

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Oregon Math: Academic Content Standards 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.	Advanced Algebra	A.A.1.1 Demonstrate an understanding of the concept of a function, use function notation, evaluate a function, determine whether or not a given relation is a function and determine whether or not a given function is one-to-one.	A.A.1.1
	Advanced Algebra	A.A.1.11 Connect the relationships among the solution of an equation, zero of a function, x-intercept of a graph and the factors of a polynomial expression.	A.A.1.11
	Advanced Algebra	A.A.1.12 Find the x and y-intercepts of a function if they exist.	A.A.1.12
	Advanced Algebra	A.A.1.13 Identify, distinguish between, and describe the characteristics of the following functions in tabular, verbal, graphical or symbolic form: polynomial, power, absolute value, rational, radical, logarithmic, exponential, algebraic, piecewise, and step.	A.A.1.13
	Advanced Algebra	A.A.1.2 Determine the domain and range of a relation including those with restricted domains.	A.A.1.2
	Advanced Algebra	A.A.1.3 Represent a given relation in multiple ways and convert between each representation.	A.A.1.3
	Advanced Algebra	A.A.1.4 Determine whether a given relation is even, odd or neither and what this means in predicting behaviors.	A.A.1.4
	Advanced Algebra	A.A.1.5 Analyze the effect on the graph of a relation by changing its parameters and perform a given transformation.	A.A.1.5
	Advanced Algebra	A.A.1.6 Determine, verify, and graph the inverse of a function or relation (if it exists) and understand the reversing roles of domain and range.	A.A.1.6
	Advanced Algebra	A.A.1.7 Determine the composition of inverse functions and whether or not it is one-to-one.	A.A.1.7
	Advanced Algebra	A.A.1.8 Perform arithmetic operations on functions and determine the composition of functions.	A.A.1.8
	Advanced Algebra	A.A.1.9 Analyze the reciprocal of a function or relation.	A.A.1.9
	Advanced Algebra	A.A.10.1 Write and evaluate parametric equations.	A.A.10.1
	Advanced Algebra	A.A.10.3 Analyze and describe graphs of parametric equations.	A.A.10.3
Advanced Algebra	A.A.2.1 Graph, solve, and analyze inequalities in two variables.	A.A.2.1	

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Oregon Math: Academic Content Standards 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.	Advanced Algebra	A.A.2.2 Graph and analyze piece-wise functions.	A.A.2.2
	Advanced Algebra	A.A.2.3 Graph, solve, and analyze absolute value equations and inequalities.	A.A.2.3
	Advanced Algebra	A.A.3.2 Derive the quadratic formula.	A.A.3.2
	Advanced Algebra	A.A.3.3 Solve quadratic equations using the zero product property, completing the square, the quadratic formula, and graphing.	A.A.3.3
	Advanced Algebra	A.A.3.4 Graph and analyze quadratic functions and relate the zeros to the discriminant.	A.A.3.4
	Advanced Algebra	A.A.3.5 Construct and solve quadratic inequalities in one and two variables.	A.A.3.5
	Advanced Algebra	A.A.3.6 Solve problems relating to conic sections including systems of equations and inequalities involving conics.	A.A.3.6
	Advanced Algebra	A.A.3.7 Graph and analyze equations of conic sections.	A.A.3.7
	Advanced Algebra	A.A.3.8 Determine conic equations from graphs or data.	A.A.3.8
	Advanced Algebra	A.A.4.1 Perform operations on polynomial expressions.	A.A.4.1
	Advanced Algebra	A.A.4.3 Understand and apply the binomial theorem and/or Pascal's triangle to expand binomial expressions.	A.A.4.3
	Advanced Algebra	A.A.4.4 Apply long (or synthetic) division, the Fundamental Theorem of Algebra, Descartes Rule of Signs, the Intermediate Value Theorem and the Rational Root Theorem to analyze and/or determine the roots of a polynomial.	A.A.4.4
	Advanced Algebra	A.A.4.5 Find approximate solutions for polynomial equations using graphing technology.	A.A.4.5
	Advanced Algebra	A.A.4.6 Write a polynomial equation given its real and/or complex solutions.	A.A.4.6
	Advanced Algebra	A.A.4.7 Graph and analyze polynomial functions.	A.A.4.7
	Advanced Algebra	A.A.5.1 Find equivalent expressions using the properties of rational exponents.	A.A.5.1
	Advanced Algebra	A.A.5.3 Solve radical equations.	A.A.5.3
	Advanced Algebra	A.A.5.4 Graph and analyze radical functions.	A.A.5.4

