

# Mathematical Processes Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
GLE 0006.1.1 Use mathematical language, symbols, and definitions while developing mathematical reasoning.	GLE 0106.1.1 Use mathematical language, symbols, and definitions while developing mathematical reasoning.	GLE 0206.1.1 Use mathematical language, symbols, and definitions while developing mathematical reasoning.	GLE 0306.1.1 Use mathematical language, symbols, and definitions while developing mathematical reasoning.	GLE 0406.1.1 Use mathematical language, symbols, and definitions while developing mathematical reasoning.	GLE 0506.1.1 Use mathematical language, symbols, and definitions while developing mathematical reasoning.	GLE 0606.1.1 Use mathematical language, symbols, and definitions while developing mathematical reasoning.	GLE 0706.1.1 Use mathematical language, symbols, and definitions while developing mathematical reasoning.	GLE 0806.1.1 Use mathematical language, symbols, and definitions while developing mathematical reasoning.	CLE 3102.1.1 Use mathematical language, symbols, definitions, proofs and counter examples correctly and precisely in mathematical reasoning.	CLE 3108.1.1 Use mathematical language, symbols, definitions, proofs and counter examples correctly and precisely in mathematical reasoning.	CLE 3103.1.1 Use mathematical language, symbols, definitions, proofs and counter examples correctly and precisely in mathematical reasoning.
GLE 0006.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution.	GLE 0106.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution.	GLE 0206.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution.	GLE 0306.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution.	GLE 0406.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution.	GLE 0506.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution.	GLE 0606.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution.	GLE 0706.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution.	GLE 0806.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution.	CLE 3102.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including testing cases, estimation, and then checking induced errors and the reasonableness of the solution.	CLE 3108.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including testing cases, estimation, and then checking induced errors and the reasonableness of the solution.	CLE 3103.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including testing cases, estimation, and then checking induced errors and the reasonableness of the solution.
GLE 0006.1.3 Develop independent reasoning to communicate mathematical ideas and derive algorithms and/or formulas.	GLE 0106.1.3 Develop independent reasoning to communicate mathematical ideas and derive algorithms and/or formulas.	GLE 0206.1.3 Develop independent reasoning to communicate mathematical ideas and derive algorithms and/or formulas.	GLE 0306.1.3 Develop independent reasoning to communicate mathematical ideas and derive algorithms and/or formulas.	GLE 0406.1.3 Develop independent reasoning to communicate mathematical ideas and derive algorithms and/or formulas.	GLE 0506.1.3 Develop independent reasoning to communicate mathematical ideas and derive algorithms and/or formulas.	GLE 0606.1.3 Develop independent reasoning to communicate mathematical ideas and derive algorithms and/or formulas.	GLE 0706.1.3 Develop independent reasoning to communicate mathematical ideas and derive algorithms and/or formulas.	GLE 0806.1.3 Develop independent reasoning to communicate mathematical ideas and derive algorithms and/or formulas.	CLE 3102.1.3 Develop inductive and deductive reasoning to independently make and evaluate mathematical arguments and construct appropriate proofs; include various types of reasoning, logic, and intuition.	CLE 3108.1.3 Develop inductive and deductive reasoning to independently make and evaluate mathematical arguments and construct appropriate proofs; include various types of reasoning, logic, and intuition.	CLE 3103.1.3 Develop inductive and deductive reasoning to independently make and evaluate mathematical arguments and construct appropriate proofs; include various types of reasoning, logic, and intuition.

