

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Missouri Math: Grade and Course Level Expectations 2007		
	Course/ Level	Standard	Standard ID
Algebra and Functions Solve problems using algebraic expressions and symbols to represent relationships, patterns and functions of different types.	Algebra I	generalize patterns using explicitly or recursively defined functions	A.1.B.1
	Algebra I	compare and contrast various forms of representations of patterns	A.1.C.1
	Algebra I	understand and compare the properties of linear and nonlinear functions	A.1.D.1
	Algebra I	describe the effects of parameter changes on linear, exponential growth/decay and quadratic functions including intercepts	A.1.E.1
	Algebra I	use symbolic algebra to represent and solve problems that involve linear and quadratic relationships including equations and inequalities	A.2.A.1
	Algebra I	describe and use algebraic manipulations, including factoring and rules of integer exponents and apply properties of exponents (including order of operations) to simplify expressions	A.2.B.1
	Algebra I	use and solve equivalent forms of equations (linear, absolute value, and quadratic)	A.2.C.1
	Algebra I	use and solve systems of linear equations or inequalities with 2 variables	A.2.D.1
	Algebra I	identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem	A.3.A.1
	Algebra I	analyze linear and quadratic functions by investigating rates of change, intercepts and zeros	A.4.A.1
	Algebra II	generalize patterns using explicitly or recursively defined functions	A.1.B.1
	Algebra II	compare and contrast various forms of representations of patterns	A.1.C.1
	Algebra II	compare properties of linear, exponential, logarithmic and rational functions	A.1.D.1
	Algebra II	describe the effects of parameter changes on functions	A.1.E.1
	Algebra II	use symbolic algebra to represent and solve problems that involve exponential, quadratic and logarithmic relationships	A.2.A.1
	Algebra II	describe and use algebraic manipulations, inverse or composition of functions	A.2.B.1
Algebra II	use and solve equivalent forms of equations and inequalities	A.2.C.1	
Algebra II	use and solve systems of linear and quadratic equations or inequalities with 2 variables	A.2.D.1	

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	Course/ Level	Standard	Standard ID
Algebra and Functions Solve problems using algebraic expressions and symbols to represent relationships, patterns and functions of different types.	Algebra II	identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem	A.3.A.1
	Algebra II	analyze exponential and logarithmic functions by investigating rates of change, intercepts and asymptotes	A.4.A.1
	Geometry	generalize patterns using explicitly or recursively defined functions	A.1.B.1
	Geometry	compare and contrast various forms of representations of patterns	A.1.C.1
	Geometry	apply appropriate properties of exponents to simplify expressions and solve equations	A.2.B.1
	Geometry	identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem	A.3.A.1
	Geometry	analyze linear functions by investigating rates of change and intercepts	A.4.A.1
	Integrated Math II	generalize patterns using explicitly or recursively defined functions	A.1.B.1
	Integrated Math II	compare and contrast various forms of representations of patterns	A.1.C.1
	Integrated Math II	understand and compare the properties of linear, exponential and quadratic functions (include domain and range)	A.1.D.1
	Integrated Math II	describe the effects of parameter changes on quadratic and exponential functions	A.1.E.1
	Integrated Math II	use symbolic algebra to represent and solve problems that involve quadratic relationships, including recursive relationships	A.2.A.1
	Integrated Math II	describe and use algebraic manipulations, including factoring and rules of integer exponents	A.2.B.1
	Integrated Math II	use and solve equivalent forms of equations and inequalities (piece-wise and quadratic)	A.2.C.1
	Integrated Math II	use and solve systems of linear equations or inequalities with 2 variables	A.2.D.1
	Integrated Math II	identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem	A.3.A.1
Integrated Math II	analyze quadratic functions by investigating rates of change, intercepts and zeros	A.4.A.1	