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Oregon Math: Academic Content Standards 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.	Advanced Algebra	A.A.6.1 Find equivalent representations for rational expressions and identify restrictions.	A.A.6.1
	Advanced Algebra	A.A.6.2 Perform operations on rational expressions.	A.A.6.2
	Advanced Algebra	A.A.6.3 Solve algebraic proportions and rational equations.	A.A.6.3
	Advanced Algebra	A.A.6.4 Graph and analyze rational functions.	A.A.6.4
	Advanced Algebra	A.A.7.3 Solve exponential and logarithmic equations.	A.A.7.3
	Advanced Algebra	A.A.7.4 Graph and analyze exponential and logarithmic functions.	A.A.7.4
	Advanced Algebra	A.A.8.2 Solve systems of linear equations in two or three variables algebraically, graphically, and/or with matrix algebra.	A.A.8.2
	Advanced Algebra	A.A.8.3 Analyze an inconsistent system of equations.	A.A.8.3
	Advanced Algebra	A.A.8.4 Solve systems of linear inequalities by graphing.	A.A.8.4
	Advanced Algebra	A.A.8.5 Interpret, analyze, and solve linear programming problems.	A.A.8.5
	Advanced Algebra	A.A.8.6 Solve nonlinear systems of equations algebraically and graphically, including linear-quadratic and quadratic-quadratic.	A.A.8.6
	Advanced Algebra	A.A.9.1 Define, recognize, and discriminate among arithmetic, geometric and other sequences and series.	A.A.9.1
	Advanced Algebra	A.A.9.2 Find the explicit and recursive formulas for arithmetic and geometric sequences and use these formulas to determine a specific term or term number.	A.A.9.2
	Advanced Algebra	A.A.9.4 Find partial sums of arithmetic and geometric series and find sums of convergent infinite series.	A.A.9.4
	Advanced Algebra	A.A.9.5 Generate and describe other recursive sequences such as factorials and the Fibonacci sequence.	A.A.9.5
Algebra	H.1A.2 Evaluate, compute with, and determine equivalent numeric and algebraic expressions with real numbers and variables that may also include absolute value, integer exponents, square roots, pi, and/or scientific notation.	H.1A.2	

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Oregon Math: Academic Content Standards 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	H.1A.4 Develop, identify, and/or justify equivalent algebraic expressions, equations, and inequalities using the properties of exponents, equality and inequality, as well as the commutative, associative, inverse, identity, and distributive properties.	H.1A.4
	Algebra	H.1A.5 Factor quadratic expressions limited to factoring common monomial terms, perfect-square trinomials, differences of squares, and quadratics of the form $x^2 + bx + c$ that factor over the integers.	H.1A.5
	Algebra	H.2A.1 Identify, construct, extend, and analyze linear patterns and functional relationships that are expressed contextually, numerically, algebraically, graphically, in tables, or using geometric figures.	H.2A.1
	Algebra	H.2A.2 Given a rule, a context, two points, a table of values, a graph, or a linear equation in either slope intercept or standard form, identify the slope of the line, determine the x and/or y intercept(s), and interpret the meaning of each.	H.2A.2
	Algebra	H.2A.3 Determine the equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, determine an equation of a new line, parallel or perpendicular to a given line, through a given point.	H.2A.3
	Algebra	H.2A.4 Fluently convert among representations of linear relationships given in the form of a graph of a line, a table of values, or an equation of a line in slope-intercept and standard form.	H.2A.4
	Algebra	H.2A.5 Given a linear function, interpret and analyze the relationship between the independent and dependent variables. Solve for x given f(x) or solve for f(x) given x.	H.2A.5
	Algebra	H.2A.6 Analyze how changing the parameters transforms the graph of $f(x) = mx + b$.	H.2A.6
	Algebra	H.2A.7 Write, use, and solve linear equations and inequalities using graphical and symbolic methods with one or two variables. Represent solutions on a coordinate graph or number line.	H.2A.7
	Algebra	H.2A.8 Solve systems of two linear equations graphically and algebraically, and solve systems of two linear inequalities graphically.	H.2A.8
Algebra	H.3A.1 Given a quadratic or exponential function, identify or determine a corresponding table or graph.	H.3A.1	
Algebra	H.3A.2 Given a table or graph that represents a quadratic or exponential function, extend the pattern to make predictions.	H.3A.2	

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT	Oregon Math: Academic Content Standards 2007		
Skill Category and Description of Skills	Course/ Level	Standard	Standard ID
<p>Algebra and Functions</p> <p>Solve problems using algebraic expressions and symbols to represent relationships, patterns and functions of different types.</p>	Algebra	H.3A.3 Compare the characteristics of and distinguish among linear, quadratic, and exponential functions that are expressed in a table of values, a sequence, a context, algebraically, and/or graphically, and interpret the domain and range of each as it applies to a given context.	H.3A.3
	Algebra	H.3A.4 Given a quadratic or exponential function, interpret and analyze the relationship between the independent and dependent variables, and evaluate the function for specific values of the domain.	H.3A.4
	Algebra	H.3A.5 Given a quadratic equation of the form $x^2 + bx + c = 0$ with integral roots, determine and interpret the roots, the vertex of the parabola that is the graph of $y = x^2 + bx + c$, and an equation of its axis of symmetry graphically and algebraically.	H.3A.5
	Discrete Mathematics	A.D.1.2 Perform set operations such as union and intersection, difference, and complement.	A.D.1.2
	Discrete Mathematics	A.D.1.3 Use Venn diagrams to explore relationships and patterns, and to make arguments about relationships between sets.	A.D.1.3
	Discrete Mathematics	A.D.1.4 Demonstrate the ability to create the cross-product or set-theoretic product of two sets.	A.D.1.4
	Discrete Mathematics	A.D.11.1 Use integer functions to encode alphabets and to create error-checking correcting codes.	A.D.11.1
	Discrete Mathematics	A.D.12.1 Designing algorithms using recurrence or iteration.	A.D.12.1
	Discrete Mathematics	A.D.12.2 Design algorithms using divide-and-conquer.	A.D.12.2
	Discrete Mathematics	A.D.12.3 Design algorithms using recursion.	A.D.12.3
Discrete Mathematics	A.D.12.4 Evaluate the efficiency of an algorithm including the order of complexity of algorithms.	A.D.12.4	
Discrete Mathematics	A.D.2.1 Determine whether simple examples of discrete functions are injective and/or surjective.	A.D.2.1	