## Mathematical Processes Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
GLE 0006.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies.	GLE 0106.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies.	GLE 0206.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies.	GLE 0306.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies.	GLE 0406.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies.	GLE 0506.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies.	GLE 0606.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies.	GLE 0706.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies.	GLE 0806.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies.	CLE 3102.1.4 Move flexibly between multiple representations (contextual, physical, written, verbal, iconic/pictorial, graphical, tabular, and symbolic), to solve problems, to model mathematical ideas, and to communicate solution strategies.	CLE 3108.1.4 Move flexibly between multiple representations (contextual, physical, written, verbal, iconic/pictorial, graphical, tabular, and symbolic), to solve problems, to model mathematical ideas, and to communicate solution strategies.	CLE 3103.1.4 Move flexibly between multiple representations (contextual, physical, written, verbal, iconic/pictorial, graphical, tabular, and symbolic), to solve problems, to model mathematical ideas, and to communicate solution strategies.
GLE 0006.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.	GLE 0106.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.	GLE 0206.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.	GLE 0306.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.	GLE 0406.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.	GLE 0506.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.	GLE 0606.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.	GLE 0706.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.	GLE 0806.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.	CLE 3102.1.5 Recognize and use mathematical ideas and processes that arise in different settings, with an emphasis on formulating a problem in mathematical terms, interpreting the solutions, mathematical ideas, and communication of solution strategies.	CLE 3108.1.5 Recognize and use mathematical ideas and processes that arise in different settings, with an emphasis on formulating a problem in mathematical terms, interpreting the solutions, mathematical ideas, and communication of solution strategies.	CLE 3103.1.5 Recognize and use mathematical ideas and processes that arise in different settings, with an emphasis on formulating a problem in mathematical terms, interpreting the solutions, mathematical ideas, and communication of solution strategies.

# Mathematical Processes Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
GLE 0006.1.6 Read and interpret the language of mathematics and use written/oral communication to express mathematical ideas precisely.	GLE 0106.1.6 Read and interpret the language of mathematics and use written/oral communication to express mathematical ideas precisely.	GLE 0206.1.6 Read and interpret the language of mathematics and use written/oral communication to express mathematical ideas precisely.	GLE 0306.1.6 Read and interpret the language of mathematics and use written/oral communication to express mathematical ideas precisely.	GLE 0406.1.6 Read and interpret the language of mathematics and use written/oral communication to express mathematical ideas precisely.	GLE 0506.1.6 Read and interpret the language of mathematics and use written/oral communication to express mathematical ideas precisely.	GLE 0606.1.6 Read and interpret the language of mathematics and use written/oral communication to express mathematical ideas precisely.	GLE 0706.1.6 Read and interpret the language of mathematics and use written/oral communication to express mathematical ideas precisely.	GLE 0806.1.6 Read and interpret the language of mathematics and use written/oral communication to express mathematical ideas precisely.	CLE 3102.1.6 Employ reading and writing to recognize the major themes of mathematical processes, the historical development of mathematics, and the connections between mathematics and the real world.	CLE 3108.1.6 Employ reading and writing to recognize the major themes of mathematical processes, the historical development of mathematics, and the connections between mathematics and the real world.	CLE 3103.1.6 Employ reading and writing to recognize the major themes of mathematical processes, the historical development of mathematics, and the connections between mathematics and the real world.
GLE 0006.1.7 Recognize the historical development of mathematics, mathematics in context, and the connections between mathematics and the real world.	GLE 0106.1.7 Recognize the historical development of mathematics, mathematics in context, and the connections between mathematics and the real world.	GLE 0206.1.7 Recognize the historical development of mathematics, mathematics in context, and the connections between mathematics and the real world.	GLE 0306.1.7 Recognize the historical development of mathematics, mathematics in context, and the connections between mathematics and the real world.	GLE 0406.1.7 Recognize the historical development of mathematics, mathematics in context, and the connections between mathematics and the real world.	GLE 0506.1.7 Recognize the historical development of mathematics, mathematics in context, and the connections between mathematics and the real world.	GLE 0606.1.7 Recognize the historical development of mathematics, mathematics in context, and the connections between mathematics and the real world.	GLE 0706.1.7 Recognize the historical development of mathematics, mathematics in context, and the connections between mathematics and the real world.	GLE 0806.1.7 Recognize the historical development of mathematics, mathematics in context, and the connections between mathematics and the real world.	CLE 3102.1.7 Use technologies appropriately to develop understanding of abstract mathematical ideas, to facilitate problem solving, and to produce accurate and reliable models.	CLE 3108.1.7 Use technologies appropriately to develop understanding of abstract mathematical ideas, to facilitate problem solving, and to produce accurate and reliable models.	CLE 3103.1.7 Use technologies appropriately to develop understanding of abstract mathematical ideas, to facilitate problem solving, and to produce accurate and reliable models.
GLE 0006.1.8 Use technologies/manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving, and to create accurate and reliable models of mathematical concepts.	GLE 0106.1.8 Use technologies/manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving, and to create accurate and reliable models of mathematical concepts.	GLE 0206.1.8 Use technologies/manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving, and to create accurate and reliable models of mathematical concepts.	GLE 0306.1.8 Use technologies/manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving, and to create accurate and reliable models of mathematical concepts.	GLE 0406.1.8 Use technologies/manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving, and to create accurate and reliable models of mathematical concepts.	GLE 0506.1.8 Use technologies/manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving, and to create accurate and reliable models of mathematical concepts.	GLE 0606.1.8 Use technologies/manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving, and to create accurate and reliable models of mathematical concepts.	GLE 0706.1.8 Use technologies/manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving, and to create accurate and reliable models of mathematical concepts.	GLE 0806.1.8 Use technologies/manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving, and to create accurate and reliable models of mathematical concepts.			

