2** Find the components of a vector by adding and subtracting vectors on a coordinate plane using a variety of methods. **PC.NR.2.3** Solve problems, including real-life situations, that can be represented by vectors. **PC.NR.2.4** Add and subtract vectors and multiply vectors by a scalar to find the resultant vector.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 3: Represent complex numbers and their operations on the complex plane.

Pre-Calculus	WIDA Alignment
PC.NR.3.1 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. **PC.NR.3.2** Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Pre-Calculus- Patterns, Algebra and Functional Reasoning

Standard 1: Build new functions from existing functions to solve mathematical and real-world situations.

Pre-Calculus	WIDA Alignment
PC.PAFR.1.1 Combine and compose functions algebraically, tabularly, and graphically. **PC.PAFR.1.2** Find the inverse of functions and verify algebraically, numerically, and graphically. **PC.PAFR.1.3** Compare the key features of a function and its inverse function and use the relationship to model real-world situations and solve problems. **PC.PAFR.1.4** Graph and describe the effect on the graph $f(x)$ of $f(x)+k$, $f(x-k)$, $kf(x)$, and $f(kx)$, for specific values of both negative and positive values of k.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 2: Explore and analyze the behaviors of rational and piecewise functions to model contextual mathematical problems.

Pre-Calculus	WIDA Alignment
PC.PAFR.2.1 Graph rational functions and describe their key features. **PC.PAFR.2.2** Solve rational equations and inequalities in one variable and explain when extraneous solutions may arise. **PC.PAFR.2.3** Transform rational expressions in different forms. **PC.PAFR.2.4** Graph piecewise-defined functions, including step functions and absolute value functions, and describe their key features.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 3: Explore and analyze structures and patterns for radical functions and use radical expressions, equations, and functions to model real-life phenomena.

Pre-Calculus	WIDA Alignment
PC.PAFR.3.1 Transform radical expressions as expressions with rational exponents and extend the properties of integer exponents to rational exponents. **PC.PAFR.3.2** Solve radical equations and describe how extraneous solutions may arise. **PC.PAFR.3.3** Analyze and graph radical functions.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 4: Explore and analyze structures and patterns for exponential and logarithmic functions and use exponential and logarithmic expressions, equations, and functions to model real-life phenomena.

Pre-Calculus	WIDA Alignment
PC.PAFR.4.1 Graph logarithmic functions and describe their key features. **PC.PAFR.4.2** Use the definition of a logarithm, logarithmic properties, and the inverse relationship between exponential and logarithmic functions to solve problems, including real-life context. **PC.PAFR.4.3** Model real-life situations and solve problems involving exponential and logarithmic functions.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 5: Explore and analyze structures and patterns of trigonometric functions and use trigonometric functions to model real-life phenomena.

Pre-Calculus	WIDA Alignment
PC.PAFR.5.1 Graph trigonometric functions and their inverses and describe their key features. **PC.PAFR.5.2** Restrict the domain of a trigonometric function to define the six inverse trigonometric functions, graph the inverse function, and evaluate inverse trigonometric expressions. **PC.PAFR.5.3** Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions and interpret them in terms of the context.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 6: Manipulate, prove, and apply trigonometric identities and equations to solve contextual mathematical problems.

Pre-Calculus	WIDA Alignment
PC.PAFR.6.1 Apply the fundamental trigonometric identities to simplify expressions and verify other identities. **PC.PAFR.6.2** Apply the sum, difference, double-angle, and half-angle formulas for sine, cosine, and tangent and use them to solve problems. **PC.PAFR.6.3** Model real-life situations and solve problems involving trigonometric equations.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 7: Represent data with matrices, perform mathematical operations, and solve systems of linear equations for mathematical problems.

Pre-Calculus	WIDA Alignment
PC.PAFR.7.1 Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. Understand that such systems may have zero, one, or two solutions. **PC.PAFR.7.2** Solve an equation of the form $f(x) = g(x)$ graphically by identifying the x-coordinate(s) of the point(s) of intersection of the graphs of y = $f(x)$ and y = $g(x)$. **PC.PAFR.7.3** Represent a system of linear equations as a single matrix equation in a vector variable.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Calculus- Measurement, Geometry and Spatial Reasoning

Standard 1: Explain the concept of the integral of a function geometrically, numerically, analytically, and contextually.

