Albuquerque Public Schools
High School District Benchmark Assessment
Algebra I Assessment Alignment 2009

NM PROCESS STANDARDS

To help New Mexico students achieve the Content Standards enumerated below, teachers are encouraged to base instruction on the following Process Standards:

These standards should be embedded in the classroom assessment and instruction.

Problem Solving • Build new mathematical knowledge through problem solving • Solve problems that arise in mathematics and other contexts • Apply and adapt a variety of appropriate strategies to solve problems, and • Monitor and reflect on the process of problem solving.	**Connections** • Recognize and use connections among mathematical ideas, • Understand how mathematical ideas interconnect and build on one another to produce a coherent whole, and • Recognize and apply mathematics in contexts outside of mathematics.
Reasoning and Proof • Recognize reasoning and proof as fundamental aspects of mathematics, • Make and investigate mathematical conjectures, • Develop and evaluate mathematical arguments and proofs, and • Select and use various types of reasoning and methods of proof.	**Representation** • Create and use representations to organize, record, and communicate mathematical ideas, • Select, apply, and translate among mathematical representations to solve problems, and • Use representations to model and interpret physical, social, and mathematical phenomena.
Communication • Organize and consolidate their thinking through communication, • Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, • Analyze and evaluate the mathematical thinking and strategies of others, • Use the language of mathematics to express mathematical ideas precisely, and • Describe mathematical concepts using developmentally appropriate definitions.	

Albuquerque Public Schools
High School District Benchmark Assessment
Algebra I Assessment Alignment 2009

EIGHTH GRADE NM STANDARDS **Strand: ALGEBRA** **Standard:** Students will understand algebraic concepts and applications.				
5-8 Benchmark A.1: Understand patterns, relations, and functions.				
Performance Standards		**Fall** **32 Questions**	**Winter** **39 Questions**	**Spring** **38 Questions**
8.A.1.1	Move between numerical, tabular, and graphical representations of linear relationships.			
8.A.1.2	Use variables to generalize patterns and information presented in tables, charts, and graphs: a. graph linear functions noting that the vertical change per unit of horizontal change (the slope of the graph) is always the same b. plot the values of quantities whose ratios are always the same, fit a line to the plot, and understand that the slope of the line equals the quantities	1 Question		
5-8 Benchmark A.2: Represent and analyze mathematical situations and structures using algebraic symbols.				
8.A.2.1	Demonstrate the difference between an equation and an expression.			
8.A.2.2	Solve two-step linear equations and inequalities in one variable with rational solutions.	1 Question		
8.A.2.3	Evaluate formulas using substitution.			
8.A.2.4	Demonstrate understanding of the relationships between ratios, proportions, and percents and solve for a missing term in a proportion.	2 Questions		
8.A.2.5	Graph solution sets of linear equations in two variables on the coordinate plane.	1 Question		
8.A.2.6	Formulate and solve problems involving simple linear relationships, find percents of a given number, variable situations, and unknown quantities.			

Albuquerque Public Schools
High School District Benchmark Assessment
Algebra I Assessment Alignment 2009

Performance Standards		Fall	Winter	Spring
8.A.2.7	Use symbols, variables, expressions, inequalities, equations, and simple systems of equations to represent problem situations that involve variables or unknown quantities.	2 Questions		
5-8 Benchmark A.3: Use mathematical models to represent and understand quantitative relationships.				
8.A.3.1	Generate different representations to model a specific numerical relationship given one representation of data (e.g., a table, a graph, an equation, a verbal description).			
5-8 Benchmark A.4: Analyze changes in various contexts.				
8.A.4.1	Use graphs, tables, and algebraic representations to make predictions and solve problems that involve change.	5 Questions		
8.A.4.2	Estimate, find, and justify solutions to problems that involve change using tables, graphs, and algebraic expressions.	2 Questions	1 Question	
8.A.4.3	Use appropriate problem-solving strategies (e.g., drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table or graph, working a simpler problem, writing an algebraic expression or working backward) to solve problems that involve change.			
8.A.4.4	Solve multi-step problems that involve changes in rate, average speed, distance, and time.			
8.A.4.5	Analyze problems that involve change by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing, and observing patterns.			

Albuquerque Public Schools
High School District Benchmark Assessment
Algebra I Assessment Alignment 2009

8.A.4.6	Generalize a pattern of change using algebra and show the relationship among the equation, graph, and table of values.			

8.A.4.7	Recognize the same general pattern of change presented in different representations.			