## Number & Operations Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
<p>GLE 0006.2.1 Count objects in a set and use numbers, including written numerals to 25.</p> <p>GLE 0006.2.2 Create, represent and recognize a set with a given number of objects.</p>	<p>GLE 0106.2.1 Understand and use number notation and place value to 100.</p>	<p>GLE 0206.2.1 Understand and use place value concepts to 1000.</p> <p>GLE 0206.2.2 Understand and use the base-ten numeration system.</p>	<p>GLE 0306.2.1 Understand the place value of whole numbers to ten-thousands place including expanded notation for all arithmetic operations.</p>	<p>GLE 0406.2.1 Understand place value of numbers from hundredths to the hundred-thousands place.</p> <p>GLE 0406.2.3 Identify prime and composite numbers.</p>	<p>GLE 0506.2.1 Extend the understanding of place value through millions and millionths in various contexts and representations.</p> <p>GLE 0506.2.2 Write natural numbers (to 50) as a product of prime factors and understand that this is unique (apart from order).</p>						
<p>GLE 0006.2.3 Recognize, compare and order sets of numerals by using both cardinal and ordinal meanings.</p>	<p>GLE 0106.2.2 Compare and order whole numbers to 100.</p>										
<p>GLE 0006.2.4 Understand addition as "putting together" and subtraction as "breaking apart."</p>	<p>GLE 0106.2.3 Develop strategies for learning basic addition facts and related subtraction facts.</p>	<p>GLE 0206.2.3 Use efficient and accurate strategies to develop fluency with multi-digit addition and subtraction.</p>									

## Number & Operations Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
GLE 0006.2.5 Model the numbers 1 through 10 as sums or differences of different sets of whole numbers (composing and decomposing numbers).	GLE 0106.2.4 Use multiple representations (including groups of ten) to model two-digit addition and subtraction.	GLE 0206.2.4 Develop an initial understanding of multiplication.	GLE 0306.2.2 Develop understanding of multiplication and related division facts through multiple strategies and representations.  GLE 0306.2.3 Relate multiplication and division as inverse operations.  GLE 0306.2.4 Solve multiplication and division problems using various representations.	GLE 0406.2.2 Develop fluency with multiplication and single-digit division.	GLE 0506.2.3 Develop fluency with division of whole numbers. Understand the relationship of divisor, dividend, and quotient in terms of multiplication and division.	GLE 0606.2.1 Understand and explain the procedures for multiplication and division of fractions, mixed numbers, and decimals.  GLE 0606.2.4 Understand and convert between fraction, decimal, and percent forms of rational numbers.  GLE 0606.2.5 Develop meaning for integers; represent and compare quantities with integers.	GLE 0706.2.1 Extend understandings of addition, subtraction, multiplication and division to integers.	GLE 0806.2.1 Extend understanding of the real number system to include irrational numbers.	CLE 3102.2.1 Understand computational results and operations involving real numbers in multiple representations.	CLE 3108.2.1 Establish the relationships between the real numbers and geometry; explore the importance of irrational numbers to geometry.  CLE 3108.2.2 Explore vectors as a numeric system, focusing on graphic representations and the properties of the operation.	CLE 3103.2.1 Understand the hierarchy of the complex number system and relationships between the elements, properties and operations.  CLE 3103.2.2 Connect numeric, analytic, graphical and verbal representations of both real and complex numbers.  CLE 3103.2.4 Understand the capabilities and limitations of technology when performing operations, graphing, and solving equations involving complex numbers.