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Algebra and Functions Solve problems using algebraic expressions and symbols to represent relationships, patterns and functions of different types.	Integrated Math II	apply properties of exponents to simplify expressions or solve equations	N.2.C.1
	Integrated Math III	generalize patterns using explicitly or recursively defined functions	A.1.B.1
	Integrated Math III	compare and contrast various forms of representations of patterns	A.1.C.1
	Integrated Math III	understand and compare the properties of linear, quadratic, exponential, logarithmic, rational and periodic functions (include asymptotes)	A.1.D.1
	Integrated Math III	describe the effects of parameter changes on logarithmic and exponential functions	A.1.E.1
	Integrated Math III	use symbolic algebra to represent and solve problems that involve exponential and logarithmic relationships, including recursive and parametric relationships	A.2.A.1
	Integrated Math III	describe and use algebraic manipulations, including inverse of functions, composition of functions and rules of exponents	A.2.B.1
	Integrated Math III	use and solve equivalent forms of equations and inequalities (exponential, logarithmic and rational)	A.2.C.1
	Integrated Math III	use and solve systems of linear and quadratic equations or inequalities with 2 variables	A.2.D.1
	Integrated Math III	identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem (including recursive forms)	A.3.A.1
Integrated Math III	analyze exponential and logarithmic functions by investigating rates of change, intercepts and asymptotes	A.4.A.1	
Communication Express mathematical ideas precisely and communicate them coherently and clearly in the language and notation of mathematics.	Algebra I	generalize patterns using explicitly or recursively defined functions	A.1.B.1
	Algebra I	describe the effects of parameter changes on linear, exponential growth/decay and quadratic functions including intercepts	A.1.E.1
	Algebra I	describe and use algebraic manipulations, including factoring and rules of integer exponents and apply properties of exponents (including order of operations) to simplify expressions	A.2.B.1
	Algebra I	select and use appropriate graphical representation of data and given one-variable quantitative data, display the distribution and describe its shape	D.1.C.1

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Communication Express mathematical ideas precisely and communicate them coherently and clearly in the language and notation of mathematics.	Algebra I	describe the effects of operations, such as multiplication, division and computing powers and roots on magnitudes of quantities and effects of computation on precision which include the judging of reasonableness of numerical computations and their results	M.2.D.1
	Algebra I	use a variety of representations to demonstrate an understanding of very large and very small numbers	N.1.C.1
	Algebra I	describe the effects of operations, such as multiplication, division, and computing powers and roots on the magnitude of quantities	N.2.B.1
	Algebra II	generalize patterns using explicitly or recursively defined functions	A.1.B.1
	Algebra II	describe the effects of parameter changes on functions	A.1.E.1
	Algebra II	describe and use algebraic manipulations, inverse or composition of functions	A.2.B.1
	Algebra II	select and use appropriate graphical representation of data and given one-variable quantitative data, describe its shape and calculate summary statistics	D.1.C.1
	Algebra II	describe the concepts of sample space and probability distribution	D.4.A.1
	Algebra II	use and describe the concepts of conditional probability and independent events and how to compute the probability of a compound event	D.4.B.1
	Algebra II	use a variety of representations to demonstrate an understanding of very large and very small numbers	N.1.C.1
	Geometry	generalize patterns using explicitly or recursively defined functions	A.1.B.1
	Geometry	select and use appropriate graphical representation of data and given one-variable quantitative data, display the distribution and describe its shape	D.1.C.1
	Geometry	identify types of symmetries of 2- and 3- dimensional figures	G.3.C.1
	Integrated Math II	describe the effects of parameter changes on quadratic and exponential functions	A.1.E.1
	Integrated Math II	describe and use algebraic manipulations, including factoring and rules of integer exponents	A.2.B.1
	Integrated Math II	describe the concepts of sample space and probability distribution	D.4.A.1

