

Algebra I Calendar 2010-2011

Timeline	Topics	Description/Vocabulary	Indicators	Benchmarks	Aligned Instructional Resources	Assessments
8/18/10 to 8/27/10 (8 Days)	Order of Operations, Variables, and Properties	order of operations, coefficients, terms, like terms, properties of closure, identities, associative, commutative, distributive, comparing number sets (real, rational, integers, irrational), evaluating expressions where you substitute a value for a variable	N 1. Identify and justify whether properties (closure, identity, inverse, commutative and associative) hold for a given set and operations; e.g., even integers and multiplication.	N C. Apply properties of operations and the real number system, and justify when they hold for a set of numbers.		
			N 2. Compare, order and determine equivalent forms for rational and irrational numbers.	N E. Compare, order and determine equivalent forms of real numbers.		
			N 4. Demonstrate fluency in computations using real numbers.	N G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.		
			N 5. Estimate the solutions for problem situations involving square and cube roots.	N I. Estimate, compute and solve problems involving scientific notation, square roots and numbers with integer exponents.		
			P 11. Add, subtract, multiply and divide monomials and polynomials (division of polynomials by monomials only).	P D. Use algebraic representations, such as tables, graphs, expressions functions and inequalities, to model and solve problem situations.		
8/30/10 to 9/17/10 (14 Days)	Solving Equations and Inequalities	solve one-step, two-step, & multi-step equations and inequalities, balancing equations, solve a formula for a given variable, roots of linear functions	N 4. Demonstrate fluency in computations using real numbers.	N G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.		Window for Math Benchmark Sept. 6 - Sept. 10
			P 4. Demonstrate the relationship among zeros of a function, roots of equations, and solutions of equations graphically and in words.	P E. Analyze and compare functions and their graphs using attributes, such as rate of change, intercepts and zeros.		
			P 6. Write and use equivalent forms of equations and inequalities in problem situations; e.g., changing a linear equation to the slope-intercept form.	P F. Solve and graph linear equations and inequalities.		
9/20/10 to 10/1/10 (10 Days)	Ratios, Proportions, Percent and Probability	ratios, solving proportions, probability, odds, dependent, independent events, fundamental counting principle, percent increase/decrease, word problems	N 4. Demonstrate fluency in computations using real numbers.	N G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.		
			N 2. Compare, order and determine equivalent forms for rational and irrational numbers.	N E. Compare, order and determine equivalent forms of real numbers.		
			M 1. Convert rates within the same measurement system; e.g., miles per hour to feet per second; kilometers per hour to meters per second.	M D. Find use and interpret measures of center and spread, such as mean and quartiles, and use those measures to compare and draw conclusions about sets of data.		
			M 2. Use unit analysis to check computations involving measurement.			
			M 3. Use the ratio of lengths in similar two-dimensional figures or three dimensional objects to calculate the ratio of their areas or volumes respectively.			
			M 4. Use scale drawings and right triangle trigonometry to solve problems that include unknown distances and angle measures.			
			M 5. Solve problems involving unit conversion for situations involving distances, areas, volumes and rates within the same measurement system.			
			P 13. Model and solve problems involving direct and inverse variation using proportional reasoning.	P I. Model and solve problem situations involving direct and inverse variations.		
			G 2. Apply proportions and right triangle trigonometric ratios to solve problems involving missing lengths and angle measures in similar figures.	G I. Use right triangle trigonometry relationships to determine lengths and angle measures.		
			D 4. Describe and compare various types of studies (survey, observation, experiment), and identify possible misuses of statistical data.	D E. Evaluate the validity of claims and predictions that are based on data by examining the appropriateness of the data collections and analysis.		
D 5. Describe characteristics and limitations of sampling methods, and analyze the effects of random versus biased sampling; e.g., determine and justify whether the sample is likely to be representative of the population.	D G. Describe sampling methods and analyze the effects of methods chosen on how well the resulting sample represents the population.					

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			D 7. Use counting techniques and the Fundamental Counting principle to determine the total number of possible outcomes for mathematical situations.	D H. Use counting techniques, such as permutations and combinations, to determine the total number of options and possible outcomes.		
			D 8. Describe, create and analyze a sample space and use it to calculate probability.	D I. Design an experiment to test a theoretical probability, and record and explain results.		
			D 9. Identify situations involving independent and dependent events, and explain differences between, and common misconceptions about, probabilities associated with those events.	D J. Compute probabilities of compound events, independent events, and simple dependent events.		