## Number & Operations Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
			<p>GLE 0306.2.5 Understand the meaning and uses of fractions.</p> <p>GLE 0306.2.6 Use various strategies and models to compare and order fractions and identify equivalent fractions.</p> <p>GLE 0306.2.7 Add and subtract fractions with like denominators using various</p>	<p>GLE 0406.2.4 Understand and use the connections between fractions and decimals.</p> <p>GLE 0406.2.5 Add and subtract fractions with like and unlike denominators.</p>	<p>GLE 0506.2.4 Develop fluency with addition and subtraction of proper and improper fractions and mixed numbers; explain and model the algorithm.</p>						
				<p>GLE 0406.2.6 Solve problems involving whole numbers, fractions, and/or decimals using all four arithmetic operations.</p>	<p>GLE 0506.2.5 Develop fluency in solving multi-step problems using whole numbers, fractions, mixed numbers, and decimals.</p>	<p>GLE 0606.2.2 Solve multi-step mathematical, contextual and verbal problems using fractions, mixed numbers, and decimals.</p>		<p>GLE 0806.2.3 Solve real-world problems using rational and irrational numbers.</p>		<p>CLE 3108.2.3 Establish an ability to estimate, select appropriate units, evaluate accuracy of calculations and approximate error in measurement in geometric settings.</p>	<p>CLE 3103.2.3 Use appropriate technology (including graphing calculators and computer spreadsheets) to solve problems, recognize patterns and collect and analyze data.</p>

## Number & Operations Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
						GLE 0606.2.3 Understand and use ratios, rates and percents.	GLE 0706.2.3 Develop an understanding of and apply proportionality.  GLE 0706.2.4 Use ratios, rates and percents to solve single- and multi-step problems in various contexts.				
							GLE 0706.2.5 Understand and work with squares, cubes, square roots and cube roots.  GLE 0706.2.6 Introduce the concept of negative exponents.	GLE 0806.2.4 Understand and use the laws of exponents.			
							GLE 0706.2.7 Understand and use scientific notation.	GLE 0806.2.2 Solve problems involving exponents and scientific notation using technology appropriately.			
							GLE 0706.2.2 Understand and work with the properties of and operations on the system of rational numbers.		CLE 3102.2.2 Understand properties of and relationships between subsets and elements of the real number system.		

## Algebra Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
<p>GLE 0006.3.1 Identify, duplicate, and extend simple number patterns and sequential and growing patterns.</p> <p>GLE 0006.3.2 Recognize attributes (such as color, shape, size) and patterns (such as repeated pairs, bilateral symmetry).</p>	<p>GLE 0106.3.1 Identify, describe, and extend simple number patterns to develop strategies for adding and subtracting whole numbers.</p>	<p>GLE 0206.3.1 Develop pattern recognition.</p>	<p>GLE 0306.3.3 Describe and analyze patterns and relationships in contexts.</p> <p>GLE 0306.3.4 Create and represent patterns using words, tables, graphs, and symbols.</p>	<p>GLE 0406.3.2 Use mathematical language and modeling to develop descriptions, rules and extensions of patterns.</p>		<p>GLE 0606.3.5 Use multiple representations including symbolic algebra to model and/or solve contextual problems that involve linear relationships.</p>	<p>GLE 0706.3.2 Understand and compare various representations of relations and functions.</p> <p>GLE 0706.3.3 Understand the concept of function as a rule that assigns to a given input one and only one number (the output).</p> <p>GLE 0706.3.4 Use function notation where <math>f(x)</math> represents the output that the function <math>f</math> assigns to the input <math>x</math>.</p>	<p>GLE 0806.3.4 Translate among verbal, tabular, graphical and algebraic representations of linear functions.</p>	<p>CLE 3102.3.1 Use algebraic thinking to analyze and generalize patterns.</p> <p>CLE 3102.3.2 Understand and apply properties in order to perform operations with, evaluate, simplify, and factor expressions and polynomials.</p> <p>CLE 3102.3.3 Understand and apply operations with rational expressions and equations.</p>		<p>CLE 3103.3.2 Understand, analyze, transform and generalize mathematical patterns, relations and functions using properties and various representations.</p>
<p>GLE 0006.3.3 Describe qualitative change.</p>	<p>GLE 0106.3.3 Extend the strategies for basic facts to include other properties of number and operations.</p>	<p>GLE 0206.3.2 Develop pattern recognition.</p>	<p>GLE 0306.3.1 Develop meaning for and apply the commutative, associative, and distributive properties using various representations.</p>	<p>GLE 0406.3.3 Translate between different forms of representations of whole number relationships.</p>	<p>GLE 0506.3.1 Understand and use order of operations.</p> <p>GLE 0506.3.3 Understand and apply the substitution property.</p>	<p>GLE 0606.3.3 Extend order of operations to include grouping symbols and exponents.</p>					<p>CLE 3103.3.1 Understand and apply properties of rational exponents and perform basic operations to simplify algebraic expressions.</p>