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	Course/ Level	Standard	Standard ID
Communication Express mathematical ideas precisely and communicate them coherently and clearly in the language and notation of mathematics.	Integrated Math II	use and describe the concepts of conditional probability and independent events	D.4.B.1
	Integrated Math III	generalize patterns using explicitly or recursively defined functions	A.1.B.1
	Integrated Math III	describe the effects of parameter changes on logarithmic and exponential functions	A.1.E.1
	Integrated Math III	describe and use algebraic manipulations, including inverse of functions, composition of functions and rules of exponents	A.2.B.1
	Integrated Math III	describe the characteristics of well designed studies, including the role of randomization in survey and experimental research	D.1.A.1
	Integrated Math III	describe how sample statistics reflect the values of population parameters and use sampling distributions as the basis for informal inference	D.3.A.1
	Integrated Math III	use and describe how to compute the probability of a compound event	D.4.B.1
Connections Connect ideas from different areas of mathematics (particularly geometry and algebra) to state or solve abstract or applied problems.	Integrated Math III	recognize how linear transformations of single-variable data affect shape, center, and spread	D.2.B.1
	Integrated Math III	perform simple transformations and their compositions on linear, quadratic, logarithmic and exponential functions	G.3.B.1
Data, Statistics, and Probability Analyze data, understand descriptive statistics, make inferences and determine the likelihood that certain events will occur.	Algebra I	formulate questions and collect data about a characteristic which include sample spaces and distributions	D.1.A.1
	Algebra I	select and use appropriate graphical representation of data and given one-variable quantitative data, display the distribution and describe its shape	D.1.C.1
	Algebra I	apply statistical measures of center to solve problems	D.2.A.1
	Algebra I	given a scatterplot, determine an equation for a line of best fit	D.2.C.1
	Algebra I	make conjectures about possible relationships between 2 characteristics of a sample on the basis of scatter plots of the data	D.3.A.1
	Algebra II	select and use appropriate graphical representation of data and given one-variable quantitative data, describe its shape and calculate summary statistics	D.1.C.1
	Algebra II	apply statistical measures of center to solve problems	D.2.A.1

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	Course/ Level	Standard	Standard ID
Data, Statistics, and Probability Analyze data, understand descriptive statistics, make inferences and determine the likelihood that certain events will occur.	Algebra II	given a scatterplot, determine a type of function which models the data	D.2.C.1
	Algebra II	describe the concepts of sample space and probability distribution	D.4.A.1
	Algebra II	use and describe the concepts of conditional probability and independent events and how to compute the probability of a compound event	D.4.B.1
	Geometry	formulate and collect data about a characteristic	D.1.A.1
	Geometry	select and use appropriate graphical representation of data and given one-variable quantitative data, display the distribution and describe its shape	D.1.C.1
	Integrated Math II	apply statistical concepts to solve problems and distinguish between a statistic and a parameter	D.2.A.1
	Integrated Math II	given a scatterplot, determine the type of function which models the data	D.2.C.1
	Integrated Math II	describe the concepts of sample space and probability distribution	D.4.A.1
	Integrated Math II	use and describe the concepts of conditional probability and independent events	D.4.B.1
	Integrated Math III	describe the characteristics of well designed studies, including the role of randomization in survey and experimental research	D.1.A.1
	Integrated Math III	display and analyze bivariate data where one variable is categorical and the other is numerical	D.1.C.1
	Integrated Math III	recognize how linear transformations of single-variable data affect shape, center, and spread	D.2.B.1
	Integrated Math III	create a scatter plot, describe its shape, determine and analyze regression equations	D.2.C.1
	Integrated Math III	describe how sample statistics reflect the values of population parameters and use sampling distributions as the basis for informal inference	D.3.A.1
	Integrated Math III	use and describe how to compute the probability of a compound event	D.4.B.1

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Geometry and Measurement Solve problems based on understanding the properties of shapes, such as triangles and circles, and the spatial relationships between angles and lines.	Algebra I	apply geometric properties such as similarity and angle relationship to solve multi-step problems in 2 dimensions	G.1.B.1
	Algebra I	draw or use visual models to represent and solve problems	G.4.B.1
	Algebra I	describe the effects of operations, such as multiplication, division and computing powers and roots on magnitudes of quantities and effects of computation on precision which include the judging of reasonableness of numerical computations and their results	M.2.D.1
	Algebra I	use unit analysis to solve problems	M.2.E.1
	Algebra II	translate, dilate and reflect functions	G.3.B.1
	Algebra II	draw or use visual models to represent and solve problems	G.4.B.1
	Algebra II	apply concepts of successive approximation	M.2.D.1
	Algebra II	use unit analysis to solve problems involving rates, such as speed, density or population density	M.2.E.1
	Geometry	use inductive and deductive reasoning to establish the validity of geometric conjectures, prove theorems and critique arguments made by others	G.1.A.1
	Geometry	make conjectures and solve problems involving 2-dimensional objects represented with Cartesian coordinates	G.2.A.1
	Geometry	use and apply constructions and the coordinate plane to represent translations, reflections, rotations and dilations of objects	G.3.A.1
	Geometry	identify types of symmetries of 2- and 3- dimensional figures	G.3.C.1
	Geometry	draw or use visual models to represent and solve problems	G.4.B.1
	Geometry	solve problems of angle measure, including those involving triangles or other polygons and of parallel lines cut by a transversal	M.2.B.1
	Geometry	determine the surface area, and volume of geometric figures, including cones, spheres, and cylinders	M.2.C.1

