

# LZHS Mathematics Department State Goal Alignment

I = Introduce   D = Develop   M = Master   A = Apply

		Essentials	A-Algebra I	CP-Algebra I	H-Algebra I	A-Geometry	CP-Geometry	H-Geometry	Intermediate	Algebra II-A	Algebra II-B	CP Algebra II	H-Algebra II	Adv. Math	H-Pre-Calculus	AP Calculus AB	AP Calculus BC	AP Statistics
	<b>State Goal 6: Number Sense</b>	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
	Demonstrate and apply a knowledge and sense of numbers, including numeration and operations (addition, subtraction, multiplication, division), patterns, ratios and proportions.	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
	<b>Standard 6A – Representations and Ordering</b>	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
6.11.01	Recognize, represent, order, compare real numbers, and locate real numbers on a number line (e.g., $\pi$ , $\sqrt{2}$ , cube rt(5), $2/3$ , -1.6).	I	M	M	M	A	A	A	A	A	A	A	A	A	A	A	A	A
6.11.02	Represent numbers in equivalent forms (e.g., fraction/decimal/percent, exponential/logarithmic, radical/rational exponents, absolute value, scientific notation).	I	D	D	D	D	D	D	D	D	M	M	M	A	A	A	A	
6.11.03	Use matrices to organize data.		I	I	I					M		M	M	A	A			
	<b>Standards 6B, 6C – Computation, Operations, Estimation, and Properties</b>	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
6.11.04	Apply the rules of order of operations to real-number expressions.	D	M	M	M	A	A	A	A	A	A	A	A	A	A	A	A	
6.11.05	Simplify or test expressions by applying field properties (commutative, associative, distributive), order properties (transitive, reflexive, symmetric), and properties of equality for the set of real numbers.	I	D	D	D	M	M	M	A	A	A	A	A	A	A	A	A	
6.11.06	Apply number theory concepts to the solution of problems (e.g., prime and composite numbers, prime factorization, greatest common factor, least common multiple, divisibility rules).	M	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
6.11.07	Determine the effects of operations on the magnitudes of quantities (e.g., multiplication, division, powers, roots).	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
6.11.08	Determine the appropriate solution, including rounding, from a context (e.g., rounding up, down, to the nearest integer).	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
6.11.09	Solve problems involving estimates or data (e.g., use averages to estimate the cost of a job that includes labor and materials).	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
6.11.10	Perform numerical computations with real numbers.	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
6.11.11	Perform numerical computations with non-real complex numbers.										D	D	M	A	A	A	A	
6.11.12	Solve problems using simple matrix operations (addition, subtraction, multiplication, scalar multiplication).		I	I	I					M	A	M	M	A	A	A	A	
6.11.13	Set up, evaluate, or solve single- and multi-step number sentences and word problems with rational numbers using the four basic operations.		I	I	I					M	A	M	M	A	A	A	A	
6.11.14	Determine the most cost effective option using single- and multi-step calculations and then comparing results.	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
6.11.15	Judge the reasonableness of solutions, and find mistakes in calculation, logic, and formula application.	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
6.11.16	Simplify numerical problems involving absolute value.			M	M					A	A	A	A	A	A	A	A	
	<b>Standard 6D – Ratios, Proportions, and Percents</b>	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
6.11.17	Set up, evaluate, or solve number sentences or word problems involving ratios and proportions with rational numbers (e.g., scale drawing, unit rate, scale factor, rate of change).	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
6.11.18	Set up, evaluate, or solve common problems involving percent (e.g., sales tax, tip, interest, discount, markup, commission, compound interest).	D	D	D	D					M	A	M	M	A	A	A	A	
6.11.19	Set up, evaluate, or solve problems stated in terms of direct and inverse variation of simple quantities.			I	I					D	M	M	M	A	A	A	A	