## Algebra Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
	GLE 0106.3.2 Understand that addition and subtraction are inverse operations.	GLE 0206.3.3 Solve simple arithmetic problems using various methods.  GLE 0206.3.4 Describe quantitative change.	GLE 0306.3.2 Develop understanding that a letter or a symbol can represent an unknown quantity in a simple mathematical expression/ equation.	GLE 0406.3.1 Extend understanding of a variable to equations involving whole numbers, fractions, decimals, and/or mixed numbers.	GLE 0506.3.2 Develop and apply the concept of variable.  GLE 0506.3.4 Solve single-step linear equations and inequalities.	GLE 0606.3.1 Write and solve two-step equations and inequalities.  GLE 0606.3.2 Interpret and represent algebraic relationships with variables in expressions, simple equations and inequalities.  GLE 0606.3.4 Use expressions, equations and formulas to solve problems.	GLE 0706.3.1 Recognize and generate equivalent forms for simple algebraic expressions.  GLE 0706.3.8 Use a variety of strategies to efficiently solve linear equations and inequalities.	GLE 0806.3.1 Recognize and generate equivalent forms for algebraic expressions.  GLE 0806.3.2 Represent, analyze, and solve problems involving linear equations and inequalities in one and two variables.  GLE 0806.3.3 Solve systems of linear equations in two variables.	CLE 3102.3.4 Solve problems involving linear equations and linear inequalities.  CLE 3102.3.5 Manipulate formulas and solve literal equations.  CLE 3102.3.6 Understand and use relations and functions in various representations to solve contextual problems.  CLE 3102.3.9 Understand and use exponential functions to solve contextual problems		CLE 3103.3.3 Analyze and apply various methods to solve equations, absolute values, inequalities, and systems of equations over complex numbers.  CLE 3103.3.5 Use mathematical models involving equations and systems of equations to represent, interpret and analyze quantitative relationships, change in various contexts, and other real-world phenomena.

## Algebra Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
						<p>GLE 0606.3.6 Understand and use the Cartesian coordinate system.</p>	<p>GLE 0706.3.5 Understand and graph proportional relationships.</p> <p>GLE 0706.3.6 Conceptualize the meanings of slope using various interpretations, representations, and contexts.</p> <p>GLE 0706.3.7 Use mathematical models involving linear equations to analyze real-world phenomena.</p>	<p>GLE 0806.3.5 Use slope to analyze situations and solve problems.</p> <p>GLE 0806.3.6 Compare and contrast linear and nonlinear functions.</p>	<p>CLE 3102.3.7 Construct and solve systems of linear equations and inequalities in two variables by various methods.</p> <p>CLE 3102.3.8 Solve and understand solutions of quadratic equations with real roots.</p>	<p>CLE 3108.3.1 Use analytic geometry tools to explore geometric problems involving parallel and perpendicular lines, circles, and special points of polygons.</p> <p>CLE 3108.3.2 Explore the effect of transformations on geometric figures and shapes in the coordinate plane.</p>	<p>CLE 3103.3.4 Graph and compare equations and inequalities in two variables. Identify and understand the relationships between the algebraic and geometric properties of the graph.</p>