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Oregon Math: Academic Content Standards 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.	Discrete Mathematics	A.D.2.2 Demonstrate ability to interpret examples of simple discrete functions by mapping elements from a discrete domain to a discrete range.	A.D.2.2
	Discrete Mathematics	A.D.2.3 Demonstrate ability to produce the subset of the cross product of the domain and image of a relation corresponding to simple examples of relations.	A.D.2.3
	Discrete Mathematics	A.D.2.4 Use concepts of reflexivity, symmetry, and transitivity to establish that a relation is an equivalence relation.	A.D.2.4
	Discrete Mathematics	A.D.2.5 Design simple algorithms such as hashing, checksum or error-correction functions.	A.D.2.5
	Discrete Mathematics	A.D.3.2 Demonstrate understanding of the relationship of modular arithmetic to two numbers being congruent modulo n .	A.D.3.2
	Discrete Mathematics	A.D.3.3 Solve practical problems or develop algorithms using modular arithmetic or congruence relations such as creating error detection codes, calculating greatest common factor, and solving simple coin-change problems.	A.D.3.3
	Discrete Mathematics	A.D.6.1 Define, recognize, and discriminate among arithmetic, geometric and other sequences and series.	A.D.6.1
	Discrete Mathematics	A.D.6.2 Find the explicit and recursive formulas for arithmetic and geometric sequences and use these formulas to determine a specific term or term number.	A.D.6.2
	Discrete Mathematics	A.D.6.4 Find partial sums of arithmetic and geometric series and find sums of convergent infinite series.	A.D.6.4
	Discrete Mathematics	A.D.6.5 Generate and describe other recursive sequences such as factorials and the Fibonacci sequence.	A.D.6.5
Discrete Mathematics	A.D.7.1 Use recursive and iterative thinking to solve problems such as population growth and decline, exponential functions, problems involving sequential change and compound interest.	A.D.7.1	
Discrete Mathematics	A.D.7.2 Use finite differences to solve problems and to find explicit formulas for recurrence relations.	A.D.7.2	
Discrete Mathematics	A.D.7.3 Use mathematical induction to prove recurrence relations and concepts in number theory such as sums of infinite integer series, divisibility statements, and parity statements.	A.D.7.3	

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Oregon Math: Academic Content Standards 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.	Discrete Mathematics	A.D.7.4 Use mathematical induction to analyze the validity of an iterative algorithm.	A.D.7.4
	Discrete Mathematics	A.D.7.5 Describe arithmetic and geometric sequences recursively.	A.D.7.5
	Discrete Mathematics	A.D.7.6 Use understanding of relationship of finite and infinite geometric series, including how the concept of limits connects them.	A.D.7.6
	Discrete Mathematics	A.D.7.7 Apply recurrence or recursion to the design and understanding of sorting and searching algorithms.	A.D.7.7
	Discrete Mathematics	A.D.7.8 Analyze algorithms for efficiency, including how the number of steps grows as a function of the size of the problem.	A.D.7.8
	Discrete Mathematics	A.D.7.9 Compare the efficiency of iterative and recursive solutions of a problem.	A.D.7.9
	Discrete Mathematics	A.D.8.1 Use truth tables to determine truth values of compounded propositional statements.	A.D.8.1
Communication Express mathematical ideas precisely and communicate them coherently and clearly in the language and notation of mathematics.	Advanced Algebra	A.A.1.1 Demonstrate an understanding of the concept of a function, use function notation, evaluate a function, determine whether or not a given relation is a function and determine whether or not a given function is one-to-one.	A.A.1.1
	Advanced Algebra	A.A.1.13 Identify, distinguish between, and describe the characteristics of the following functions in tabular, verbal, graphical or symbolic form: polynomial, power, absolute value, rational, radical, logarithmic, exponential, algebraic, piecewise, and step.	A.A.1.13
	Advanced Algebra	A.A.9.1 Define, recognize, and discriminate among arithmetic, geometric and other sequences and series.	A.A.9.1
	Advanced Algebra	A.A.9.5 Generate and describe other recursive sequences such as factorials and the Fibonacci sequence.	A.A.9.5
	Algebra	H.2A.2 Given a rule, a context, two points, a table of values, a graph, or a linear equation in either slope intercept or standard form, identify the slope of the line, determine the x and/or y intercept(s), and interpret the meaning of each.	H.2A.2

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Oregon Math: Academic Content Standards 2007		
	Course/ Level	Standard	Standard ID
Communication Express mathematical ideas precisely and communicate them coherently and clearly in the language and notation of mathematics.	Algebra	H.3A.3 Compare the characteristics of and distinguish among linear, quadratic, and exponential functions that are expressed in a table of values, a sequence, a context, algebraically, and/or graphically, and interpret the domain and range of each as it applies to a given context.	H.3A.3
	Discrete Mathematics	A.D.1.1 Demonstrate understanding of the definitions of set equality, subset and null set.	A.D.1.1
	Discrete Mathematics	A.D.1.4 Demonstrate the ability to create the cross-product or set-theoretic product of two sets.	A.D.1.4
	Discrete Mathematics	A.D.2.1 Determine whether simple examples of discrete functions are injective and/or surjective.	A.D.2.1
	Discrete Mathematics	A.D.2.3 Demonstrate ability to produce the subset of the cross product of the domain and image of a relation corresponding to simple examples of relations.	A.D.2.3
	Discrete Mathematics	A.D.3.2 Demonstrate understanding of the relationship of modular arithmetic to two numbers being congruent modulo n .	A.D.3.2
	Discrete Mathematics	A.D.5.1 Produce all combinations and permutations of sets.	A.D.5.1
	Discrete Mathematics	A.D.5.5 Find the odds that an event will occur given the probabilities and vice versa.	A.D.5.5
	Discrete Mathematics	A.D.6.1 Define, recognize, and discriminate among arithmetic, geometric and other sequences and series.	A.D.6.1
	Discrete Mathematics	A.D.7.5 Describe arithmetic and geometric sequences recursively.	A.D.7.5
Discrete Mathematics	A.D.8.4 Identify and give examples of undefined terms, definitions, axioms, and theorems.	A.D.8.4	
Connections Connect ideas from different areas of mathematics (particularly geometry and algebra) to state or solve abstract or applied problems.	Advanced Algebra	A.A.1.11 Connect the relationships among the solution of an equation, zero of a function, x -intercept of a graph and the factors of a polynomial expression.	A.A.1.11
	Advanced Algebra	A.A.10.2 Relate parametric equations to equivalent rectangular equations.	A.A.10.2

