

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	North Dakota Math: Content and Achievement Standards 2005		
	Course/ Level	Standard	Standard ID
Algebra and Functions Solve problems using algebraic expressions and symbols to represent relationships, patterns and functions of different types.	Grades: 9-10	9-10.1.3. Identify the properties of the real number system; i.e., commutative, associative, distributive, closure, inverse, and identity properties	9-10.1.3
	Grades: 9-10	9-10.1.5. Use the order of operations and properties of exponents to simplify an algebraic expression	9-10.1.5
	Grades: 9-10	9-10.1.7. Apply basic properties of exponents to simplify algebraic expressions; i.e., power of a product, power of a power, products and quotients of powers, zero and negative exponents	9-10.1.7
	Grades: 9-10	9-10.5.1. Given the explicit and/or the recursive definition of a sequence, generate a specific term (explicit formula only) or a specified number of terms	9-10.5.1
	Grades: 9-10	9-10.5.10. Solve a literal equation for a specified variable; e.g., solve $l = prt$ for r , or solve $7n + p = t$ for	9-10.5.10
	Grades: 9-10	9-10.5.11. Use essential quantitative relationships in a situation to determine whether the relationship can be modeled by a linear function; e.g., simple interest is linear, compound interest is not linear	9-10.5.11
	Grades: 9-10	9-10.5.12. Graphically represent the solution or solutions to an equation, inequality, or system	9-10.5.12
	Grades: 9-10	9-10.5.13. Interpret a graphical representation of a real-world situation	9-10.5.13
	Grades: 9-10	9-10.5.14. Draw conclusions about a situation being modeled	9-10.5.14
	Grades: 9-10	9-10.5.15. Approximate and interpret rates of change from graphical and numerical data	9-10.5.15
	Grades: 9-10	9-10.5.2. Express relations and functions using a variety of representations; i.e., numeric, graphic, symbolic, and verbal	9-10.5.2
	Grades: 9-10	9-10.5.3. Determine whether a relation is a function by examining various representations of the relation; e.g., table, graph, equation, set of ordered pairs	9-10.5.3
	Grades: 9-10	9-10.5.4. Perform the operations of addition, subtraction, multiplication, and division on algebraic functions; e.g., given $f(x) = 2x$ and $g(x) = 5x - 7$, find $f(x) + g(x)$	9-10.5.4
	Grades: 9-10	9-10.5.5. Identify the independent variable, dependent variable, domain, and range of a function	9-10.5.5

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Algebra and Functions Solve problems using algebraic expressions and symbols to represent relationships, patterns and functions of different types.	Grades: 9-10	9-10.5.6. Draw graphs of linear and quadratic functions using paper and pencil, labeling key features; e.g., graph a line and label its x-intercept and y-intercept, graph a parabola and label its vertex and one point on each side of the vertex	9-10.5.6
	Grades: 9-10	9-10.5.7. Use algebraic expressions, equations, or inequalities involving one or two variables to represent relationships (e.g., given a verbal statement, write an equivalent algebraic expression or equation) found in various contexts (e.g., time and distance problems, mixture problems)	9-10.5.7
	Grades: 9-10	9-10.5.8. Manipulate algebraic expressions and equations using properties of real numbers; e.g., simplify, factor	9-10.5.8
	Grades: 9-10	9-10.5.9. Solve linear equations and inequalities, systems of two linear equations or inequalities, and quadratic equations having rational solutions; e.g., factoring, quadratic formula	9-10.5.9
	Grades: 11-12	11-12.1.4. Justify the steps of an algebraic process using the properties of the real number system; e.g., write an algebraic proof	11-12.1.4
	Grades: 11-12	11-12.1.6. Apply basic properties of exponents and logarithms to rewrite algebraic expressions; i.e., power of a product, power of a power, products and quotients of powers, zero and negative exponents, and log of a product, quotient, or power	11-12.1.6
	Grades: 11-12	11-12.5.1. Perform advanced operations (i.e., composition and finding inverses) on algebraic functions	11-12.5.1
	Grades: 11-12	11-12.5.2. Generate graphs of a variety of functions (i.e., linear, quadratic, polynomial, absolute value, and exponential), using technology when appropriate	11-12.5.2
	Grades: 11-12	11-12.5.4. Use transformations (i.e., reflection, translation, dilation) to graph linear, quadratic, and absolute value functions	11-12.5.4
	Grades: 11-12	11-12.5.5. Given the graph of a transformed linear, quadratic, or absolute value function, write its equation	11-12.5.5
Grades: 11-12	11-12.5.6. Determine and write an equation for a function (i.e., linear, quadratic, polynomial, absolute value, and exponential) that models a mathematical relationship	11-12.5.6	