Calculus	WIDA Alignment
C.MGSR.1.1 Explain how the definite integral is used to solve area problems. **C.MGSR.1.2** Approximate definite integrals by a finite sum. **C.MGSR.1.3** Interpret the definite integral as a limit of Riemann sums. **C.MGSR.1.4** Explain the relationship between the integral and derivative as expressed in both parts of the *Fundamental Theorem of Calculus*. Interpret the relationship in terms of rates of change.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Expressive** Construct mathematics arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 2: Apply theorems and rules of integration to solve mathematical and real-world situations.

Calculus	WIDA Alignment
C.MGSR.2.1 Apply the *Fundamental Theorem of Calculus* to solve mathematical and real-world situations. **C.MGSR.2.2** Explain graphically and verbally the properties of the definite integral. Apply these properties to evaluate basic definite integrals. **C.MGSR.2.3** Evaluate integrals using substitution.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Calculus-Numerical Reasoning

Standard 1: Apply the concepts of a limit graphically, numerically, analytically, and contextually.

Calculus	WIDA Alignment
C.NR.1.1 Estimate and verify limits using tables, graphs of functions, and technology. **C.NR.1.2** Calculate limits—including one-sided limits—algebraically, using direct substitution, simplification, rationalization, and the limit laws for constant multiples, sums, differences, products, and quotients. **C.NR.1.3** Calculate infinite limits and limits at infinity and use those limits to identify the asymptotes.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Calculus- Patterns, Algebra and Functional Reasoning

Standard 1: Apply the definition and graphical interpretation of continuity of a function.

Calculus	WIDA Alignment
C.PAFR.1.1 Apply the definition of continuity of a function at a point to solve problems. **C.PAFR.1.2** Classify discontinuities as removable, jump, or infinite. Justify that classification using the definition of continuity. **C.PAFR.1.3** Understand the *Intermediate Value Theorem* and apply the theorem to prove the existence of solutions of equations arising in mathematical and real-world situations.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 2: Understand the concept of the derivative of a function geometrically, numerically, analytically, and verbally.

Calculus	WIDA Alignment
C.PAFR.2.1 Interpret the value of the derivative of a function as the slope of the corresponding tangent line. **C.PAFR.2.2** Interpret the value of the derivative as an instantaneous rate of change in a variety of real-world contexts such as velocity and population growth. **C.PAFR.2.3** Approximate the derivative graphically by finding the slope of the tangent line drawn to a curve at a given point and numerically by using the difference quotient. **C.PAFR.2.4** Explain graphically and analytically the relationship between differentiability and continuity. **C.PAFR.2.5** Explain graphically and analytically the relationship between the average rate of change and the instantaneous rate of change. **C.PAFR.2.6** Use the definition of the derivative to determine the derivatives of various functions.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 3: Apply the rules of differentiation to functions.

Calculus	WIDA Alignment
C.PAFR.3.1 Identify and apply the derivatives of constant, power, trigonometric, inverse trigonometric, exponential, and logarithmic functions. **C.PAFR.3.2** Use the constant multiple, sum, difference, product, quotient, and chain rules to find the derivatives of functions. **C.PAFR.3.3** Apply methods of implicit and logarithmic differentiation.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 4: Apply theorems and rules of differentiation to solve mathematical and real-world situations.

Calculus	WIDA Alignment
C.PAFR.4.1 Explain the mathematical and real-world meanings of the *Extreme Value Theorem* and the *Mean Value Theorem*. **C.PAFR.4.2** Write an equation of a line tangent to the graph of a function at a point. **C.PAFR.4.3** Explain the relationship between the increasing/decreasing behavior of f and the signs of f'. Use the relationship to generate a graph of f given the graph of f', and vice versa, and to identify the points of inflection of f. **C.PAFR.4.4** Explain the relationships among the concavity of the graph of f, the increasing/decreasing behavior of f' and the signs of f''. Use those relationships to generate graphs of f, f', and f'' given any one of them and identify the points of inflection of f. **C.PAFR.4.5** Solve a variety of real-world situations involving related rates, optimization, linear approximation, and rates of change.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Reasoning in Mathematics- Data, Probability, and Statistical Reasoning

Standard 1: Apply statistical reasoning to complete investigations.