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	Course/ Level	Standard	Standard ID
Geometry and Measurement Solve problems based on understanding the properties of shapes, such as triangles and circles, and the spatial relationships between angles and lines.	Geometry	use unit analysis to solve problems	M.2.E.1
	Integrated Math II	apply relationships among surface areas and among volumes of similar objects	G.1.B.1
	Integrated Math II	make conjectures and solve problems involving 2-dimensional objects represented with Cartesian coordinates	G.2.A.1
	Integrated Math II	use and apply constructions and matrices to represent translations, reflections, rotations, and dilations	G.3.A.1
	Integrated Math II	translate, dilate and reflect quadratic and exponential functions	G.3.B.1
	Integrated Math II	draw or use visual models to represent and solve problems	G.4.B.1
	Integrated Math II	analyze effects of computation on accuracy and precision in measurement	M.2.D.1
	Integrated Math III	use inductive and deductive reasoning to determine lengths and angle measures in all types of triangles and to establish the validity of geometric conjectures, proved theorems and critique arguments made by others	G.1.A.1
	Integrated Math III	determine the effect on surface area or volume of changing one measurement	G.1.B.1
	Integrated Math III	perform simple transformations and their compositions on linear, quadratic, logarithmic and exponential functions	G.3.B.1
	Integrated Math III	draw representations of 3-dimensional geometric objects from different perspectives using a variety of tools	G.4.A.1
	Integrated Math III	draw or use visual models to represent and solve problems	G.4.B.1
	Integrated Math III	compare and contrast between angle and radian measure	M.1.B.1
	Integrated Math III	solve problems of angle measure of parallel lines cut by a transversal	M.2.B.1
	Integrated Math III	analyze concepts of successive approximation	M.2.D.1
Integrated Math III	use unit analysis to solve problems involving rates, such as speed, density or population density	M.2.E.1	

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Number and Operations Understand types of numbers (integers, fractions, decimals), their properties and the correct order of operations. Perform computations correctly.	Algebra I	compare and order rational and irrational numbers, including finding their approximate locations on a number line	N.1.A.1
	Algebra I	use real numbers and various models, drawing, etc. to solve problems	N.1.B.1
	Algebra I	use a variety of representations to demonstrate an understanding of very large and very small numbers	N.1.C.1
	Algebra I	describe the effects of operations, such as multiplication, division, and computing powers and roots on the magnitude of quantities	N.2.B.1
	Algebra I	apply operations to real numbers, using mental computation or paper-and-pencil calculations for simple cases and technology for more complicated cases	N.2.D.1
	Algebra I	judge the reasonableness of numerical computations and their results	N.3.D.1
	Algebra I	solve problems involving proportions	N.3.E.1
	Algebra II	compare and order rational and irrational numbers, including finding their approximate locations on a number line	N.1.A.1
	Algebra II	use real numbers and various models, drawing, etc. to solve problems	N.1.B.1
	Algebra II	use a variety of representations to demonstrate an understanding of very large and very small numbers	N.1.C.1
	Algebra II	judge the reasonableness of numerical computations and their results, including complex numbers	N.3.D.1
	Algebra II	solve problems involving proportions	N.3.E.1
	Geometry	compare and order rational and irrational numbers, including finding their approximate locations on a number line	N.1.A.1
	Geometry	use real numbers and various models, drawing, etc. to solve problems	N.1.B.1
	Geometry	apply operations to real numbers, using mental computation or paper-and-pencil calculations for simple cases and technology for more complicated cases	N.2.D.1
	Geometry	judge the reasonableness of numerical computations and their results	N.3.D.1