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Communication Express mathematical ideas precisely and communicate them coherently and clearly in the language and notation of mathematics.	Grades: 9-10	9-10.1.1. Express numbers between one-billionth and one billion in fraction, decimal, and verbal form; express numbers of all magnitudes in scientific notation	9-10.1.1
	Grades: 9-10	9-10.1.10. Explain the reasonableness of a problem's solution and the process used to obtain it	9-10.1.10
	Grades: 9-10	9-10.1.2. Describe the hierarchal relationships (e.g., integers are rationals) among subsets of the real number system; i.e., reals, rationals, irrationals, integers, wholes, and naturals	9-10.1.2
	Grades: 9-10	9-10.1.3. Identify the properties of the real number system; i.e., commutative, associative, distributive, closure, inverse, and identity properties	9-10.1.3
	Grades: 9-10	9-10.2.1. Identify the properties and attributes of two- and three-dimensional objects that distinguish one from another; e.g., a cylinder has two parallel circular bases	9-10.2.1
	Grades: 9-10	9-10.2.8. Describe the effects of combining basic transformations in a plane; e.g., two reflections over parallel lines results in a translation	9-10.2.8
	Grades: 9-10	9-10.3.10. Identify the trend of a set of data and estimate the strength of the correlation between two variables; e.g., strong vs. weak, positive vs. negative	9-10.3.10
	Grades: 9-10	9-10.3.3. Identify the variable, sample, and population in a well-designed study; e.g., in an exit poll for a tax increase, the variable is the outcome of the vote, the sample is the set of people surveyed, the population is the set of all voters	9-10.3.3
	Grades: 9-10	9-10.3.8. Discuss relationships among measures of central tendency and spread; i.e., mean, median, mode, range, and quartiles	9-10.3.8
	Grades: 9-10	9-10.4.2. Describe the effects of scalar change on the area and volume of a figure; e.g., the effect of doubling one or more edges of a solid on its surface area and volume	9-10.4.2
Grades: 9-10	9-10.5.5. Identify the independent variable, dependent variable, domain, and range of a function	9-10.5.5	
Grades: 11-12	11-12.1.2. Describe the hierarchal relationships (e.g., explain why real numbers are complex) among subsets of the complex number system, i.e., complex, real, and imaginary	11-12.1.2	

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Connections Connect ideas from different areas of mathematics (particularly geometry and algebra) to state or solve abstract or applied problems.	Grades: 9-10	9-10.2.10. Recognize images of the same object shown from different perspectives; i.e., a two-dimensional image of a three-dimensional object	9-10.2.10
	Grades: 9-10	9-10.2.5. Use Cartesian coordinates to determine distance, midpoint, and slope	9-10.2.5
	Grades: 9-10	9-10.5.12. Graphically represent the solution or solutions to an equation, inequality, or system	9-10.5.12
Data, Statistics, and Probability Analyze data, understand descriptive statistics, make inferences and determine the likelihood that certain events will occur.	Grades: 9-10	9-10.3.1. Construct appropriate displays of given data; i.e., circle graphs, bar graphs, histograms, stem-and-leaf plots, box-and-whisker plots, and scatter plots	9-10.3.1
	Grades: 9-10	9-10.3.10. Identify the trend of a set of data and estimate the strength of the correlation between two variables; e.g., strong vs. weak, positive vs. negative	9-10.3.10
	Grades: 9-10	9-10.3.2. Interpret a given visual representation (i.e., circle graphs, bar graphs, histograms, stem-and-leaf plots, box-and-whisker plots, and scatter plots) of a set of data	9-10.3.2
	Grades: 9-10	9-10.3.3. Identify the variable, sample, and population in a well-designed study; e.g., in an exit poll for a tax increase, the variable is the outcome of the vote, the sample is the set of people surveyed, the population is the set of all voters	9-10.3.3
	Grades: 9-10	9-10.3.4. Determine the number of possible outcomes for a given event, using appropriate counting techniques; e.g., fundamental counting principle, factorials, combinations, permutations	9-10.3.4
	Grades: 9-10	9-10.3.5. Calculate experimental and theoretical probabilities with and without replacement	9-10.3.5
	Grades: 9-10	9-10.3.6. Calculate probabilities of compound events using addition and multiplication rules	9-10.3.6
	Grades: 9-10	9-10.3.7. Calculate measures of central tendency and spread; i.e., mean, median, mode, range, and quartiles	9-10.3.7
	Grades: 9-10	9-10.3.8. Discuss relationships among measures of central tendency and spread; i.e., mean, median, mode, range, and quartiles	9-10.3.8
	Grades: 9-10	9-10.3.9. Select two points and approximate an equation for the line of best fit (if appropriate) for a set of data	9-10.3.9
Grades: 11-12	11-12.3.1. Choose, construct, and interpret a display to represent a set of data	11-12.3.1	