Reasoning in Mathematics	WIDA Alignment
RM.DPSR.1.1 Formulate a statistical question and develop a statistical method to address questions/studies through exploration of the research cycle. **RM.DPSR.1.2** Write and identify a null hypothesis and an alternative hypothesis, as well as what makes up an experimental study. **RM.DPSR.1.3** Identify the population of interest and the variables to be used in each study. Determine the appropriate sampling design, sampling technique, and statistical analysis for each research question.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 2: Analyze data of a statistical experiment.

Reasoning in Mathematics	WIDA Alignment
RM.DPSR.2.1 Compare and contrast categorical and quantitative data. **RM.DPSR.2.2** Identify the variable of interest, interpret a variety of graphical displays (particularly histograms and box plots), and estimate center, spread, shape, outliers, and unusual features. **RM.DPSR.2.3** Analyze histograms in depth, analyzing the effect of changing the bin size (also known as interval width). **RM.DPSR.2.4** Analyze the appropriateness and usefulness of the chosen measure of center and of the graphical display. **RM.DPSR.2.5** Analyze the shape, spread, and unusual features of data sets and identify limitations based on data collection.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 3: Explore the sources of variability in sampling methods.

Reasoning in Mathematics	WIDA Alignment
RM.DPSR.3.1 Analyze possible sources of variability in the data, including biased sampling methods (such as non-representative sampling and under coverage) and biased statistics, as well as natural and induced variability. **RM.DPSR.3.2** Identify and explore various possible sources of statistical bias (such as response bias, nonresponse bias, and observer effect) and examine the effects of statistical bias on the generalizability of results.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematics arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematics arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Reasoning in Mathematics- Measurement, Geometry, and Spatial Reasoning

Standard 1: Identify transformations using matrices.

Reasoning in Mathematics	WIDA Alignment
RM.MGSR.1.1 Use matrices to organize information and identify matrices that can be used to describe geometric transformations. **RM.MGSR.1.2** Represent figures using matrices and explore ways of determining different transformations *(translations, reflection, rotations, dilations, or combinations*).	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 2: Analyze truth tables to validate real-world situations.

Reasoning in Mathematics	WIDA Alignment
RM.MGSR.2.1 Analyze truth tables to determine and verify the validity of arguments. **RM.MGSR.2.2** Create arguments and statements to validate arguments.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Reasoning in Mathematics- Numerical Reasoning

Standard 1: Analyze numerical data through estimation and approximation in real-world situations.

Reasoning in Mathematics	WIDA Alignment
RM.NR.1.1 Use various numerical techniques when estimating and calculating very large and small values. **RM.NR.1.2** Apply proportional reasoning with aspect ratios. **RM.NR.1.3** Use weighted averages and sums. **RM.NR.1.4** Investigate and validate identification numbers.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 2: Analyze present and future value of investments involving interest.

Reasoning in Mathematics	WIDA Alignment
RM.NR.2.1 Compare and contrast the nominal interest rate with the annual percentage rate (APR). **RM.NR.2.2** Determine the future value of an investment, given the present value.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 3: Analyze real-world scenarios involving credit card debt and loans.

Reasoning in Mathematics	WIDA Alignment
RM.NR.3.1 Determine the monthly payment to retire a debt at a fixed rate. **RM.NR.3.2** Compare and contrast different credit card offers using minimum payments.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Reasoning in Mathematics- Patterns, Algebra, and Functional Reasoning

Standard 1: Analyze regression of linear functions.

Reasoning in Mathematics	WIDA Alignment
RM.PAFR.1.1 Compute and analyze the correlation coefficient of data to determine the strength of the linear model. **RM.PAFR.1.2** Analyze data that follow a linear pattern using recursively defined rules and compare those rules to explicit function rules.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 2: Analyze step and piecewise functions in real-world situations.

Reasoning in Mathematics	WIDA Alignment
RM.PAFR.2.1 Explore step and piecewise functions to make predictions and decisions about a variety of mathematical and real-world situations.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 3: Analyze data that follow an exponential pattern using the idea of a common ratio between consecutive values.