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	<b>State Goal 8: Algebra</b>	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
	Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
	<b>Standard 8A – Representations, Patterns, and Expressions</b>	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
8.11.01	Simplify or identify equivalent algebraic expressions (e.g., exponential, rational, logarithmic, factored, polynomial).	I	I	I	I	I	D	D	D	D	D	D	M	M	A	A	A	
8.11.02	Represent mathematical relationships using symbolic algebra.	I	I	I	I	D	D	D	D	D	M	M	M	A	A	A	A	
8.11.03	Identify essential quantitative relationships in a situation, and determine the class or classes of functions (e.g., linear, quadratic, exponential) that model the relationships.	I	I	I	I	D	D	D	D	D	D	D	M	M	A	A	A	
8.11.04	Determine a specific term, a finite sum, or a rule that generates terms of a pattern.									I	D	I	M	M	A	A	A	
8.11.05	Model and describe slope as a constant rate of change.	I	M	M	M	A	A	A	A	A	A	A	A	A	A	A	A	
8.11.06	Evaluate variable expressions and functions.	I	D	D	D	D	D	D	D	M	A	M	M	A	A	A	A	
	<b>Standard 8B – Connections Using Tables, Graphs, and Symbols</b>	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
8.11.07	Identify an equation of a line or an equation of a line of best fit from given information (e.g., from a set of ordered pairs, graphs, tables).	I	I	I	I	I	D	D	D	D	D	D	M	M	A	A	A	
8.11.08	Recognize and describe the general shape and properties of functions from graphs, tables, or equations (e.g., linear, absolute value, quadratic, exponential, logarithmic).	I	I	I	I	D	D	D	D	D	D	D	M	M	A	A	A	
8.11.09	Identify slope from an equation, table of values, or graph.	I	M	M	M	A	A	A	A	A	A	A	A	A	A	A	A	
8.11.10	Interpret the role of the coefficients and constants on the graphs of linear and quadratic functions, given a set of equations.	I	I	I	I					D	D	D	M	M	A	A	A	
8.11.11	Analyze functions by investigating domain, range, rates of change, intercepts, and zeros.	I	I	I	I					D	D	M	M	A	A	A	A	
8.11.12	Create and connect representations that are tabular, graphic, numeric, and symbolic from a set of data.	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	M
8.11.13	Represent quantitative relationships graphically, and interpret the meaning of the graph or a specific part of the graph as it relates to the situation represented by the graph.	I	I	I	I	D	D	D	D	D	D	D	D	D	D	M	M	
	<b>Standards 8C, 8D – Writing, Interpreting, and Solving Equations</b>	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
8.11.14	Model problems using mathematical functions and relations (e.g., linear, non-linear).	I	I	I	I	D	D	D	D	D	M	M	M	A	A	A	A	
8.11.15	Interpret the graph of a system of equations and inequalities, including cases where there are no solutions.	I	I	I	I	D	D	D		M	A	M	M	A	A	A	A	
8.11.16	Solve linear equations and inequalities, including selecting and evaluating formulas.	I	I	I	I	D	D	D		M	A	M	M	A	A	A	A	
8.11.17	Solve systems of equations and inequalities.	I	I	I	I	D	D	D		M	A	M	M	A	A	A	A	
8.11.18	Solve quadratic equations over the complex number system, including selecting and evaluating formulas.									I	M	I	M	M	A	A	A	
8.11.19	Solve problems that include nonlinear functions, including selecting and evaluating formulas (i.e., absolute value, trigonometric, logarithmic, exponential).	I	I	I	I					D	D	D	D	M	M	A	A	
8.11.20	Identify, interpret, and write equations for circles and other conic sections.					I	I	I			D	D	M		A	A	A	
8.11.21	Recognize and apply mathematical and algebraic axioms, theorems of algebra, and deductive reasoning.	I	I	I	I	M	M	M		A	A	A	A	A	A	A	A	
8.11.22	Identify equivalent forms of equations, inequalities, and systems of equations.	I	I	I	I	D	D	D	D	M	A	M	M	A	A	A	A	

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	<b>State Goal 9: Geometry</b>	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
	Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space.	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
	<b>Standard 9A – Properties of Single Figures and Coordinate Geometry</b>	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
9.11.01	Apply the Pythagorean theorem.	I	D	M	M	A	A	A	A	A	A	A	A	A	A	A	A	
9.11.02	Identify and represent transformations (rotations, reflections, translations, dilations) of an object in the plane, and describe the effects of transformations on points in words or coordinates.					D	D	D		D	D	D	D	D	M	A	A	
9.11.03	Determine how changing the scale factor affects the size and position of a figure in the plane.			I	I	D	D	D		D	D	D	D	M	M	A	A	
9.11.04	Classify plane figures according to their properties.					M	M	M		A	A	A	A	A	A	A	A	
9.11.05	Identify, apply, or solve problems that require knowledge of geometric properties of plane figures (e.g., triangles, quadrilaterals, parallel lines cut by a transversal, angles, diagonals, triangle inequality).					M	M	M		A	A	A	A	A	A	A	A	
9.11.06	Identify a three-dimensional object from different perspectives.																	
9.11.07	Identify the relationship between two-dimensional patterns (e.g., nets) and related three-dimensional objects (e.g., cylinders, prisms, cones).					M	M	M		A	A	A	A	A	A	A	A	
9.11.08	Identify two- and three-dimensional figures that would match a set of given conditions.					M	M	M		A	A	A	A	A	A	A	A	
9.11.09	Solve problems that involve calculating distance, midpoint, and slope using coordinate geometry.	I	I	I	I	M	M	M		A	A	A	A	A	A	A	A	
9.11.10	Identify, apply, and solve problems that require knowledge of geometric relationships of circles (e.g. arcs, chords, tangents, secants, central angles, inscribed angles).					M	M	M										
9.11.11	Graph, locate, and identify points on a coordinate system.	D	M	M	M	A	A	A	A	A	A	A	A	A	A	A	A	
	<b>Standard 9B – Relationships Between and Among Multiple Figures</b>	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
9.11.12	Solve problems involving similar figures.					M	M	M										
9.11.13	Solve problems using triangle congruence.					M	M	M										
9.11.14	Describe how two or more objects are related in space (e.g., skew lines, the possible ways three planes might intersect).					D	D	D		D	D	D	D	D	D	M	M	
9.11.15	Identify relationships between circles and other objects in the plane (e.g., inscribed circles, concentric circles, internal/external tangency).					D	M	M										
	<b>Standard 9C – Justifications of Conjectures and Conclusions</b>	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
9.11.16	Recognize and apply the conditions that assure congruence and similarity.					D	M	M										
9.11.17	Recognize and apply mathematical and geometric axioms, fundamental theorems of geometry, and deductive reasoning.					M	M	M										
9.11.18	Identify a counter-example to disprove a conjecture.					I	I	D										
	<b>Standard 9D – Trigonometry</b>	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
9.11.19	Determine distances and angle measures using indirect measurement (e.g., properties of right triangles, Law of Sines, Law of Cosines).					D	D	D			D				M	M	A	A
9.11.20	Solve problems using 45°-45°-90° and 30°-60°-90° triangles.					M	M	M							A	A		
9.11.21	Identify graphs of a given trigonometric function (sin x, cos x) using its characteristics (e.g., period, amplitude).														M	M		
9.11.22	Define, identify, and evaluate trigonometric ratios.					D	D	D							M	M		
9.11.23	Use trigonometric identities (e.g., $\sin 2x + \cos 2x = 1$ )														M	M		