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	Course/ Level	Standard	Standard ID
Number and Operations Understand types of numbers (integers, fractions, decimals), their properties and the correct order of operations. Perform computations correctly.	Geometry	solve problems involving proportions	N.3.E.1
	Integrated Math II	compare and order rational and irrational numbers, including finding their approximate locations on a number line	N.1.A.1
	Integrated Math II	use real numbers and various models, drawings, etc. to solve problems	N.1.B.1
	Integrated Math II	apply operations to real numbers, using mental computation or paper-and-pencil calculations for simple cases and technology for more complicated cases	N.2.D.1
	Integrated Math II	judge the reasonableness of numerical computations and their results	N.3.D.1
	Integrated Math II	solve problems involving proportions	N.3.E.1
	Integrated Math III	compare and order rational and irrational numbers, including finding their approximate locations on a number line	N.1.A.1
	Integrated Math III	use real numbers and various models, drawings, etc. to solve problems	N.1.B.1
	Integrated Math III	judge the reasonableness of numerical computations and their results	N.3.D.1
	Integrated Math III	solve problems involving proportions	N.3.E.1
Problem Solving Solve abstract and practical problems, applying and adapting a variety of strategies. Monitor progress and evaluate answers in terms of questions asked.	Algebra I	use symbolic algebra to represent and solve problems that involve linear and quadratic relationships including equations and inequalities	A.2.A.1
	Algebra I	use and solve equivalent forms of equations (linear, absolute value, and quadratic)	A.2.C.1
	Algebra I	use and solve systems of linear equations or inequalities with 2 variables	A.2.D.1
	Algebra I	identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem	A.3.A.1
	Algebra I	apply statistical measures of center to solve problems	D.2.A.1
	Algebra I	given a scatterplot, determine an equation for a line of best fit	D.2.C.1
	Algebra I	apply geometric properties such as similarity and angle relationship to solve multi-step problems in 2 dimensions	G.1.B.1

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Problem Solving Solve abstract and practical problems, applying and adapting a variety of strategies. Monitor progress and evaluate answers in terms of questions asked.	Algebra I	use unit analysis to solve problems	M.2.E.1
	Algebra I	use real numbers and various models, drawing, etc. to solve problems	N.1.B.1
	Algebra I	apply operations to real numbers, using mental computation or paper-and-pencil calculations for simple cases and technology for more complicated cases	N.2.D.1
	Algebra I	judge the reasonableness of numerical computations and their results	N.3.D.1
	Algebra I	solve problems involving proportions	N.3.E.1
	Algebra II	use symbolic algebra to represent and solve problems that involve exponential, quadratic and logarithmic relationships	A.2.A.1
	Algebra II	use and solve equivalent forms of equations and inequalities	A.2.C.1
	Algebra II	use and solve systems of linear and quadratic equations or inequalities with 2 variables	A.2.D.1
	Algebra II	identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem	A.3.A.1
	Algebra II	apply statistical measures of center to solve problems	D.2.A.1
	Algebra II	given a scatterplot, determine a type of function which models the data	D.2.C.1
	Algebra II	use unit analysis to solve problems involving rates, such as speed, density or population density	M.2.E.1
	Algebra II	use real numbers and various models, drawing, etc. to solve problems	N.1.B.1
	Algebra II	solve problems involving proportions	N.3.E.1
	Geometry	apply appropriate properties of exponents to simplify expressions and solve equations	A.2.B.1
	Geometry	identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem	A.3.A.1
	Geometry	solve problems of angle measure, including those involving triangles or other polygons and of parallel lines cut by a transversal	M.2.B.1