Reasoning in Mathematics	WIDA Alignment
RM.PAFR.3.1 Find recursive rules to model data and make connections between the recursive rule and the explicit function rule of the exponential relationship.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Applications and Modeling- Data, Probability, and Statistical Reasoning

Standard 1: Summarize and interpret data represented in tables or graphs to make predictions.

Applications and Modeling	WIDA Alignment
AM.DPSR.1.1 Summarize and interpret trends to make predictions in real-world situations. **AM.DPSR.1.2** Calculate and explain pay scale based on occupational outlook projections. **AM.DPSR.1.3** Calculate and explain operating costs, including cost of materials, supplies, equipment, license fees, and insurance fees. **AM.DPSR.1.4** Construct and analyze charts that reflect current demographics in various industries.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 2: Solve problems involving probability and probability models, and use expected value to make informed decisions in real-world situations.

Applications and Modeling	WIDA Alignment
AM.DPSR.2.1 Determine the probability of simple and compound events in real-world situations. **AM.DPSR.2.2** Use probabilities to make and justify decisions about risk in real-world situations. **AM.DPSR.2.3** Calculate and analyze the expected value of a probability model (binominal, normal, and Poisson distributions) for a real-world situation to make decisions about fairness, payoff, and risk.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Applications and Modeling- Measurement, Geometry, and Spatial Reasoning

Standard 1: Apply trigonometric principles to solve real-world geometric situations involving inaccessible distances.

Applications and Modeling	WIDA Alignment
AM.MGSR.1.1 Apply sine, cosine, and tangent ratios and *the Law of Sines* and the *Law of Cosines* to discover distances.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 2: Critique the appropriateness of measurements in terms of precision, accuracy, and approximate error.

Applications and Modeling	WIDA Alignment
AM.MGSR.2.1 Determine dimensions by scaling plans or blueprints. **AM.MGSR.2.2** Apply knowledge of fractions for reading a ruler to $\frac{1}{16}$ inch to interpreting blueprints and measuring materials. **AM.MGSR.2.3** Compare the metric and the British imperial systems of measurements used in industry.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 3: Apply two- and three-dimensional representations, geometric transformations, and scale models in planning, designing, and constructing solutions to real-world situations.

Applications and Modeling	WIDA Alignment
AM.MGSR.3.1 Calculate lengths utilizing the *Pythagorean Theorem*. **AM.MGSR.3.2** Apply the concepts of area, volume, scale factors, and scale drawings to applied problems for a specific project. **AM.MGSR.3.3** Determine the level of precision and the appropriate tools for taking measurements in constructing a two-dimensional visual representation of a three-dimensional object or structure. **AM.MGSR.3.4** Apply *Heron's Formula* for finding the area of a triangular region.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 4: Apply two- and three-dimensional representations in coordinate systems to find solutions to real-world situations.

Applications and Modeling	WIDA Alignment
AM.MGSR.4.1 Plot coordinates on a three-dimensional Cartesian coordinate system and use relationships between coordinates to solve design problems. **AM.MGSR.4.2** Use technology and other tools to explore the results of simple transformations using three-dimensional coordinates, including translations in the *x*, *y*, and/or *z* directions; rotations of 90º, 180º, or 270º about the *x*, *y*, and *z* axes; reflections over the *xy*, *yz*, and *xz* planes; and dilations from the origin.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 5: Use vectors and matrices to represent, organize, and describe data to solve problems in mathematical and real-world situations.

Applications and Modeling	WIDA Alignment
AM.MGSR.5.1 Apply vectors to mathematical and real-world situations by recognizing vectors as mathematical objects having both magnitude and direction. **AM.MGSR.5.2** Use and apply matrices to represent geometric transformations in real-world situations.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Applications and Modeling- Numerical Reasoning

Standard 1: Solve problems using fractions, percents, and ratios for real-world situations involving linear, quadratic, exponential, and absolute functions.

Applications and Modeling	WIDA Alignment
AM.NR.1.1 Apply numerical reasoning to real-world situations involving percent increase and decrease.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Applications and Modeling- Patterns, Algebra, and Functional Reasoning

Standard 1: Create and analyze mathematical models to make decisions on real-world situations.