# Geometry & Measurement Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
GLE 0006.4.1 Interpret and describe the physical world with geometric ideas and vocabulary.	GLE 0106.4.1 Recognize, describe, and draw geometric figures.	GLE 0206.4.1 Recognize, classify, and transform 2- and 3-dimensional geometric figures.	GLE 0306.4.1 Describe, compare, and analyze properties of polygons.	GLE 0406.4.1 Understand and use the properties of lines, segments, angles, polygons, and circles.	GLE 0506.4.2 Describe polyhedral solids and analyze their properties, including volume and surface area.	GLE 0606.4.1 Understand and use basic properties of triangles, quadrilaterals, and other polygons.		GLE 0806.4.2 Understand the relationships among the angles formed by parallel lines cut by transversals.		<p>CLE 3108.4.1 Develop the structures of geometry, such as lines, angles, planes, and planar figures, and explore their properties and relationships.</p> <p>CLE 3108.4.2 Describe the properties of regular polygons, including comparative classification of them and special points and segments.</p> <p>CLE 3108.4.3 Develop an understanding of the tools of logic and proof, including aspects of formal logic as well as construction of proofs.</p> <p>CLE 3108.4.9 Develop the role of circles in geometry, including angle measurement, properties as a geometric figure, and aspects relating to the coordinate</p>	

## Geometry & Measurement Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
GLE 0006.4.2 Use positional terms to specify locations with simple relationships.				GLE 0406.4.4 Understand the representation of location and movement within the first quadrant of a coordinate system.	GLE 0506.4.3 Describe length/distance relationships using the first quadrant of the coordinate system.	GLE 0606.4.2 Use the concepts of translation, rotation, reflection, and symmetry to understand congruence in the plane.					Develop an understanding of the tools of logic and proof, including aspects of formal logic as well as construction of proofs.
GLE 0006.4.3 Compare and order measurable attributes of objects directly (by comparing them with each other) and indirectly (by comparing both with a third object).	GLE 0106.4.3 Use non-standard units in linear measurement.	GLE 0206.4.2 Understand the meaning and process of linear measurement.  GLE 0206.4.3 Add, subtract, compare, compute and estimate linear measurements.	GLE 0306.4.5 Solve measurement problems involving fractional parts of linear units and capacity units.	GLE 0406.4.2 Understand and use measures of length, area, capacity, and weight.  GLE 0406.4.3 Solve problems that involve estimating and measuring length, area, capacity and weight.	GLE 0506.4.4 Solve problems that require attention to both approximation and precision of measurement.			GLE 0806.4.3 Understand the necessary levels of accuracy and precision in measurement.  GLE 0806.4.4 Understand both metric and customary units of measurement.	CLE 3102.4.2 Apply appropriate units of measure and convert measures in problem solving situations.		

## Geometry & Measurement Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
			<p>GLE 0306.4.3 Understand and use attributes of 2- and 3-dimensional figures to solve problems.</p> <p>GLE 0306.4.4 Use appropriate units, strategies and tools to solve problems involving perimeter.</p>		<p>GLE 0506.4.1 Use basic formulas and visualization to find the area of geometric figures.</p>	<p>GLE 0606.4.3 Develop and use formulas to determine the circumference and area of circles, and the area of trapezoids, and develop strategies to find the area of composite shapes.</p> <p>GLE 0606.4.4 Develop and use formulas for surface area and volume of 3-dimensional figures.</p>		<p>GLE 0806.4.5 Use visualization to describe or identify intersections, cross-sections, and various views of geometric figures.</p>	<p>CLE 3102.4.1 Use algebraic reasoning in applications involving geometric formulas and contextual problems.</p>	<p>CLE 3108.4.4 Develop geometric intuition and visualization through performing geometric constructions with straightedge/compass and with technology.</p> <p>CLE 3108.4.5 Extend the study of planar figures to three-dimensions, including the classical solid figures, and develop analysis through cross-sections.</p> <p>CLE 3108.4.6 Generate formulas for perimeter, area, and volume, including their use, dimensional analysis, and applications.</p>	