9/20/10 to 10/1/10 (Cont.)			D 10. Use theoretical and experimental probability, including simulations random numbers, to estimate probabilities and to solve problems dealing with uncertainty; e.g., compound events, independent events, simple dependent events.	D K. Make predictions based on theoretical probabilities and experimental results.		
10/4/10 to 10/22/10 (13 Days)	Functions	define a function, vertical line test, independent/dependent variables, domain, range, linear, nonlinear, absolute value function, introduce parabolas, families of functions (linear, quadratic, abs. value) function notation, comparing graphs of functions, function notation	N 4. Demonstrate fluency in computations using real numbers.	N G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.		
			P 1. Define function with ordered pairs in which each domain element is assigned exactly one range element.	P B. Identify and classify functions as linear or nonlinear, and contrast their properties using tables, graphs or equations.		
			P 3. Describe problem situations (linear, quadratic and exponential) by using tabular, graphical and symbolic representations.	P C. Translate information from one representation (words, table, graph or equation) to another representation of a relation or function.		
			P 2. Generalize patterns using functions or relationships (linear, quadratic and exponential), and freely translate among tabular, graphical and symbolic representations.	PA. Generalize and explain patterns and sequences in order to find the next term and the nth term.		
			P 5. Describe and compare characteristics of the following families of functions: linear, quadratic and exponential functions; e.g., general shape, number of roots, domain, range, rate of change, maximum or minimum.	P E. Analyze and compare functions and their graphs using attributes, such as rate of change, intercepts and zeros.		
			P 10. Solve quadratic equations with real roots by factoring, graphing, using the quadratic formula and with technology.	P G. Solve quadratic equations with real roots by graphing formula and factoring.		
			P 15. Describe how a change in the value of a constant in a linear or quadratic equation affects the related graphs.	P J. Describe and interpret rates of change from graphical and numerical data.		
END OF FIRST QUARTER						
10/25/10 to 11/19/10 (20 Days)	Linear Equations and Coordinate Geometry	slope, rate of change, slope formula, rise/run, slope triangle, horizontal slope, vertical slope, parallel/perpendicular lines and slopes, linear, y-intercept, point slope form, slope intercept form, standard form, xy chart, translate among algebraic tabular graphical forms, word problems, distance formula, coordinate geometry	N 4. Demonstrate fluency in computations using real numbers.	N G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.		
			G 3. Analyze two-dimensional figures in a coordinate plane; e.g., use slope and distance formulas to show that a quadrilateral is a parallelogram.	G G. Prove or disprove conjectures and solve problems involving two and three-dimensional objects represented within a coordinate system.		
			P 2. Generalize patterns using functions or relationships (linear, quadratic and exponential), and freely translate among tabular, graphical and symbolic representations.	P C. Translate information from one representation (words, table, graph or equation) to another representation of a relation or function.		
			P 3. Describe problem situations (linear, quadratic and exponential) by using tabular, graphical and symbolic representations.	P B. Identify and classify functions as linear or nonlinear, and contrast their properties using tables, graphs or equations.		
			P 5. Describe and compare characteristics of the following families of functions: linear, quadratic and exponential functions; e.g., general shape, number of roots, domain, range, rate of change, maximum or minimum.	P E. Analyze and compare functions and their graphs using attributes, such as rate of change, intercepts and zeros.		

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Timeline	Topics	Description/Vocabulary	Indicators	Benchmarks	Aligned Instructional Resources	Assessments
10/25/10 to 11/19/10 (Cont.)			P 6. Write and use equivalent forms of equations and inequalities in problem situations; e.g., changing a linear equation to the slope-intercept form.	P F. Solve and graph linear equations and inequalities.		
			P 8. Find linear equations that represent lines that pass through a given set of ordered pairs, and find linear equations that represent lines parallel or perpendicular to a given line through a specific point.			
			P 14. Describe the relationship between slope and the graph of a direct variation and inverse variation.	P I. Model and solve problem situations involving direct and inverse variation.		
			P 15. Describe how a change in the value of a constant in a linear or quadratic equation affects the related graphs.	P J. Describe and interpret rates of change from graphical and numerical data.		
			D 2. Create a scatterplot for a set of bivariate data, sketch the line of best fit, and interpret the slope of the line of best fit.	D A. Create, interpret and use graphical displays and statistical measures to describe data; e.g., box and whisker plots, histograms, scatterplots, measures of center and variability.		