Applications and Modeling	WIDA Alignment
AM.PAFR.1.1 Use exponential functions to model change in a variety of financial situations. **AM.PAFR.1.2** Compare the various means of paying for an automobile, including leasing, purchasing by cash, and purchasing by loan. **AM.PAFR.1.3** Use sequences to represent simple and compound interest and depreciation.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 2: Analyze and solve application-based problems relating to direct, inverse, and joint variation.

Applications and Modeling	WIDA Alignment
AM.PAFR.2.1 Apply variations to mathematical and real-world situations to describe troubleshooting in business and industrial applications. **AM.PAFR.2.2** Utilize mathematical skills for troubleshooting in business and industrial applications.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 3: Analyze and apply linear programming to mathematical and real-world situations.

Applications and Modeling	WIDA Alignment
AM.PAFR.3.1 Calculate the values of the variables that maximize or minimize the objective function, given four or more constraints.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Statistical Modeling- Data, Probability, and Statistical Reasoning

Standard 1: Communicate using descriptive and inferential statistics by collecting, critiquing, analyzing, and interpreting real-world data.

Statistical Modeling	WIDA Alignment
SM.DPSR.1.1 Calculate and interpret *z*-scores as a measure of relative standing to standardize units. **SM.DPSR.1.2** Approximate percentages using the *Empirical Rule* and *z*-scores for normally distributed data. **SM.DPSR.1.3** Using simulations taken from a given population, model sample-to-sample variability in sampling distributions of a statistic. **SM.DPSR.1.4** Construct and compare confidence intervals of different models to make conclusions about reliability given a margin of error. **SM.DPSR.1.5** Summarize and evaluate reports based on data for appropriateness of study design, analysis methods, and statistical measures used.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 2: Formulate investigative statistical questions that can be answered using data.

Statistical Modeling	WIDA Alignment
SM.DPSR.2.1 Formulate investigative statistical questions about a population using samples taken from the population. **SM.DPSR.2.2** Formulate comparative and associative investigative statistical questions for surveys and observational studies to compare two or more groups or to investigate the association of two or more variables. **SM.DPSR.2.3** Formulate comparative and associative investigative statistical questions for experiments to compare two or more groups or to investigate the association of two or more variables. **SM.DPSR.2.4** Formulate inferential investigative statistical questions regarding association and prediction. **SM.DPSR.2.5** Formulate investigative statistical questions for two variables.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 3: Design and implement a plan to collect data to address the investigative statistical question.

Statistical Modeling	WIDA Alignment
SM.DPSR.3.1 Apply an appropriate data-collection plan when collecting data for the investigative statistical question of interest. **SM.DPSR.3.2** Distinguish between sample surveys, observational studies, and experiments. **SM.DPSR.3.3** Design sample surveys, experiments, and observational studies using statistical methods. **SM.DPSR.3.4** Differentiate between random selection and random assignment and identify their impact on generalizing. **SM.DPSR.3.5** Examine potential sources and effects of bias and confounding variables. **SM.DPSR.3.6** Describe and comply with the ethical use of data. **SM.DPSR.3.7** Identify when data can be generalized to a target population.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 4: Use appropriate graphical and numerical methods to analyze data.

Statistical Modeling	WIDA Alignment
SM.DPSR.4.1 Describe quantitative and categorical data. **SM.DPSR.4.2** Summarize and describe relationships between two variables. **SM.DPSR.4.3** Describe the relationship between two quantitative variables by interpreting correlation (*r*) and a least-square regression line (using technology). **SM.DPSR.4.4** Assess the fit of a linear model by plotting and analyzing residuals, including the squares of the residuals, to improve its fit. **SM.DPSR.4.5** Calculate and interpret the *p*-value for a population proportion and/or population mean. **SM.DPSR.4.6** Use simulated sampling distributions to describe the sample-to-sample variability of sample statistics. **SM.DPSR.4.7** Use simulations to investigate associations between two categorical variables and to compare groups.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 5: Interpret the results of the analysis by making connections to the investigative statistical question.

Statistical Modeling	WIDA Alignment
SM.DPSR.5.1 Use statistical evidence from analyses to answer investigative statistical questions. **SM.DPSR.5.2** Determine the possible impact of extreme data points, missing values, or incorrect values on the results. **SM.DPSR.5.3** Use and interpret the *p*-value to determine whether the estimate for a population parameter is reasonable. **SM.DPSR.5.4** Interpret a given margin of error corresponding to an estimate of a population parameter. **SM.DPSR.5.5** Explain the impact of multiple variables on one another.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Discrete Mathematics- Data, Probability, and Statistical Reasoning

Standard 1: Analyze, model, and solve problems involving fair outcomes.