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Data, Statistics, and Probability Analyze data, understand descriptive statistics, make inferences and determine the likelihood that certain events will occur.	Grades: 11-12	11-12.3.2. Make predictions based on theoretical probabilities and experimental results	11-12.3.2
	Grades: 11-12	11-12.3.3. Select, calculate, and use appropriate measures of central tendency and spread (i.e., mean, median, mode, range, and quartiles) to draw meaningful conclusions about a set of data	11-12.3.3
	Grades: 11-12	11-12.3.4. Given a set of data exhibiting a linear trend, approximate an equation for the line of best fit (with or without technology) and use that model to make predictions	11-12.3.4
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.	Grades: 9-10	9-10.2.1. Identify the properties and attributes of two- and three-dimensional objects that distinguish one from another; e.g., a cylinder has two parallel circular bases	9-10.2.1
	Grades: 9-10	9-10.2.10. Recognize images of the same object shown from different perspectives; i.e., a two-dimensional image of a three-dimensional object	9-10.2.10
	Grades: 9-10	9-10.2.11. Use geometric models to find solutions to problems in mathematics and other disciplines; e.g., art and architecture	9-10.2.11
	Grades: 9-10	9-10.2.2. Determine congruence and similarity among geometric objects	9-10.2.2
	Grades: 9-10	9-10.2.3. Use trigonometric relationships and the Pythagorean Theorem to determine side lengths and angle measures in right triangles	9-10.2.3
	Grades: 9-10	9-10.2.4. Using given information, establish the validity of a conjecture using a two-column or paragraph proof	9-10.2.4
	Grades: 9-10	9-10.2.5. Use Cartesian coordinates to determine distance, midpoint, and slope	9-10.2.5
	Grades: 9-10	9-10.2.6. Use distance, midpoint, and slope to determine relationships between points, lines, and plane figures in the Cartesian coordinate system; e.g., determine whether a triangle is scalene, isosceles, or equilateral given the coordinates of its vertices	9-10.2.6
	Grades: 9-10	9-10.2.7. Identify and perform transformations of objects in the plane using sketches (translations, reflections, rotations, and dilations) and coordinates (translations, reflections, and dilations)	9-10.2.7
Grades: 9-10	9-10.2.8. Describe the effects of combining basic transformations in a plane; e.g., two reflections over parallel lines results in a translation	9-10.2.8	
Grades: 9-10	9-10.2.9. Construct plane figures using traditional and/or technological tools; i.e., congruent segments, congruent angles, angle and segment bisectors, perpendicular and parallel lines	9-10.2.9	