Strand: Numbers and Operations **Standard:** Students will understand numerical concepts and mathematical operations.				
5-8 Benchmark N.3: Compute fluently and make reasonable estimates.				
8.N.3.1	Formulate algebraic expressions that include real numbers to describe and solve real-world problems.			1 Question

Strand: Geometry **Standard:** Students will understand geometric concepts and applications.				
5-8 Benchmark G.4: Use visualization, spatial reasoning, and geometric modeling to solve problems.				
8.G.4.3	Represent and solve problems for area, perimeter, circumference, and volume.	1 Question		

Strand: Data Analysis and Probability **Standard:** Students will understand how to formulate questions, analyze data, and determine probabilities.				
5-8 Benchmark G.4: Select and use appropriate statistical methods to analyze data.				
8.D.2.4.	Interpret and use data from graphical representations and draw simple conclusions (e.g., line of best fit).	1 Question		

Albuquerque Public Schools
High School District Benchmark Assessment
Algebra I Assessment Alignment 2009

Strand II: Algebra, Functions, and Graphs			
Content Standard: Student will understand algebraic concepts and applications. **9-12 Benchmark A1: Represents and analyzes mathematical situations and structures using algebraic symbols.**			
Performance Standards	**Fall**	**Winter**	**Spring**
A.1.1 Use special symbols of mathematics correctly and precisely.			
A.1.2 Classify and use equivalent representations of natural, whole, integer, rational, or irrational, or complex numbers, and choose which type of number is appropriate in a given context and why it is necessary to extend to each new set of numbers.	Embedded in the Assessment		
A.1.3 Determine the relative position on the number line and the relative magnitude of integers, decimals, rationals, irrationals, and numbers in scientific notation.	Embedded in the Assessment		
A.1.4 Explain that the distance between two numbers on the number line is the absolute value of their difference.			2 Questions
A.1.5 Use a variety of computational methods, recognize when an estimate or approximation is more appropriate than an exact answer, and understand the limits on precision of approximations.			
A.1.6 Simplify numerical expressions using the order of operations, including integer exponents.	3 Questions		3 Questions
A.1.7 Translate verbal statements into algebraic expressions or equations.	1 Question	3 Questions	
A.1.8 Solve formulas for specified variables.	2 Questions	3 Questions	1 Question
A.1.9 Solve quadratic equations in one variable.			1 Question
A.1.10 Solve radical equations involving one radical.			
A.1.11 Describe the properties of rationale exponents and apply these properties to simplify algebraic expressions.			4 Questions
A.1.12 Explain and use equivalent representations for algebraic expressions, (e.g., simplify using the distributive property.	4 Questions	1 Question	

Albuquerque Public Schools
High School District Benchmark Assessment
Algebra I Assessment Alignment 2009

A.1.13 Simplify rational expressions by factoring and reducing to lowest terms.			
A.1.14 Evaluate polynomial, rational, radical, and absolute value expressions for one or more variables.	1 Question		1 Question
A.1.15 Compare and order polynominal expressions by degree.			
A.1.16 Factor polynomials of various types (e.g., differences of squares, perfect square trinomials, sum and difference of cubes).			3 Questions
A.1.17 Solve linear equations and inequalities in one variable including those involving the absolute value of a linear function.		1 Question	
A.1.18 Uses the four basic operations (+, -, x, ÷) with linear, polynomial, and rational expressions in contextual situations.	Embedded in the Assessment		
A.1.19 Uses the four basic operations (+, -, x, ÷) in contextual situations with numbers in scientific notation, and express the results with the appropriate number of significant figures.			

Albuquerque Public Schools
High School District Benchmark Assessment
Algebra I Assessment Alignment 2009

Performance Standards	Fall	Winter	Spring
Benchmark A.2: Understand patterns, relations, functions, and graphs.			
A.2.1 Distinguishes between the concept of a relation and a function.		1 Question	
A.2.2 Determine whether a relation defined by a graph, a set of ordered pairs, a table of values, an equation, or a rule is a function.	1 Question	2 Questions	
A.2.3 Translates among tabular, symbolic, and graphical representations of functions and relations.	2 Questions	3 Questions	1 Question
A.2.4 Construct a linear function that represents a given graph.			
A.2.5 Explain and use functional notation in both abstract and contextual situations and evaluate a function at a specific point in its domain. (NM – IB.5).		4 Questions	1 Question
A.2.6 Graph a linear equation and demonstrate that is has a constant rate of change.		1 Question	
A.2.7 Graph a linear inequality in two variables.		1 Question	1 Question
A.2.8 Graph a quadratic function and understand the relationship between its real zeros and the x-intercepts of its graph.			
A.2.9 Graph exponential functions and identify their key characteristics as related to contextual situations.			
A.2.10 Identify and describe symmetries of graphs.			
A.2.11 Uses the quadratic formula and factoring techniques to determine whether the graph of a quadratic function will intersect the x-axis in zero, one, or two points (include quadratic functions that represents real phenomena.			7 Questions
A.2.12 Explain the meaning of real and complex roots of quadratic functions in contextual situations.			
A.2.13 Read information and draw conclusions from graphs and identify properties of a graph that provide useful information about the original	1 Question		2 Questions