10/25/10 to 11/19/10 (Cont.)			M 5. Solve problems involving unit conversion for situations involving distances, areas, volumes and rates within the same measurement system.	M D. Find use and interpret measures of center and spread, such as mean and quartiles, and use those measures to compare and draw conclusions about sets of data.		
11/22/10 to 12/3/10 (7 Days)	Linear inequalities and their graphs	Solve and graph linear inequalities, solve problem situations involving linear inequalities	P 6. Write and use equivalent forms of equations and inequalities in problem situations; e.g., changing a linear equation to the slope-intercept form.	P F. Solve and graph linear equations and inequalities.		
			N 4. Demonstrate fluency in computations using real numbers.	N G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.		
			P 4. Demonstrate the relationship among zeros of a function, roots of equations, and solutions of equations graphically and in words.	P E. Analyze and compare functions and their graphs using attributes, such as rate of change, intercepts and zeros.		
12/6/10 to 12/15/10 (8 Days)	Systems of Equations and Inequalities by graphing	Solve systems of linear equations by graphing, solve systems of inequalities by graphing	P 6. Write and use equivalent forms of equations and inequalities in problem situations; e.g., changing a linear equation to the slope-intercept form.	P F. Solve and graph linear equations and inequalities.		Window for Math Benchmark Dec. 6 - Dec. 10 Window for 1st Semester Exams Dec. 16 - Dec.21
			P 9. Solve and interpret the meaning of 2 by 2 systems of linear equations graphically, by substitution and by elimination, with and without technology.	P H. Solve systems of linear equations involving two variables graphically and symbolically.		
			P 4. Demonstrate the relationship among zeros of a function, roots of equations, and solutions of equations graphically and in words.	P E. Analyze and compare functions and their graphs using attributes, such as rate of change, intercepts and zeros.		
END OF SECOND QUARTER						
1/5/11 to 1/21/11 (12 Days)	Systems of Equations Algebraically	Solve systems of linear equations by graphing, substitution, elimination, and with technology, word problems, solve systems of inequalities by graphing	P 6. Write and use equivalent forms of equations and inequalities in problem situations; e.g., changing a linear equation to the slope-intercept form.	P F. Solve and graph linear equations and inequalities.		
			P 9. Solve and interpret the meaning of 2 by 2 systems of linear equations graphically, by substitution and by elimination, with and without technology.	P H. Solve systems of linear equations involving two variables graphically and symbolically.		
			P 4. Demonstrate the relationship among zeros of a function, roots of equations, and solutions of equations graphically and in words.	P E. Analyze and compare functions and their graphs using attributes, such as rate of change, intercepts and zeros.		
			N 4. Demonstrate fluency in computations using real numbers.	N G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.		
			N 4. Demonstrate fluency in computations using real numbers.	N G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.		

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Timeline	Topics	Description/Vocabulary	Indicators	Benchmarks	Aligned Instructional Resources	Assessments
1/24/11 to 1/28/11 (5 Days)	Rates, Direct and Inverse Variation	measurement conversions, direct and inverse variation, word problems	M 1. Convert rates within the same measurement system; e.g., miles per hour to feet per second; kilometers per hour to meters per second.	M D. Find use and interpret measures of center and spread, such as mean and quartiles, and use those measures to compare and draw conclusions about sets of data.		
			M 2. Use unit analysis to check computations involving measurement.			
			M 4. Use scale drawings and right triangle trigonometry to solve problems that include unknown distances and angle measures.			
			M 5. Solve problems involving unit conversion for situations involving distances, areas, volumes and rates within the same measurement system.	P I. Model and solve problem situations involving direct and inverse variation.		
			P 13. Model and solve problems involving direct and inverse variation using proportional reasoning.			
P 14. Describe the relationship between slope and the graph of a direct variation and inverse variation.						
1/31/11 to 2/18/11 (15 Days)	Exponents	base, scientific notation, zero and negative exponents, Multiplying and Dividing Exponents, word problems involving exponents, Exponential Functions, exponential growth and decay.	N 3. Explain the effects of operations such as multiplication or division, and of computing powers and roots on the magnitude of quantities.	N F. Explain the effects of operations on the magnitude of quantities.		
			N 4. Demonstrate fluency in computations using real numbers.	N G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.		
			P 12. Simplify rational expressions by eliminating common factors and applying properties of integer exponents.	P D. Use algebraic representations, such as tables, graphs, expressions functions and inequalities, to model and solve problem situations.		