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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.	Grades: 9-10	9-10.4.1. Select appropriate units and scales for problem situations involving measurement	9-10.4.1
	Grades: 9-10	9-10.4.10. Apply indirect measurement techniques to solve problems involving irregular shapes or inaccessible objects; e.g., calculate the distance across a lake, triangulate an irregular region to find its approximate area	9-10.4.10
	Grades: 9-10	9-10.4.2. Describe the effects of scalar change on the area and volume of a figure; e.g., the effect of doubling one or more edges of a solid on its surface area and volume	9-10.4.2
	Grades: 9-10	9-10.4.3. Use approximations to compare the standard and metric systems of measurement; e.g., a five-kilometer race is about three miles long	9-10.4.3
	Grades: 9-10	9-10.4.4. Given a conversion factor, convert between standard and metric measurements	9-10.4.4
	Grades: 9-10	9-10.4.5. Use methods necessary to achieve a specified degree of precision and accuracy (i.e., appropriate number of significant digits) in measurement situations	9-10.4.5
	Grades: 9-10	9-10.4.6. Employ estimation techniques to evaluate reasonableness of results in measurement situations	9-10.4.6
	Grades: 9-10	9-10.4.7. Use unit analysis to track units during computations	9-10.4.7
	Grades: 9-10	9-10.4.8. Given a formula list, compute the area of a regular polygon	9-10.4.8
Grades: 9-10	9-10.4.9. Given a formula list, compute the surface area and volume of a right prism, right cylinder, right pyramid, right cone, and sphere	9-10.4.9	
Number and Operations Understand types of numbers (integers, fractions, decimals), their properties and the correct order of operations. Perform computations correctly.	Grades: 9-10	9-10.1.1. Express numbers between one-billionth and one billion in fraction, decimal, and verbal form; express numbers of all magnitudes in scientific notation	9-10.1.1
	Grades: 9-10	9-10.1.10. Explain the reasonableness of a problem's solution and the process used to obtain it	9-10.1.10
	Grades: 9-10	9-10.1.2. Describe the hierarchal relationships (e.g., integers are rationals) among subsets of the real number system; i.e., reals, rationals, irrationals, integers, wholes, and naturals	9-10.1.2
	Grades: 9-10	9-10.1.6. Analyze the effects of multiplication, division, raising to a power, and extracting a root on the magnitudes of quantities; e.g., when will the square root of a number be greater than the number itself, or what will happen to the magnitude of a number when you multiply it by a negative number?	9-10.1.6

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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.	Grades: 9-10	9-10.1.8. Apply estimation skills to predict realistic solutions to problems	9-10.1.8
	Grades: 9-10	9-10.1.9. Select and use a computational technique (i.e., mental calculation, paper-and-pencil, or technology) to solve problems involving real numbers	9-10.1.9
	Grades: 11-12	11-12.1.1. Translate between radical expressions and expressions involving rational exponents	11-12.1.1
	Grades: 11-12	11-12.1.2. Describe the hierarchal relationships (e.g., explain why real numbers are complex) among subsets of the complex number system, i.e., complex, real, and imaginary	11-12.1.2
Problem Solving Solve abstract and practical problems, applying and adapting a variety of strategies. Monitor progress and evaluate answers in terms of questions asked.	Grades: 9-10	9-10.1.5. Use the order of operations and properties of exponents to simplify an algebraic expression	9-10.1.5
	Grades: 9-10	9-10.1.7. Apply basic properties of exponents to simplify algebraic expressions; i.e., power of a product, power of a power, products and quotients of powers, zero and negative exponents	9-10.1.7
	Grades: 9-10	9-10.1.9. Select and use a computational technique (i.e., mental calculation, paper-and-pencil, or technology) to solve problems involving real numbers	9-10.1.9
	Grades: 9-10	9-10.2.11. Use geometric models to find solutions to problems in mathematics and other disciplines; e.g., art and architecture	9-10.2.11
	Grades: 9-10	9-10.2.2. Determine congruence and similarity among geometric objects	9-10.2.2
	Grades: 9-10	9-10.2.3. Use trigonometric relationships and the Pythagorean Theorem to determine side lengths and angle measures in right triangles	9-10.2.3
	Grades: 9-10	9-10.2.7. Identify and perform transformations of objects in the plane using sketches (translations, reflections, rotations, and dilations) and coordinates (translations, reflections, and dilations)	9-10.2.7
	Grades: 9-10	9-10.3.4. Determine the number of possible outcomes for a given event, using appropriate counting techniques; e.g., fundamental counting principle, factorials, combinations, permutations	9-10.3.4
Grades: 9-10	9-10.3.5. Calculate experimental and theoretical probabilities with and without replacement	9-10.3.5	

