

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Maryland Math: Core Learning Goals Without Assessment Limits 2001		
	Course/ Level	Standard	Standard ID
<b>Algebra and Functions</b> Solve problems using algebraic expressions and symbols to represent relationships, patterns and functions of different types.	Grades: 9-12	1.1.1 The student will recognize, describe, and/or extend patterns and functional relationships that are expressed numerically, algebraically, and/or geometrically.	1.1.1
	Grades: 9-12	1.1.2 The student will represent patterns and/or functional relationships in a table, as a graph, and/or by mathematical expression.	1.1.2
	Grades: 9-12	1.1.3 The student will apply addition, subtraction, multiplication, and/or division of algebraic expressions to mathematical and real-world problems.	1.1.3
	Grades: 9-12	1.1.4 The student will describe the graph of a non-linear function and discuss its appearance in terms of the basic concepts of maxima and minima, zeros (roots), rate of change, domain and range, and continuity.	1.1.4
	Grades: 9-12	1.2.1 The student will determine the equation for a line, solve linear equations, and/or describe the solutions using numbers, symbols, and/or graphs.	1.2.1
	Grades: 9-12	1.2.2 The student will solve linear inequalities and describe the solutions using numbers, symbols, and/or graphs.	1.2.2
	Grades: 9-12	1.2.3 The student will solve and describe using numbers, symbols, and/or graphs if and where two straight lines intersect.	1.2.3
	Grades: 9-12	1.2.4 The student will describe how the graphical model of a non-linear function represents a given problem and will estimate the solution.	1.2.4
	Grades: 9-12	1.2.5 The student will apply formulas and/or use matrices (arrays of numbers) to solve real-world problems.	1.2.5
<b>Communication</b> Express mathematical ideas precisely and communicate them coherently and clearly in the language and notation of mathematics.	Grades: 9-12	1.1.1 The student will recognize, describe, and/or extend patterns and functional relationships that are expressed numerically, algebraically, and/or geometrically.	1.1.1
	Grades: 9-12	1.1.4 The student will describe the graph of a non-linear function and discuss its appearance in terms of the basic concepts of maxima and minima, zeros (roots), rate of change, domain and range, and continuity.	1.1.4
	Grades: 9-12	1.2.4 The student will describe how the graphical model of a non-linear function represents a given problem and will estimate the solution.	1.2.4
	Grades: 9-12	2.1.3 The student will use transformations to move figures, create designs, and/or demonstrate geometric properties.	2.1.3

## Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Maryland Math: Core Learning Goals Without Assessment Limits 2001		
	Course/ Level	Standard	Standard ID
<b>Communication</b> Express mathematical ideas precisely and communicate them coherently and clearly in the language and notation of mathematics.	Grades: 9-12	3.1.1 The student will design and/or conduct an investigation that uses statistical methods to analyze data and communicate results.	3.1.1
	Grades: 9-12	3.2.3 The student will communicate the use and misuse of statistics.	3.2.3
<b>Connections</b> Connect ideas from different areas of mathematics (particularly geometry and algebra) to state or solve abstract or applied problems.	Grades: 9-12	2.3.1 The student will use algebraic and/or geometric properties to measure indirectly.	2.3.1
<b>Data, Statistics, and Probability</b> Analyze data, understand descriptive statistics, make inferences and determine the likelihood that certain events will occur.	Grades: 9-12	3.1.1 The student will design and/or conduct an investigation that uses statistical methods to analyze data and communicate results.	3.1.1
	Grades: 9-12	3.1.2 The student will use the measures of central tendency and/or variability to make informed conclusions.	3.1.2
	Grades: 9-12	3.1.3 The student will calculate theoretical probability or use simulations or statistical inferences from data to estimate the probability of an event.	3.1.3
	Grades: 9-12	3.2.1 The student will make informed decisions and predictions based upon the results of simulations and data from research.	3.2.1
	Grades: 9-12	3.2.2 The student will interpret data and/or make predictions by finding and using a line of best fit and by using a given curve of best fit.	3.2.2
	Grades: 9-12	3.2.3 The student will communicate the use and misuse of statistics.	3.2.3
	<b>Geometry and Measurement</b> Solve problems based on understanding the properties of shapes, such as triangles and circles, and the spatial relationships between angles and lines.	Grades: 9-12	2.1.1 The student will analyze the properties of geometric figures.
Grades: 9-12		2.1.2 The student will identify and/or verify properties of geometric figures using the coordinate plane and concepts from algebra.	2.1.2
Grades: 9-12		2.1.3 The student will use transformations to move figures, create designs, and/or demonstrate geometric properties.	2.1.3
Grades: 9-12		2.1.4 The student will construct and/or draw and/or validate properties of geometric figures using appropriate tools and technology.	2.1.4