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Oregon Math: Academic Content Standards 2007		
	Course/ Level	Standard	Standard ID
Connections Connect ideas from different areas of mathematics (particularly geometry and algebra) to state or solve abstract or applied problems.	Advanced Algebra	A.A.3.4 Graph and analyze quadratic functions and relate the zeros to the discriminant.	A.A.3.4
	Algebra	H.2A.1 Identify, construct, extend, and analyze linear patterns and functional relationships that are expressed contextually, numerically, algebraically, graphically, in tables, or using geometric figures.	H.2A.1
	Algebra	H.2A.8 Solve systems of two linear equations graphically and algebraically, and solve systems of two linear inequalities graphically.	H.2A.8
	Discrete Mathematics	A.D.12.5 Demonstrate understanding of the relationship of set theory, relations, functions, combinatorics, sequences, series, graph theory, and matrices to the design of data structures and algorithms.	A.D.12.5
	Discrete Mathematics	A.D.12.6 Demonstrate understanding of the relationship of data structures to the design of algorithms and use this understanding to analyze algorithms.	A.D.12.6
	Discrete Mathematics	A.D.7.6 Use understanding of relationship of finite and infinite geometric series, including how the concept of limits connects them.	A.D.7.6
	Geometry	H.3G.1 Recognize and identify line and rotational symmetry of two-dimensional figures.	H.3G.1
	Geometry	H.3G.4 Apply slope, distance, and midpoint formulas to solve problems in a coordinate plane.	H.3G.4
Data, Statistics, and Probability Analyze data, understand descriptive statistics, make inferences and determine the likelihood that certain events will occur.	Advanced Algebra	A.A.1.10 Collect and analyze data to make predictions and to investigate scatterplots and to determine the equation for a curve of best fit including linear, power, exponential, and logarithmic functions.	A.A.1.10
	Discrete Mathematics	A.D.12.5 Demonstrate understanding of the relationship of set theory, relations, functions, combinatorics, sequences, series, graph theory, and matrices to the design of data structures and algorithms.	A.D.12.5
	Discrete Mathematics	A.D.12.6 Demonstrate understanding of the relationship of data structures to the design of algorithms and use this understanding to analyze algorithms.	A.D.12.6
	Discrete Mathematics	A.D.5.3 Apply basic fundamental counting principles such as The Pigeonhole Principle, Multiplication Principle, Addition Principle, and Binomial Theorem to practical problems.	A.D.5.3
	Discrete Mathematics	A.D.5.4 Solve probability problems such as conditional probability, probability of simple events, mutually exclusive events, and independent events.	A.D.5.4

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Oregon Math: Academic Content Standards 2007		
	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.	Discrete Mathematics	A.D.5.5 Find the odds that an event will occur given the probabilities and vice versa.	A.D.5.5
	Discrete Mathematics	A.D.9.1 Use election theory techniques to analyze election data such as majority, plurality, runoff, approval, the Borda method in which points are assigned to preferences, and the Condorcet method in which each pair of candidates is run off head to head.	A.D.9.1
	Discrete Mathematics	A.D.9.2 Use fair division techniques to divide continuous objects.	A.D.9.2
	Discrete Mathematics	A.D.9.3 Use fair division techniques to solve apportionment problems.	A.D.9.3
	Statistics	H.1S.1 Given a context, determine appropriate survey methods, analyze the strengths and limitations of a particular survey, observational study, experiment, or simulation, and the display of its data.	H.1S.1
	Statistics	H.1S.2 Evaluate data-based reports by considering the source of the data, the design of the study, and the way the data was analyzed and displayed.	H.1S.2
	Statistics	H.1S.3 Compare and draw conclusions about two or more data sets using graphical displays or central tendencies and range.	H.1S.3
	Statistics	H.1S.4 Use or construct a scatter plot for a given data set, determine whether there is a (n) linear, quadratic, exponential, or no trend. If linear, determine if there is a positive or negative correlation among the data; and, if appropriate, sketch a line of best fit, and use it to make predictions.	H.1S.4
	Statistics	H.1S.5 Construct, analyze, and interpret tables, scatter plots, frequency distributions, and histograms of data sets.	H.1S.5
	Statistics	H.2S.1 Identify, analyze, and use experimental and theoretical probability to estimate and calculate the probability of simple events.	H.2S.1
	Statistics	H.2S.2 Determine the sample space of a probability experiment.	H.2S.2
	Statistics	H.2S.3 Compute and interpret probabilities for independent, dependent, complementary, and compound events using various methods (e.g., diagrams, tables, area models, and counting techniques).	H.2S.3