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<p>Problem Solving</p> <p>Solve abstract and practical problems, applying and adapting a variety of strategies. Monitor progress and evaluate answers in terms of questions asked.</p>	Grades: 9-10	9-10.3.6. Calculate probabilities of compound events using addition and multiplication rules	9-10.3.6
	Grades: 9-10	9-10.3.7. Calculate measures of central tendency and spread; i.e., mean, median, mode, range, and quartiles	9-10.3.7
	Grades: 9-10	9-10.3.9. Select two points and approximate an equation for the line of best fit (if appropriate) for a set of data	9-10.3.9
	Grades: 9-10	9-10.4.1. Select appropriate units and scales for problem situations involving measurement	9-10.4.1
	Grades: 9-10	9-10.4.10. Apply indirect measurement techniques to solve problems involving irregular shapes or inaccessible objects; e.g., calculate the distance across a lake, triangulate an irregular region to find its approximate area	9-10.4.10
	Grades: 9-10	9-10.4.5. Use methods necessary to achieve a specified degree of precision and accuracy (i.e., appropriate number of significant digits) in measurement situations	9-10.4.5
	Grades: 9-10	9-10.4.7. Use unit analysis to track units during computations	9-10.4.7
	Grades: 9-10	9-10.4.8. Given a formula list, compute the area of a regular polygon	9-10.4.8
	Grades: 9-10	9-10.4.9. Given a formula list, compute the surface area and volume of a right prism, right cylinder, right pyramid, right cone, and sphere	9-10.4.9
	Grades: 9-10	9-10.5.1. Given the explicit and/or the recursive definition of a sequence, generate a specific term (explicit formula only) or a specified number of terms	9-10.5.1
	Grades: 9-10	9-10.5.10. Solve a literal equation for a specified variable; e.g., solve $l = prt$ for r , or solve $7n + p = t$ for	9-10.5.10
	Grades: 9-10	9-10.5.2. Express relations and functions using a variety of representations; i.e., numeric, graphic, symbolic, and verbal	9-10.5.2
Grades: 9-10	9-10.5.3. Determine whether a relation is a function by examining various representations of the relation; e.g., table, graph, equation, set of ordered pairs	9-10.5.3	

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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.	Grades: 9-10	9-10.5.4. Perform the operations of addition, subtraction, multiplication, and division on algebraic functions; e.g., given $f(x) = 2x$ and $g(x) = 5x - 7$, find $f(x) + g(x)$	9-10.5.4
	Grades: 9-10	9-10.5.6. Draw graphs of linear and quadratic functions using paper and pencil, labeling key features; e.g., graph a line and label its x-intercept and y-intercept, graph a parabola and label its vertex and one point on each side of the vertex	9-10.5.6
	Grades: 9-10	9-10.5.8. Manipulate algebraic expressions and equations using properties of real numbers; e.g., simplify, factor	9-10.5.8
	Grades: 9-10	9-10.5.9. Solve linear equations and inequalities, systems of two linear equations or inequalities, and quadratic equations having rational solutions; e.g., factoring, quadratic formula	9-10.5.9
	Grades: 11-12	11-12.1.6. Apply basic properties of exponents and logarithms to rewrite algebraic expressions; i.e., power of a product, power of a power, products and quotients of powers, zero and negative exponents, and log of a product, quotient, or power	11-12.1.6
	Grades: 11-12	11-12.5.1. Perform advanced operations (i.e., composition and finding inverses) on algebraic functions	11-12.5.1
	Grades: 11-12	11-12.5.4. Use transformations (i.e., reflection, translation, dilation) to graph linear, quadratic, and absolute value functions	11-12.5.4
	Grades: 11-12	11-12.5.6. Determine and write an equation for a function (i.e., linear, quadratic, polynomial, absolute value, and exponential) that models a mathematical relationship	11-12.5.6
Reasoning Develop and use mathematical arguments and proofs to explore the truth of conjectures and justify conclusions.	Grades: 9-10	9-10.1.6. Analyze the effects of multiplication, division, raising to a power, and extracting a root on the magnitudes of quantities; e.g., when will the square root of a number be greater than the number itself, or what will happen to the magnitude of a number when you multiply it by a negative number?	9-10.1.6
	Grades: 9-10	9-10.1.8. Apply estimation skills to predict realistic solutions to problems	9-10.1.8
	Grades: 9-10	9-10.2.4. Using given information, establish the validity of a conjecture using a two-column or paragraph proof	9-10.2.4
	Grades: 9-10	9-10.2.6. Use distance, midpoint, and slope to determine relationships between points, lines, and plane figures in the Cartesian coordinate system; e.g., determine whether a triangle is scalene, isosceles, or equilateral given the coordinates of its vertices	9-10.2.6