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Problem Solving Solve abstract and practical problems, applying and adapting a variety of strategies. Monitor progress and evaluate answers in terms of questions asked.	Geometry	determine the surface area, and volume of geometric figures, including cones, spheres, and cylinders	M.2.C.1
	Geometry	use unit analysis to solve problems	M.2.E.1
	Geometry	use real numbers and various models, drawing, etc. to solve problems	N.1.B.1
	Geometry	apply operations to real numbers, using mental computation or paper-and-pencil calculations for simple cases and technology for more complicated cases	N.2.D.1
	Geometry	judge the reasonableness of numerical computations and their results	N.3.D.1
	Geometry	solve problems involving proportions	N.3.E.1
	Integrated Math II	use symbolic algebra to represent and solve problems that involve quadratic relationships, including recursive relationships	A.2.A.1
	Integrated Math II	use and solve equivalent forms of equations and inequalities (piece-wise and quadratic)	A.2.C.1
	Integrated Math II	use and solve systems of linear equations or inequalities with 2 variables	A.2.D.1
	Integrated Math II	identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem	A.3.A.1
	Integrated Math II	apply statistical concepts to solve problems and distinguish between a statistic and a parameter	D.2.A.1
	Integrated Math II	given a scatterplot, determine the type of function which models the data	D.2.C.1
	Integrated Math II	use real numbers and various models, drawings, etc. to solve problems	N.1.B.1
	Integrated Math II	apply properties of exponents to simplify expressions or solve equations	N.2.C.1
	Integrated Math II	apply operations to real numbers, using mental computation or paper-and-pencil calculations for simple cases and technology for more complicated cases	N.2.D.1
	Integrated Math II	judge the reasonableness of numerical computations and their results	N.3.D.1
	Integrated Math II	solve problems involving proportions	N.3.E.1

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Problem Solving Solve abstract and practical problems, applying and adapting a variety of strategies. Monitor progress and evaluate answers in terms of questions asked.	Integrated Math III	use symbolic algebra to represent and solve problems that involve exponential and logarithmic relationships, including recursive and parametric relationships	A.2.A.1
	Integrated Math III	use and solve equivalent forms of equations and inequalities (exponential, logarithmic and rational)	A.2.C.1
	Integrated Math III	use and solve systems of linear and quadratic equations or inequalities with 2 variables	A.2.D.1
	Integrated Math III	identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem (including recursive forms)	A.3.A.1
	Integrated Math III	use inductive and deductive reasoning to determine lengths and angle measures in all types of triangles and to establish the validity of geometric conjectures, proved theorems and critique arguments made by others	G.1.A.1
	Integrated Math III	determine the effect on surface area or volume of changing one measurement	G.1.B.1
	Integrated Math III	solve problems of angle measure of parallel lines cut by a transversal	M.2.B.1
	Integrated Math III	use unit analysis to solve problems involving rates, such as speed, density or population density	M.2.E.1
	Integrated Math III	use real numbers and various models, drawings, etc. to solve problems	N.1.B.1
	Integrated Math III	judge the reasonableness of numerical computations and their results	N.3.D.1
Integrated Math III	solve problems involving proportions	N.3.E.1	
Reasoning Develop and use mathematical arguments and proofs to explore the truth of conjectures and justify conclusions.	Algebra I	compare and contrast various forms of representations of patterns	A.1.C.1
	Algebra I	understand and compare the properties of linear and nonlinear functions	A.1.D.1
	Algebra I	analyze linear and quadratic functions by investigating rates of change, intercepts and zeros	A.4.A.1
	Algebra I	formulate questions and collect data about a characteristic which include sample spaces and distributions	D.1.A.1
	Algebra I	make conjectures about possible relationships between 2 characteristics of a sample on the basis of scatter plots of the data	D.3.A.1

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Reasoning Develop and use mathematical arguments and proofs to explore the truth of conjectures and justify conclusions.	Algebra I	compare and order rational and irrational numbers, including finding their approximate locations on a number line	N.1.A.1
	Algebra II	compare and contrast various forms of representations of patterns	A.1.C.1
	Algebra II	compare properties of linear, exponential, logarithmic and rational functions	A.1.D.1
	Algebra II	analyze exponential and logarithmic functions by investigating rates of change, intercepts and asymptotes	A.4.A.1
	Algebra II	apply concepts of successive approximation	M.2.D.1
	Algebra II	compare and order rational and irrational numbers, including finding their approximate locations on a number line	N.1.A.1
	Algebra II	judge the reasonableness of numerical computations and their results, including complex numbers	N.3.D.1
	Geometry	compare and contrast various forms of representations of patterns	A.1.C.1
	Geometry	analyze linear functions by investigating rates of change and intercepts	A.4.A.1
	Geometry	use inductive and deductive reasoning to establish the validity of geometric conjectures, prove theorems and critique arguments made by others	G.1.A.1
	Geometry	make conjectures and solve problems involving 2-dimensional objects represented with Cartesian coordinates	G.2.A.1
	Geometry	compare and order rational and irrational numbers, including finding their approximate locations on a number line	N.1.A.1
	Integrated Math II	generalize patterns using explicitly or recursively defined functions	A.1.B.1
	Integrated Math II	compare and contrast various forms of representations of patterns	A.1.C.1
	Integrated Math II	understand and compare the properties of linear, exponential and quadratic functions (include domain and range)	A.1.D.1
	Integrated Math II	analyze quadratic functions by investigating rates of change, intercepts and zeros	A.4.A.1