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT	Oregon Math: Academic Content Standards 2007		
Skill Category and Description of Skills	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.	Discrete Mathematics	A.D.8.3 Determine whether two propositions are logically equivalent.	A.D.8.3
	Discrete Mathematics	A.D.8.4 Identify and give examples of undefined terms, definitions, axioms, and theorems.	A.D.8.4
	Discrete Mathematics	A.D.8.5 Construct logical arguments using laws of detachment (modus ponens), syllogism, tautology, and contradiction; judge the validity of arguments, and give counterexamples to disprove statements.	A.D.8.5
	Discrete Mathematics	A.D.8.7 Appropriately select and use methods of deductive, inductive, and indirect proof and determine whether a short proof is logically valid.	A.D.8.7
	Geometry	H.1G.1 Identify, apply, and analyze angle relationships among two or more lines and a transversal to determine if lines are parallel, perpendicular, or neither.	H.1G.1
	Geometry	H.1G.2 Apply theorems, properties, and definitions to determine, identify, and justify congruency or similarity of triangles and to classify quadrilaterals.	H.1G.2
	Geometry	H.1G.3 Apply theorems of corresponding parts of congruent and similar figures to determine missing sides and angles of polygons.	H.1G.3
	Geometry	H.1G.4 Use trigonometric ratios (sine, cosine and tangent) and the Pythagorean Theorem to solve for unknown lengths in right triangles.	H.1G.4
	Geometry	H.1G.5 Determine the missing dimensions, angles, or area of regular polygons, quadrilaterals, triangles, circles, composite shapes, and shaded regions.	H.1G.5
	Geometry	H.1G.6 Determine if three given lengths form a triangle. If the given lengths form a triangle, classify it as acute, right, or obtuse.	H.1G.6
	Geometry	H.1G.7 In problems involving circles, apply theorems and properties of chords, tangents, and angles; and theorems and formulas of arcs and sectors.	H.1G.7
	Geometry	H.2G.1 Identify, classify, model, sketch, and label representations of three-dimensional objects from nets and from different perspectives.	H.2G.1
	Geometry	H.2G.2 Identify and apply formulas for surface area and volume of spheres; right solids, including rectangular prisms and pyramids; cones; and cylinders; and compositions thereof. Solve related context-based problems.	H.2G.2

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT	Oregon Math: Academic Content Standards 2007		
Skill Category and Description of Skills	Course/ Level	Standard	Standard ID
<p>Geometry and Measurement</p> <p>Solve problems based on understanding the properties of shapes, such as triangles and circles, and the spatial relationships between angles and lines.</p>	Geometry	H.2G.3 Identify and apply formulas to solve for the missing dimensions of spheres and right solids, including rectangular prisms and pyramids, cones, and cylinders, both numerically and symbolically.	H.2G.3
	Geometry	H.3G.1 Recognize and identify line and rotational symmetry of two-dimensional figures.	H.3G.1
	Geometry	H.3G.2 Identify and perform single and composite transformations of geometric figures in a plane, including translations, origin-centered dilations, reflections across either axis or $y = \pm x$, and rotations about the origin in multiples of 90° .	H.3G.2
	Geometry	H.3G.3 Apply a scale factor to determine similar two- and three-dimensional figures, are similar. Compare and compute their respective areas and volumes of similar figures.	H.3G.3
	Geometry	H.3G.4 Apply slope, distance, and midpoint formulas to solve problems in a coordinate plane.	H.3G.4
<p>Number and Operations</p> <p>Understand types of numbers (integers, fractions, decimals), their properties and the correct order of operations. Perform computations correctly.</p>	Advanced Algebra	A.A.4.2 Analyze and calculate permutations, combinations, and other systematic counting methods.	A.A.4.2
	Advanced Algebra	A.A.5.2 Perform arithmetic operations to simplify radical expressions.	A.A.5.2
	Algebra	H.1A.1 Compare, order, and locate real numbers on a number line.	H.1A.1
	Algebra	H.1A.3 Express square roots in equivalent radical form and their decimal approximations when appropriate.	H.1A.3
	Discrete Mathematics	A.D.1.1 Demonstrate understanding of the definitions of set equality, subset and null set.	A.D.1.1
	Discrete Mathematics	A.D.3.1 Perform modular arithmetic operations.	A.D.3.1
	Discrete Mathematics	A.D.5.1 Produce all combinations and permutations of sets.	A.D.5.1
	Discrete Mathematics	A.D.5.2 Calculate the number of combinations and permutations of sets of m items taken n at a time.	A.D.5.2

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Oregon Math: Academic Content Standards 2007		
	Course/ Level	Standard	Standard ID
Problem Solving Solve abstract and practical problems, applying and adapting a variety of strategies. Monitor progress and evaluate answers in terms of questions asked.	Advanced Algebra	A.A.1.12 Find the x and y-intercepts of a function if they exist.	A.A.1.12
	Advanced Algebra	A.A.1.2 Determine the domain and range of a relation including those with restricted domains.	A.A.1.2
	Advanced Algebra	A.A.1.7 Determine the composition of inverse functions and whether or not it is one-to-one.	A.A.1.7
	Advanced Algebra	A.A.1.8 Perform arithmetic operations on functions and determine the composition of functions.	A.A.1.8
	Advanced Algebra	A.A.10.1 Write and evaluate parametric equations.	A.A.10.1
	Advanced Algebra	A.A.2.1 Graph, solve, and analyze inequalities in two variables.	A.A.2.1
	Advanced Algebra	A.A.2.3 Graph, solve, and analyze absolute value equations and inequalities.	A.A.2.3
	Advanced Algebra	A.A.3.3 Solve quadratic equations using the zero product property, completing the square, the quadratic formula, and graphing.	A.A.3.3
	Advanced Algebra	A.A.3.5 Construct and solve quadratic inequalities in one and two variables.	A.A.3.5
	Advanced Algebra	A.A.3.6 Solve problems relating to conic sections including systems of equations and inequalities involving conics.	A.A.3.6
	Advanced Algebra	A.A.4.1 Perform operations on polynomial expressions.	A.A.4.1
	Advanced Algebra	A.A.4.3 Understand and apply the binomial theorem and/or Pascal's triangle to expand binomial expressions.	A.A.4.3
	Advanced Algebra	A.A.4.4 Apply long (or synthetic) division, the Fundamental Theorem of Algebra, Descartes Rule of Signs, the Intermediate Value Theorem and the Rational Root Theorem to analyze and/or determine the roots of a polynomial.	A.A.4.4
	Advanced Algebra	A.A.4.5 Find approximate solutions for polynomial equations using graphing technology.	A.A.4.5
	Advanced Algebra	A.A.5.3 Solve radical equations.	A.A.5.3
Advanced Algebra	A.A.6.3 Solve algebraic proportions and rational equations.	A.A.6.3	
Advanced Algebra	A.A.7.3 Solve exponential and logarithmic equations.	A.A.7.3	