Albuquerque Public Schools
High School District Benchmark Assessment
Algebra I Assessment Alignment 2009

problem.			
A.2.14 Understand the relationship between the coefficients of a linear equation and the slope of x- and y-intercepts of its graphs.		2 Questions	
A.2.15 Evaluate estimated rate of change in a contextual situations.		5 Questions	
Benchmark A.3: Use mathematical models to represent and understand quantitative relationships.			
A.3.1 Models real-world phenomena using linear equations and linear inequalities, interpret resulting solutions, and use estimation to detect errors.		2 Questions	1 Question
A.3.2 Model real-world phenomena using quadratic equations, interpret resulting solutions, and use estimation to detect errors.			3 Questions
A.3.3 Model real-world phenomena using exponential equations, interpret resulting solutions, and use estimation to detect errors.			
A.3.4 Solve systems of linear equations in two variables algebraically and graphically.			
A.3.5 Solve applications involving systems of two equations in two variables.			4 Questions
A.3.6 Write an equation of the line that passes through two given points.		2 Questions	
A.3.7 Verify that a point lies on a line, given an equation of the line, and be able to derive linear equations given a point and a slope.		2 Questions	
A.3.8 Determine whether the graphs of two given linear equations are parallel, perpendicular, coincide or none of these.		1 Question	1 Question

Albuquerque Public Schools
High School District Benchmark Assessment
Algebra I Assessment Alignment 2009

Strand IV: Data Analysis and Probability			
Content Standard: Students will understand how to formulate questions, analyze data, and determine probabilities. **Benchmark D2: Select and use appropriate statistical methods to analyze data and make predictions.**			
Performance Standards	**Fall**	**Winter**	**Spring**
D.2.9 Use linear patterns in data to make predictions.		1 Question	
D.2.10 Use technological tools to find the line of best fit.		1 Question	
D.2.11 Describe the relationship between two variables and determine its strength (e.g., estimate the correlation coefficient), with and without technological tools.	1 Question	2 Questions	1 Question

Albuquerque Public Schools
High School District Benchmark Assessment
Algebra I Assessment Alignment 2009

Summary of the Algebra I Standards Assessed on the District Benchmark Assessment (DBA)

Fall DBA standards & (items): A.1.2**(8)** – (1), A.2.2**(8)** - (1), A.2.4**(8)** – (2), A.2.5**(8)** - (1), A.2.7**(8)** – (2), A.4.1**(8)** – (5), A.4.2**(8)** - (2), D.2.4**(8)** – (1), G.4.3**(8)** – (1), A.1.6 – (3), A.1.7 – (1), A.1.8 – (2), A.1.12 – (4), A.1.14 (1), A.2.2 – (1), A.2.3 – (2), A.2.13 – (1), D.2.11 – (1). Total items = 32.

***(8)** indicates an 8th grade standard.

Winter DBA standards & (items): A.4.2**(8)** – (1), A.1.7 - (3), A.1.8 – (3), A.1.12 – (1), A.1.17 – (1), A.2.1 – (1), A.2.2 – (2), A.2.3 – (3), A.2.5 – (4), A.2.6 – (1), A.2.7 – (1), A.2.14 – (2), A.2.15 – (5), A.3.1 – (2), A.3.6 – (2), A.3.7 - (2), A.3.8 – (1), D.2.9 - (1), D.2.10 – (1), D.2.11 – (2). Total items = 39.

Spring DBA standards & (items): N.3.1 – **(8)** – (1), A.1. 4– (2), A.1.6 - (3), A.1.8 – (1), A.1.9 – (1), A.1.11-(4), A.1.14 – (1), A.1.16 (3), A.2.3 – (1), A.2.5 – (1), A.2.7 – (1), A.2.11 – (7), A.2.13 – (2), A.3.1 - (1), A.3.2 – (3), A.3.5 (4), A.3.8 – (1), D.2.11 – (1). Total items = 38.