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Reasoning Develop and use mathematical arguments and proofs to explore the truth of conjectures and justify conclusions.	Integrated Math II	apply relationships among surface areas and among volumes of similar objects	G.1.B.1
	Integrated Math II	make conjectures and solve problems involving 2-dimensional objects represented with Cartesian coordinates	G.2.A.1
	Integrated Math II	analyze effects of computation on accuracy and precision in measurement	M.2.D.1
	Integrated Math II	compare and order rational and irrational numbers, including finding their approximate locations on a number line	N.1.A.1
	Integrated Math III	compare and contrast various forms of representations of patterns	A.1.C.1
	Integrated Math III	understand and compare the properties of linear, quadratic, exponential, logarithmic, rational and periodic functions (include asymptotes)	A.1.D.1
	Integrated Math III	analyze exponential and logarithmic functions by investigating rates of change, intercepts and asymptotes	A.4.A.1
	Integrated Math III	display and analyze bivariate data where one variable is categorical and the other is numerical	D.1.C.1
	Integrated Math III	compare and contrast between angle and radian measure	M.1.B.1
	Integrated Math III	analyze concepts of successive approximation	M.2.D.1
Representation Use and translate among representations including verbal, numerical, symbolic and graphical to communicate mathematical ideas and solve problems.	Algebra I	draw or use visual models to represent and solve problems	G.4.B.1
	Algebra II	translate, dilate and reflect functions	G.3.B.1
	Algebra II	draw or use visual models to represent and solve problems	G.4.B.1
	Geometry	formulate and collect data about a characteristic	D.1.A.1
	Geometry	use and apply constructions and the coordinate plane to represent translations, reflections, rotations and dilations of objects	G.3.A.1
	Geometry	draw or use visual models to represent and solve problems	G.4.B.1

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT	Missouri Math: Grade and Course Level Expectations 2007		
Skill Category and Description of Skills	Course/ Level	Standard	Standard ID
Representation Use and translate among representations including verbal, numerical, symbolic and graphical to communicate mathematical ideas and solve problems.	Integrated Math II	use and apply constructions and matrices to represent translations, reflections, rotations, and dilations	G.3.A.1
	Integrated Math II	translate, dilate and reflect quadratic and exponential functions	G.3.B.1
	Integrated Math II	draw or use visual models to represent and solve problems	G.4.B.1
	Integrated Math III	create a scatter plot, describe its shape, determine and analyze regression equations	D.2.C.1
	Integrated Math III	draw representations of 3-dimensional geometric objects from different perspectives using a variety of tools	G.4.A.1

PSAT/NMSQT Skills Insight™ Alignment to State Standards

Executive Summary, July 2010

Purpose

PSAT/NMSQT *Skills Insight*™ is a free online tool designed to help students and educators gain a better understanding of how PSAT/NMSQT® scores relate to specific academic skills. It provides a description of the academic skills that are typical of students scoring at each score band, suggestions for improvement, and practice test questions. Learn more by visiting www.collegeboard.com/psatskills.

The information provided by PSAT/NMSQT *Skills Insight* is organized by skill category. There are five skill categories for the critical reading section, nine for the mathematics section (4 content skill categories; 5 process skill categories), and 5 for the writing skills section. This report shows the alignment between state standards in English Language Arts and Mathematics and the content and skills measured by the PSAT/NMSQT.

Using Alignment Results with PSAT/NMSQT Reports

Schools and districts that administer the PSAT/NMSQT have access to the *Summary of Answers and Skills* (SOAS) report¹. SOAS reports summarize performance on test sections, skill categories, and individual test questions, and compare local results to the state or nation. Using SOAS and the alignment information provided in this report, schools and districts can develop remediation strategies to help students improve their college readiness skills, future SAT scores, and performance on state assessments.