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Oregon Math: Academic Content Standards 2007		
	Course/ Level	Standard	Standard ID
Problem Solving Solve abstract and practical problems, applying and adapting a variety of strategies. Monitor progress and evaluate answers in terms of questions asked.	Advanced Algebra	A.A.7.4 Graph and analyze exponential and logarithmic functions.	A.A.7.4
	Advanced Algebra	A.A.8.2 Solve systems of linear equations in two or three variables algebraically, graphically, and/or with matrix algebra.	A.A.8.2
	Advanced Algebra	A.A.8.5 Interpret, analyze, and solve linear programming problems.	A.A.8.5
	Advanced Algebra	A.A.8.6 Solve nonlinear systems of equations algebraically and graphically, including linear-quadratic and quadratic-quadratic.	A.A.8.6
	Advanced Algebra	A.A.9.2 Find the explicit and recursive formulas for arithmetic and geometric sequences and use these formulas to determine a specific term or term number.	A.A.9.2
	Advanced Algebra	A.A.9.4 Find partial sums of arithmetic and geometric series and find sums of convergent infinite series.	A.A.9.4
	Algebra	H.1A.1 Compare, order, and locate real numbers on a number line.	H.1A.1
	Algebra	H.1A.2 Evaluate, compute with, and determine equivalent numeric and algebraic expressions with real numbers and variables that may also include absolute value, integer exponents, square roots, pi, and/or scientific notation.	H.1A.2
	Algebra	H.2A.5 Given a linear function, interpret and analyze the relationship between the independent and dependent variables. Solve for x given f(x) or solve for f(x) given x.	H.2A.5
	Algebra	H.3A.5 Given a quadratic equation of the form $x^2 + bx + c = 0$ with integral roots, determine and interpret the roots, the vertex of the parabola that is the graph of $y = x^2 + bx + c$, and an equation of its axis of symmetry graphically and algebraically.	H.3A.5
Discrete Mathematics	A.D.12.2 Design algorithms using divide-and-conquer.	A.D.12.2	
Discrete Mathematics	A.D.12.3 Design algorithms using recursion.	A.D.12.3	
Discrete Mathematics	A.D.2.5 Design simple algorithms such as hashing, checksum or error-correction functions.	A.D.2.5	
Discrete Mathematics	A.D.3.1 Perform modular arithmetic operations.	A.D.3.1	

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Oregon Math: Academic Content Standards 2007		
	Course/ Level	Standard	Standard ID
Problem Solving Solve abstract and practical problems, applying and adapting a variety of strategies. Monitor progress and evaluate answers in terms of questions asked.	Discrete Mathematics	A.D.3.3 Solve practical problems or develop algorithms using modular arithmetic or congruence relations such as creating error detection codes, calculating greatest common factor, and solving simple coin-change problems.	A.D.3.3
	Discrete Mathematics	A.D.5.2 Calculate the number of combinations and permutations of sets of m items taken n at a time.	A.D.5.2
	Discrete Mathematics	A.D.5.3 Apply basic fundamental counting principles such as The Pigeonhole Principle, Multiplication Principle, Addition Principle, and Binomial Theorem to practical problems.	A.D.5.3
	Discrete Mathematics	A.D.5.4 Solve probability problems such as conditional probability, probability of simple events, mutually exclusive events, and independent events.	A.D.5.4
	Discrete Mathematics	A.D.6.2 Find the explicit and recursive formulas for arithmetic and geometric sequences and use these formulas to determine a specific term or term number.	A.D.6.2
	Discrete Mathematics	A.D.6.4 Find partial sums of arithmetic and geometric series and find sums of convergent infinite series.	A.D.6.4
	Discrete Mathematics	A.D.6.5 Generate and describe other recursive sequences such as factorials and the Fibonacci sequence.	A.D.6.5
	Discrete Mathematics	A.D.7.2 Use finite differences to solve problems and to find explicit formulas for recurrence relations.	A.D.7.2
	Discrete Mathematics	A.D.7.7 Apply recurrence or recursion to the design and understanding of sorting and searching algorithms.	A.D.7.7
	Discrete Mathematics	A.D.9.2 Use fair division techniques to divide continuous objects.	A.D.9.2
Discrete Mathematics	A.D.9.3 Use fair division techniques to solve apportionment problems.	A.D.9.3	
Geometry	H.1G.2 Apply theorems, properties, and definitions to determine, identify, and justify congruency or similarity of triangles and to classify quadrilaterals.	H.1G.2	
Geometry	H.1G.3 Apply theorems of corresponding parts of congruent and similar figures to determine missing sides and angles of polygons.	H.1G.3	