1/31/11 to 2/18/11 (Cont.)			P 15. Describe how a change in the value of a constant in a linear or quadratic equation affects the related graphs.	P J. Describe and interpret rates of change from graphical and numerical data.		
			P 7. Use formulas to solve problems involving exponential growth and decay.	P D. Use algebraic representations, such as tables, graphs, expressions functions and inequalities, to model and solve problem situations.		
2/22/11 to 3/18/11 (19 Days)	Naming, Multiplying and Factoring Polynomials.	naming polynomials, stand. form, add/subtract/multiply polynomials, foil, factoring (GCF, spec.cases, trinomials with a = 1, monomial ops (multiply, divide, combine like	N 4. Demonstrate fluency in computations using real numbers.	N G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.		Window for Math Benchmark Mar. 14 - Mar. 18
			P 11. Add, subtract, multiply and divide monomials and polynomials (division of polynomials by monomials only).	P D. Use algebraic representations, such as tables, graphs, expressions functions and inequalities, to model and solve problem situations.		
END OF THIRD QUARTER						
3/21/11 to 4/15/11 (15 Days)	Quadratics	quadratic equation, quadratic formula, zeros, roots, solutions, intercepts, solve by factoring, graphing, formula, and with technology, (real roots only)	N 4. Demonstrate fluency in computations using real numbers.	N G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.		
			P 10. Solve quadratic equations with real roots by factoring, graphing, using the quadratic formula and with technology.	P G. Solve quadratic equations with real roots by graphing formula and factoring.		
			P 11. Add, subtract, multiply and divide monomials and polynomials (division of polynomials by monomials only).	P D. Use algebraic representations, such as tables, graphs, expressions functions and inequalities, to model and solve problem situations.		
			P 4. Demonstrate the relationship among zeros of a function, roots of equations, and solutions of equations graphically and in words.			
P 12. Simplify rational expressions by eliminating common factors and applying properties of integer exponents.						
			N 4. Demonstrate fluency in computations using real numbers.	N G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.		

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Timeline	Topics	Description/Vocabulary	Indicators	Benchmarks	Aligned Instructional Resources	Assessments
4/18/11 to 5/6/11 (13 Days)	Trigonometry	trigonometric ratios, pythagorean theorem, use trig to find sides and angles	M 4. Use scale drawings and right triangle trigonometry to solve problems that include unknown distances and angle measures. G 1. Define the basic trigonometric ratios in right triangles: sine, cosine and tangent. G 2. Apply proportions and right triangle trigonometric ratios to solve problems involving missing lengths and angle measures in similar figures.	M D. Find use and interpret measures of center and spread, such as mean and quartiles, and use those measures to compare and draw conclusions about sets of data. G I. Use right triangle trigonometry relationships to determine lengths and angle measures.		
5/9/11 to 5/20/11 (10 Days)	Data Analysis	box and whisker, frequency, min, max, range, outliers, quartiles, line of best fit, scatterplot, measures of center, five number summary, correlation	N 4. Demonstrate fluency in computations using real numbers. D 10. Use theoretical and experimental probability, including simulations random numbers, to estimate probabilities and to solve problems dealing with uncertainty; e.g., compound events, independent events, simple dependent events. D 2. Create a scatterplot for a set of bivariate data, sketch the line of best fit, and interpret the slope of the line of best fit. D 3. Analyze and interpret frequency distributions based on spread, symmetry, skewness, clusters and outliers. D 4. Describe and compare various types of studies (survey, observation, experiment), and identify possible misuses of statistical data. D 5. Describe characteristics and limitations of sampling methods, and analyze the effects of random versus biased sampling; e.g., determine and justify whether the sample is likely to be representative of the population.	N G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions. D A. Create, interpret and use graphical displays and statistical measures to describe data; e.g., box and whisker plots, histograms, scatterplots, measures of center and variability. D E. Evaluate the validity of claims and predictions that are based on data by examining the appropriateness of the data collections and analysis. D G. Describe sampling methods and analyze the effects of methods chosen on how well the resulting sample represents the population.		
5/9/11 to 5/20/11 (Cont.)	Data Analysis		D 6. Make inferences about relationships in bivariate data, and recognize the difference between evidence of relationship (correlation) and causation.	D F. Construct convincing arguments based on analysis of data and interpretation of graphs.		Window for 2nd Semester Exams May 23 - May 26
END OF FOURTH SEMESTER						