Mathematics: Alignment Approach and Findings

- There are nine Skills Categories in Mathematics, representing both content and process skills: *Number and Operations; Algebra and Functions; Geometry and Measurement; Data, Statistics and Probability; Problem Solving; Representation; Reasoning; Connections and Communication*.
- Only standards for grades 9-12 were considered for these alignments. Within grades 9-12, the areas with the greatest concentration of alignments are the Number and Operations, Algebra and Geometry strands of the state standards. In most cases, Precalculus and Trigonometry were excluded from the alignment study.
- The organization and hierarchy of standards varies on a state-by-state basis. During the alignment process, the College Board aligned the PSAT/NMSQT skills to the most specific level of the state's standards.
- States often integrate process and content standards. In such cases, the state standard received an alignment to both a process skill category and a content skill category.
- Generally, there is strong correspondence between the PSAT/NMSQT Skills Categories in Mathematics and state standards. Coverage of the Skills Categories across a state standards document is dependent upon the specific state standards and on the degree of specificity of language employed within the standards.
- The PSAT/NMSQT is administered to students in grades 10 and 11; consequently, the strongest areas of alignment are in the content categories of *Number and Operations, Algebra and Functions* and *Geometry and Measurement* and in the process categories of *Problem Solving, Reasoning* and *Representations*. Considering the design and purpose of the PSAT/NMSQT, extensive alignments in upper levels of high school mathematics standards, including Trigonometry, are not intended or expected.

¹ Using the access code printed on the PSAT/NMSQT *Roster of Student Scores and Plans*, SOAS reports can be downloaded from www.collegeboard.com/reports beginning in the first week of January.

- The College Board content specialists who conducted the alignments have a deep understanding of the PSAT/NMSQT test specifications. Therefore, although multiple Skills Categories might link to a particular standard, these alignments display only the strongest and most appropriate matches.

English Language Arts: Alignment Approach and Findings

- Reading and Writing each have five PSAT/NMSQT Skills Categories. In Reading, the categories are *Determining the Meaning of Words*, *Author’s Craft*, *Reasoning and Inferencing*, *Organization and Ideas* and *Understanding Literary Elements*. In Writing, the categories are *Manage Word Choice and Grammatical Relationships Between Words*, *Manage Grammatical Structures Used to Modify or Compare*, *Manage Phrases and Clauses in a Sentence*; *Recognize Correctly Formed Sentences* and *Manage Order and Relationships of Sentences and Paragraphs*.
- The PSAT/NMSQT is administered to students in grades 10 and 11, and the College Board targeted the English Language Arts alignments at these specific grade levels. In states where the standards are organized by grade band (grades 9-10, 11-12) or by one high school band (grades 9-12), the College Board aligned to all high school grade levels.
- Given the purpose and design of the PSAT/NMSQT, the English Language Arts alignment is focused on the areas of reading and writing and does not include state standards in speaking, listening, or media literacy. Additionally, these alignments excluded genre-specific state standards (such as those related to American, British, or World literature), although the essential PSAT/NMSQT skills in Reading can be used to support instruction in literature.
- The organization and hierarchy of standards varies on a state-by-state basis. During the alignment process, the College Board aligned the PSAT/NMSQT skills to the most specific level of the state’s standards. Coverage of the Skills Categories across a state standards document is dependent upon the specific state standards and on the degree of specificity of language employed within the standards.
- In Writing, generally there is strong correspondence between the PSAT/NMSQT Skills Categories and state standards that focus on grammar, usage, language conventions, and the role of editing and revising in writing.
- In Reading, there is strong correspondence between the PSAT/NMSQT Skills Categories and state standards in the essential areas of vocabulary development (determine the meaning of unfamiliar words or of words with multiple meanings by understanding context and by analyzing roots, prefixes, and suffixes) and reading comprehension (determine the main idea and supporting details; understand the organization of passages; analyze the various elements of an author’s craft, including purpose, perspective, word choice, and use of rhetorical and literary devices and understand literary elements such as plot, characterization, and setting).

Summary

In summary, the PSAT/NMSQT Skills Categories correspond well to state standards. Educators can use these alignments to connect the PSAT/NMSQT to their local curricula and state standards to monitor student learning and to build a coherent instructional plan for their students.