Discrete Mathematics	WIDA Alignment
DM.DPSR.1.1 Investigate and describe the results of various election methods. **DM.DPSR.1.2** Explain fairness and equity in relation to the paradoxes of voting. **DM.DPSR.1.3** Solve apportionment problems using a variety of methods. **DM.DPSR.1.4** Compare voting methods to determine the most appropriate method for the situation. **DM.DPSR.1.5** Determine power indexes for weighted voting systems.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Discrete Mathematics- Measurement, Geometry, and Spatial Reasoning

Standard 1: Use graph theory to model relationships and solve problems.

Discrete Mathematics	WIDA Alignment
DM.MGSR.1.1 Distinguish between inductive and deductive reasoning. **DM.MGSR.1.2** Determine statements and rephrase them symbolically. **DM.MGSR.1.3** Use *negation*, *disjunction*, and *conjunction* to determine if statements are logically equivalent. **DM.MGSR.1.4** Write statements in words and symbolically using *converse, inverse,* and *contrapositive*. **DM.MGSR.1.5** Verify arguments and syllogisms. **DM.MGSR.1.6** Represent real-world situations using a vertex-edge graph. **DM.MGSR.1.7** Test graphs and digraphs for paths and circuits.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Discrete Mathematics- Numerical Reasoning

Standard 1: Investigate principles of set theory.

Discrete Mathematics	WIDA Alignment
DM.NR.1.1 Define basic terms and concepts in set theory. **DM.NR.1.2** Compare sets with appropriate language and notation. **DM.NR.1.3** Determine and explain the cardinality of sets.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments

Standard 2: Analyze numbers with different bases in real-world situations.

Discrete Mathematics	WIDA Alignment
DM.NR.2.1 Perform arithmetic operations using modular arithmetic properties. **DM.NR.2.2** Solve problems involving modular arithmetic in real-world situations. **DM.NR.2.3** Explain and apply binary and hexadecimal number systems.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 3: Determine the number of ways an event can occur.

Discrete Mathematics	WIDA Alignment
DM.NR.3.1 Calculate combinations and permutations.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Discrete Mathematics- Patterns, Algebra, and Functional Reasoning

Standard 1: Classify and compare objects using estimation and sets for real-world situations.

Discrete Mathematics	WIDA Alignment
DM.PAFR.1.1 Use estimation to get an approximate answer in real-world situations. **DM.PAFR.1.2** Perform operations on sets.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 2: Develop an understanding of and carry out proofs by mathematical induction using the Principle of Mathematical Induction.

Discrete Mathematics	WIDA Alignment
DM.PAFR.2.1 Create mathematical induction proofs using the *Principle of Mathematical Induction*.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions

Standard 3: Use matrices to model and solve mathematical and real-world situations.

Discrete Mathematics	WIDA Alignment
DM.PAFR.3.1 Manipulate matrices using addition, subtraction, multiplication, inverse, and power properties. **DM.PAFR.3.2** Write and evaluate matrices drawn from real-world situations.	**ELD-MA.9-12.Explain.Interpretive** Interpret mathematical explanations by • Identifying concept or entity • Analyzing data and owning problem-solving approaches • Evaluating rationales, models, and/or interpretations based on evidence and mathematical principles **ELD-MA.9-12.Explain.Expressive** Construct mathematical explanations that • Introduce mathematical concept or entity • Share solutions with others • Describe data and/or approach used to solve a problem • State reasoning used to generate own or alternate solutions **ELD-MA.9-12.Argue.Interpretive** Interpret mathematical arguments by • Comparing conjectures with previously established results and stated assumptions • Distinguishing correct from flawed logic • Evaluating relationships among evidence and mathematical principles to create generalizations **ELD-MA.9-12.Argue.Expressive** Construct mathematical arguments that • Create precise conjecture, using definitions, previously established results, and stated assumptions • Generalize logical relationships across cases • Justify (and refute) conclusions with evidence and mathematical principles • Evaluate and extend others' arguments