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Oregon Math: Academic Content Standards 2007		
	Course/ Level	Standard	Standard ID
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	H.1G.4 Use trigonometric ratios (sine, cosine and tangent) and the Pythagorean Theorem to solve for unknown lengths in right triangles.	H.1G.4
	Geometry	H.1G.5 Determine the missing dimensions, angles, or area of regular polygons, quadrilaterals, triangles, circles, composite shapes, and shaded regions.	H.1G.5
	Geometry	H.1G.7 In problems involving circles, apply theorems and properties of chords, tangents, and angles; and theorems and formulas of arcs and sectors.	H.1G.7
	Geometry	H.2G.2 Identify and apply formulas for surface area and volume of spheres; right solids, including rectangular prisms and pyramids; cones; and cylinders; and compositions thereof. Solve related context-based problems.	H.2G.2
	Geometry	H.2G.3 Identify and apply formulas to solve for the missing dimensions of spheres and right solids, including rectangular prisms and pyramids, cones, and cylinders, both numerically and symbolically.	H.2G.3
	Geometry	H.3G.3 Apply a scale factor to determine similar two- and three-dimensional figures, are similar. Compare and compute their respective areas and volumes of similar figures.	H.3G.3
	Statistics	H.2S.2 Determine the sample space of a probability experiment.	H.2S.2
	Statistics	H.2S.3 Compute and interpret probabilities for independent, dependent, complementary, and compound events using various methods (e.g., diagrams, tables, area models, and counting techniques).	H.2S.3
Reasoning Develop and use mathematical arguments and proofs to explore the truth of conjectures and justify conclusions.	Advanced Algebra	A.A.1.10 Collect and analyze data to make predictions and to investigate scatterplots and to determine the equation for a curve of best fit including linear, power, exponential, and logarithmic functions.	A.A.1.10
	Advanced Algebra	A.A.1.4 Determine whether a given relation is even, odd or neither and what this means in predicting behaviors.	A.A.1.4
	Advanced Algebra	A.A.1.5 Analyze the effect on the graph of a relation by changing its parameters and perform a given transformation.	A.A.1.5
	Advanced Algebra	A.A.1.6 Determine, verify, and graph the inverse of a function or relation (if it exists) and understand the reversing roles of domain and range.	A.A.1.6
	Advanced Algebra	A.A.1.9 Analyze the reciprocal of a function or relation.	A.A.1.9

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Oregon Math: Academic Content Standards 2007		
	Course/ Level	Standard	Standard ID
Reasoning Develop and use mathematical arguments and proofs to explore the truth of conjectures and justify conclusions.	Advanced Algebra	A.A.10.3 Analyze and describe graphs of parametric equations.	A.A.10.3
	Advanced Algebra	A.A.3.2 Derive the quadratic formula.	A.A.3.2
	Advanced Algebra	A.A.4.2 Analyze and calculate permutations, combinations, and other systematic counting methods.	A.A.4.2
	Advanced Algebra	A.A.5.1 Find equivalent expressions using the properties of rational exponents.	A.A.5.1
	Advanced Algebra	A.A.6.2 Perform operations on rational expressions.	A.A.6.2
	Advanced Algebra	A.A.8.3 Analyze an inconsistent system of equations.	A.A.8.3
	Algebra	H.1A.4 Develop, identify, and/or justify equivalent algebraic expressions, equations, and inequalities using the properties of exponents, equality and inequality, as well as the commutative, associative, inverse, identity, and distributive properties.	H.1A.4
	Algebra	H.2A.6 Analyze how changing the parameters transforms the graph of $f(x) = mx + b$.	H.2A.6
	Algebra	H.3A.4 Given a quadratic or exponential function, interpret and analyze the relationship between the independent and dependent variables, and evaluate the function for specific values of the domain.	H.3A.4
	Discrete Mathematics	A.D.1.2 Perform set operations such as union and intersection, difference, and complement.	A.D.1.2
	Discrete Mathematics	A.D.12.4 Evaluate the efficiency of an algorithm including the order of complexity of algorithms.	A.D.12.4
	Discrete Mathematics	A.D.2.2 Demonstrate ability to interpret examples of simple discrete functions by mapping elements from a discrete domain to a discrete range.	A.D.2.2
	Discrete Mathematics	A.D.2.4 Use concepts of reflexivity, symmetry, and transitivity to establish that a relation is an equivalence relation.	A.D.2.4
	Discrete Mathematics	A.D.7.1 Use recursive and iterative thinking to solve problems such as population growth and decline, exponential functions, problems involving sequential change and compound interest.	A.D.7.1
Discrete Mathematics	A.D.7.3 Use mathematical induction to prove recurrence relations and concepts in number theory such as sums of infinite integer series, divisibility statements, and parity statements.	A.D.7.3	