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Reasoning Develop and use mathematical arguments and proofs to explore the truth of conjectures and justify conclusions.	Grades: 9-10	9-10.3.2. Interpret a given visual representation (i.e., circle graphs, bar graphs, histograms, stem-and-leaf plots, box-and-whisker plots, and scatter plots) of a set of data	9-10.3.2
	Grades: 9-10	9-10.4.3. Use approximations to compare the standard and metric systems of measurement; e.g., a five-kilometer race is about three miles long	9-10.4.3
	Grades: 9-10	9-10.4.6. Employ estimation techniques to evaluate reasonableness of results in measurement situations	9-10.4.6
	Grades: 9-10	9-10.5.11. Use essential quantitative relationships in a situation to determine whether the relationship can be modeled by a linear function; e.g., simple interest is linear, compound interest is not linear	9-10.5.11
	Grades: 9-10	9-10.5.13. Interpret a graphical representation of a real-world situation	9-10.5.13
	Grades: 9-10	9-10.5.14. Draw conclusions about a situation being modeled	9-10.5.14
	Grades: 9-10	9-10.5.15. Approximate and interpret rates of change from graphical and numerical data	9-10.5.15
	Grades: 11-12	11-12.1.4. Justify the steps of an algebraic process using the properties of the real number system; e.g., write an algebraic proof	11-12.1.4
	Grades: 11-12	11-12.3.2. Make predictions based on theoretical probabilities and experimental results	11-12.3.2
	Grades: 11-12	11-12.3.4. Given a set of data exhibiting a linear trend, approximate an equation for the line of best fit (with or without technology) and use that model to make predictions	11-12.3.4
Representation Use and translate among representations including verbal, numerical, symbolic and graphical to communicate mathematical ideas and solve problems.	Grades: 9-10	9-10.2.9. Construct plane figures using traditional and/or technological tools; i.e., congruent segments, congruent angles, angle and segment bisectors, perpendicular and parallel lines	9-10.2.9
	Grades: 9-10	9-10.3.1. Construct appropriate displays of given data; i.e., circle graphs, bar graphs, histograms, stem-and-leaf plots, box-and-whisker plots, and scatter plots	9-10.3.1
	Grades: 9-10	9-10.4.4. Given a conversion factor, convert between standard and metric measurements	9-10.4.4
	Grades: 9-10	9-10.5.7. Use algebraic expressions, equations, or inequalities involving one or two variables to represent relationships (e.g., given a verbal statement, write an equivalent algebraic expression or equation) found in various contexts (e.g., time and distance problems, mixture problems)	9-10.5.7

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	Course/ Level	Standard	Standard ID
Representation Use and translate among representations including verbal, numerical, symbolic and graphical to communicate mathematical ideas and solve problems.	Grades: 11-12	11-12.1.1. Translate between radical expressions and expressions involving rational exponents	11-12.1.1
	Grades: 11-12	11-12.3.1. Choose, construct, and interpret a display to represent a set of data	11-12.3.1
	Grades: 11-12	11-12.3.3. Select, calculate, and use appropriate measures of central tendency and spread (i.e., mean, median, mode, range, and quartiles) to draw meaningful conclusions about a set of data	11-12.3.3
	Grades: 11-12	11-12.5.2. Generate graphs of a variety of functions (i.e., linear, quadratic, polynomial, absolute value, and exponential), using technology when appropriate	11-12.5.2
	Grades: 11-12	11-12.5.5. Given the graph of a transformed linear, quadratic, or absolute value function, write its equation	11-12.5.5

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.