# Geometry & Measurement Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
	GLE 0106.4.2 Compose and decompose geometric shapes.	GLE 0206.4.4 Compose and decompose polygons to make other polygons.						GLE 0806.4.1 Derive the Pythagorean theorem and understand its applications.		Develop the role of circles in geometry, including angle measurement, properties as a geometric figure, and aspects relating to the coordinate plane.	<p>CLE 3103.4.1 Understand the trigonometric functions and their relationship to the unit circle.</p> <p>CLE 3103.4.2 Know and use the basic identities of sine, cosine, and tangent as well as their reciprocals.</p> <p>CLE 3103.4.3 Graph all six trigonometric functions and identify their key characteristics.</p> <p>CLE 3103.4.4 Know and use the Law of Sines to find missing sides and angles of a triangle, including the ambiguous case.</p> <p>CLE 3103.4.5 Use trigonometric concepts, properties and graphs to solve problems.</p>

## Geometry & Measurement Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
			GLE 0306.4.2 Understand and apply the concepts of congruence and symmetry.				GLE 0706.4.1 Understand the application of proportionality with similar triangles.  GLE 0706.4.2 Apply proportionality to converting among different units of measurements to solve problems involving rates such as motion at a constant speed.  GLE 0706.4.3 Understand and use scale factor to describe the relationships between length, area, and volume.  GLE 0706.4.4 Understand and use ratios, derived quantities, and indirect measurements.			CLE 3108.4.8 Establish processes for determining congruence and similarity of figures, especially as related to scale factor, contextual applications, and transformations.	

## Data Analysis, Statistics, & Probability Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
GLE 0006.5.1 Sort objects and use one or more attributes to solve problems.											
GLE 0006.5.2 Re-sort objects using new attributes.											
	GLE 0106.5.1 Use various representations to display and compare data.	GLE 0206.5.1 Use and understand various representations to depict and analyze data measurements.	GLE 0306.5.1 Organize, display, and analyze data using various representations to solve problems.	GLE 0406.5.1 Collect, record, arrange, present, and interpret data using tables and various representations.	GLE 0506.5.1 Make, record, display and interpret data and graphs that include whole numbers, decimals, and fractions.	GLE 0606.5.2 Interpret representations of data from surveys and polls, and describe sample bias and how data representations can be misleading.	GLE 0706.5.1 Collect, organize, and analyze both single- and two-variable data.  GLE 0706.5.2 Select, create, and use appropriate graphical representations of data.  GLE 0706.5.3 Formulate questions and design studies to collect data about a characteristic shared by two populations, or different characteristics within one population.	GLE 0806.5.2 Select, create, and use appropriate graphical representations of data (including scatterplots with lines of best fit) to make and test conjectures.	CLE 3102.5.2 Use statistical thinking to draw conclusions and make predictions.	CLE 3108.5.1 Analyze, interpret, employ and construct accurate statistical graphs.	CLE 3103.5.3 Use data and statistical thinking to draw inferences, make predictions, justify conclusions and identify and explain misleading uses of data.
		GLE 0206.5.2 Determine whether an event is likely or unlikely.		GLE 0406.5.2 Use probability to describe chance events.		GLE 0606.5.1 Understand the meaning of probability and how it is expressed.	GLE 0706.5.5 Understand and apply basic concepts of probability.	GLE 0806.5.1 Explore probabilities for compound, independent and/or dependent events.	CLE 3102.5.3 Understand basic counting procedures and concepts of probability.	CLE 3108.5.2 Develop the basic principles of geometric probability.	CLE 3103.5.4 Develop an understanding of probability concepts in order to make informed decisions.

### Data Analysis, Statistics, & Probability Standard

Kindergarten 0006	Grade 1 0106	Grade 2 0206	Grade 3 0306	Grade 4 0406	Grade 5 0506	Grade 6 0606	Grade 7 0706	Grade 8 0806	Algebra 1 3102	Geometry 3108	Algebra 2 3103
								GLE 0806.5.3 Evaluate the use of statistics in media reports.			CLE 3103.5.2 Evaluate and critique various ways of collecting data and using information based on data published in the media.
				GLE 0506.5.2 Describe the shape and important features of a set of data using the measures of central tendency.		GLE 0706.5.4 Use descriptive statistics to summarize and compare data.					
								CLE 3102.5.1 Describe and interpret quantitative information.			CLE 3103.5.1 Describe, interpret, and apply quantitative data.