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Maryland Math: Core Learning Goals Without Assessment Limits 2001		
	Course/ Level	Standard	Standard ID
<b>Geometry and Measurement</b> Solve problems based on understanding the properties of shapes, such as triangles and circles, and the spatial relationships between angles and lines.	Grades: 9-12	2.2.1 The student will identify and/or verify congruent and similar figures and/or apply equality or proportionality of their corresponding parts.	2.2.1
	Grades: 9-12	2.2.2 The student will solve problems using two-dimensional figures and/or right-triangle trigonometry.	2.2.2
	Grades: 9-12	2.2.3 The student will use inductive or deductive reasoning.	2.2.3
	Grades: 9-12	2.3.1 The student will use algebraic and/or geometric properties to measure indirectly.	2.3.1
	Grades: 9-12	2.3.2 The student will use techniques of measurement and will estimate, calculate, and/or compare perimeter, circumference, area, volume, and/or surface area of two-and three-dimensional figures and their parts.	2.3.2
<b>Problem Solving</b> Solve abstract and practical problems, applying and adapting a variety of strategies. Monitor progress and evaluate answers in terms of questions asked.	Grades: 9-12	1.1.3 The student will apply addition, subtraction, multiplication, and/or division of algebraic expressions to mathematical and real-world problems.	1.1.3
	Grades: 9-12	1.2.1 The student will determine the equation for a line, solve linear equations, and/or describe the solutions using numbers, symbols, and/or graphs.	1.2.1
	Grades: 9-12	1.2.2 The student will solve linear inequalities and describe the solutions using numbers, symbols, and/or graphs.	1.2.2
	Grades: 9-12	1.2.3 The student will solve and describe using numbers, symbols, and/or graphs if and where two straight lines intersect.	1.2.3
	Grades: 9-12	1.2.5 The student will apply formulas and/or use matrices (arrays of numbers) to solve real-world problems.	1.2.5
	Grades: 9-12	2.2.2 The student will solve problems using two-dimensional figures and/or right-triangle trigonometry.	2.2.2
	Grades: 9-12	2.3.2 The student will use techniques of measurement and will estimate, calculate, and/or compare perimeter, circumference, area, volume, and/or surface area of two-and three-dimensional figures and their parts.	2.3.2
	Grades: 9-12	3.1.3 The student will calculate theoretical probability or use simulations or statistical inferences from data to estimate the probability of an event.	3.1.3

Alignments of PSAT/NMSQT Skill Categories and State Standards

PSAT/NMSQT Skill Category and Description of Skills	Maryland Math: Core Learning Goals Without Assessment Limits 2001		
	Course/ Level	Standard	Standard ID
<b>Reasoning</b> Develop and use mathematical arguments and proofs to explore the truth of conjectures and justify conclusions.	Grades: 9-12	2.1.1 The student will analyze the properties of geometric figures.	2.1.1
	Grades: 9-12	2.1.2 The student will identify and/or verify properties of geometric figures using the coordinate plane and concepts from algebra.	2.1.2
	Grades: 9-12	2.2.1 The student will identify and/or verify congruent and similar figures and/or apply equality or proportionality of their corresponding parts.	2.2.1
	Grades: 9-12	2.2.3 The student will use inductive or deductive reasoning.	2.2.3
	Grades: 9-12	3.1.2 The student will use the measures of central tendency and/or variability to make informed conclusions.	3.1.2
	Grades: 9-12	3.2.1 The student will make informed decisions and predictions based upon the results of simulations and data from research.	3.2.1
	Grades: 9-12	3.2.2 The student will interpret data and/or make predictions by finding and using a line of best fit and by using a given curve of best fit.	3.2.2
<b>Representation</b> Use and translate among representations including verbal, numerical, symbolic and graphical to communicate mathematical ideas and solve problems.	Grades: 9-12	1.1.2 The student will represent patterns and/or functional relationships in a table, as a graph, and/or by mathematical expression.	1.1.2
	Grades: 9-12	2.1.4 The student will construct and/or draw and/or validate properties of geometric figures using appropriate tools and technology.	2.1.4

# 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](http://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) report<sup>1</sup>. 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.

---

<sup>1</sup> 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](http://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.