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Oregon Math: Academic Content Standards 2007		
	Course/ Level	Standard	Standard ID
Reasoning Develop and use mathematical arguments and proofs to explore the truth of conjectures and justify conclusions.	Discrete Mathematics	A.D.7.4 Use mathematical induction to analyze the validity of an iterative algorithm.	A.D.7.4
	Discrete Mathematics	A.D.7.8 Analyze algorithms for efficiency, including how the number of steps grows as a function of the size of the problem.	A.D.7.8
	Discrete Mathematics	A.D.7.9 Compare the efficiency of iterative and recursive solutions of a problem.	A.D.7.9
	Discrete Mathematics	A.D.8.3 Determine whether two propositions are logically equivalent.	A.D.8.3
	Discrete Mathematics	A.D.8.5 Construct logical arguments using laws of detachment (modus ponens), syllogism, tautology, and contradiction; judge the validity of arguments, and give counterexamples to disprove statements.	A.D.8.5
	Discrete Mathematics	A.D.8.6 Use applications of the universal and existential quantifiers to propositional statements.	A.D.8.6
	Discrete Mathematics	A.D.8.7 Appropriately select and use methods of deductive, inductive, and indirect proof and determine whether a short proof is logically valid.	A.D.8.7
	Discrete Mathematics	A.D.9.1 Use election theory techniques to analyze election data such as majority, plurality, runoff, approval, the Borda method in which points are assigned to preferences, and the Condorcet method in which each pair of candidates is run off head to head.	A.D.9.1
	Geometry	H.1G.1 Identify, apply, and analyze angle relationships among two or more lines and a transversal to determine if lines are parallel, perpendicular, or neither.	H.1G.1
	Geometry	H.1G.6 Determine if three given lengths form a triangle. If the given lengths form a triangle, classify it as acute, right, or obtuse.	H.1G.6
Statistics	H.1S.1 Given a context, determine appropriate survey methods, analyze the strengths and limitations of a particular survey, observational study, experiment, or simulation, and the display of its data.	H.1S.1	
Statistics	H.1S.2 Evaluate data-based reports by considering the source of the data, the design of the study, and the way the data was analyzed and displayed.	H.1S.2	
Statistics	H.1S.3 Compare and draw conclusions about two or more data sets using graphical displays or central tendencies and range.	H.1S.3	

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Oregon Math: Academic Content Standards 2007		
	Course/ Level	Standard	Standard ID
Reasoning Develop and use mathematical arguments and proofs to explore the truth of conjectures and justify conclusions.	Statistics	H.1S.4 Use or construct a scatter plot for a given data set, determine whether there is a (n) linear, quadratic, exponential, or no trend. If linear, determine if there is a positive or negative correlation among the data; and, if appropriate, sketch a line of best fit, and use it to make predictions.	H.1S.4
	Statistics	H.1S.5 Construct, analyze, and interpret tables, scatter plots, frequency distributions, and histograms of data sets.	H.1S.5
	Statistics	H.2S.1 Identify, analyze, and use experimental and theoretical probability to estimate and calculate the probability of simple events.	H.2S.1
Representation Use and translate among representations including verbal, numerical, symbolic and graphical to communicate mathematical ideas and solve problems.	Advanced Algebra	A.A.1.3 Represent a given relation in multiple ways and convert between each representation.	A.A.1.3
	Advanced Algebra	A.A.2.2 Graph and analyze piece-wise functions.	A.A.2.2
	Advanced Algebra	A.A.3.7 Graph and analyze equations of conic sections.	A.A.3.7
	Advanced Algebra	A.A.3.8 Determine conic equations from graphs or data.	A.A.3.8
	Advanced Algebra	A.A.4.6 Write a polynomial equation given its real and/or complex solutions.	A.A.4.6
	Advanced Algebra	A.A.4.7 Graph and analyze polynomial functions.	A.A.4.7
	Advanced Algebra	A.A.5.2 Perform arithmetic operations to simplify radical expressions.	A.A.5.2
	Advanced Algebra	A.A.5.4 Graph and analyze radical functions.	A.A.5.4
	Advanced Algebra	A.A.6.1 Find equivalent representations for rational expressions and identify restrictions.	A.A.6.1
	Advanced Algebra	A.A.6.4 Graph and analyze rational functions.	A.A.6.4
	Advanced Algebra	A.A.8.4 Solve systems of linear inequalities by graphing.	A.A.8.4
	Algebra	H.1A.3 Express square roots in equivalent radical form and their decimal approximations when appropriate.	H.1A.3
Algebra	H.1A.5 Factor quadratic expressions limited to factoring common monomial terms, perfect-square trinomials, differences of squares, and quadratics of the form $x^2 + bx + c$ that factor over the integers.	H.1A.5	

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT	Oregon Math: Academic Content Standards 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.	Algebra	H.2A.3 Determine the equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, determine an equation of a new line, parallel or perpendicular to a given line, through a given point.	H.2A.3
	Algebra	H.2A.4 Fluently convert among representations of linear relationships given in the form of a graph of a line, a table of values, or an equation of a line in slope-intercept and standard form.	H.2A.4
	Algebra	H.2A.7 Write, use, and solve linear equations and inequalities using graphical and symbolic methods with one or two variables. Represent solutions on a coordinate graph or number line.	H.2A.7
	Algebra	H.3A.1 Given a quadratic or exponential function, identify or determine a corresponding table or graph.	H.3A.1
	Algebra	H.3A.2 Given a table or graph that represents a quadratic or exponential function, extend the pattern to make predictions.	H.3A.2
	Discrete Mathematics	A.D.1.3 Use Venn diagrams to explore relationships and patterns, and to make arguments about relationships between sets.	A.D.1.3
	Discrete Mathematics	A.D.11.1 Use integer functions to encode alphabets and to create error-checking correcting codes.	A.D.11.1
	Discrete Mathematics	A.D.12.1 Designing algorithms using recurrence or iteration.	A.D.12.1
	Discrete Mathematics	A.D.8.1 Use truth tables to determine truth values of compounded propositional statements.	A.D.8.1
	Geometry	H.2G.1 Identify, classify, model, sketch, and label representations of three-dimensional objects from nets and from different perspectives.	H.2G.1
Geometry	H.3G.2 Identify and perform single and composite transformations of geometric figures in a plane, including translations, origin-centered dilations, reflections across either axis or $y = \pm x$, and rotations about the origin in multiples of 90° .	H.3G.2	

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.