

# Measures of Academic Progress (MAP) Pennsylvania State-Aligned Version 2

The NWEA Goal Structure is a document that represents the content and structure of a state’s standards documents. Goal structures are created through an alignment process that links state standards documents to the NWEA item bank. The MAP tests and associated reports for teachers and students are based upon this structure and alignment.

The alignment process begins with a thorough review of a state’s standards documents by NWEA’s curriculum specialists. The general goal areas or strands within a state’s standards that appear across grade levels become the goals in the goal structure (indicated below as bold). Areas in a state’s standards documents that are determined to be sub-domains of the goals/strands become the sub-goals in the goal structure (indented under each goal below).

Goal and sub-goal names from the Goal Structure are shortened for technical reasons to create the headings in DesCartes. Report Names are shortened further to accommodate report specifications.

<b>Mathematics 2-5 Goal Structure</b>	<b>Mathematics 2-5 DesCartes</b>	<b>Mathematics 2-5 Report Names</b>
<b>Numbers and Operations</b>	<b>Numbers and Operations</b>	<b>Numbers and Operations</b>
Demonstrate an understanding of numbers and ways of representing numbers: express numbers in equivalent forms; demonstrate understanding of place value of whole numbers and decimals; apply place-value concepts and numeration to counting and equivalency; use or develop models and/or words to represent quantities as decimals, fractions, or mixed numbers; use fractions to represent quantities as part of a whole; use simple applications of negative numbers (number line, counting, temperature; count and make change using a collection of coins and one dollar bills*	Numbers and Ways of Representing Numbers	
Demonstrate an understanding of relationships among numbers: compare quantities or magnitudes of numbers; compare amounts of money using a collection of coins and one dollar bills*	Relationships Among Numbers: Compare and Order	

Demonstrate an understanding of number systems: develop and/or apply number theory concepts (i.e., primes, factors, multiples, composites) to represent numbers in various ways	Number Systems: Number Theory Concepts	
Understand the meanings of operations, compute accurately and fluently, and make reasonable estimates for problems involving addition and subtraction: understand various meanings of operations and the relationship between them; compute accurately without the use of a calculator (straight computation or 1 operation word problems), and apply rounding and/or estimation strategies to solve a variety of problems involving addition and subtraction with whole numbers, decimals money, and fractions*	Compute and Estimate: Addition and Subtraction	
Understand the meanings of operations, compute accurately and fluently, and make reasonable estimates for problems involving multiplication and division: understand various meanings of operations and the relationship between them; compute accurately without the use of a calculator (straight computation or 1 operation word problems) , and apply rounding and/or estimation strategies to solve a variety of problems involving multiplication and division of whole numbers, decimals, and money*	Compute and Estimate: Multiplication and Division	
<b>Measurement</b>	<b>Measurement</b>	<b>Measurement</b>
Demonstrate an understanding of measurable attributes of objects and figures: determine time and/or calculate elapsed time; use the attributes of length, area, volume and weight of objects; estimate measurements of figures	Measurable Attributes of Objects and Figures	
Demonstrate an understanding of the units, systems and processes of measurement: select appropriate units (customary or metric) to measure specific attributes of objects; determine the measurement of objects with non-standard and standard units;	Units, Systems, and Processes of Measurement	

<p>Apply appropriate techniques, tools and formulas to determine measurements: use appropriate tools to determine measurements solve problems using simple conversions and/or add and subtract measurements; solve problems involving length, time, weight, mass, capacity, temperature, perimeter, area and/or money</p>	<p>Measurement Techniques, Tools and Formulas</p>	
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<b>Geometry</b>	<b>Geometry</b>	<b>Geometry</b>
Analyze characteristics and properties of two-dimensional geometric shapes and demonstrate understanding of geometric relationships: identify/describe the basic properties of geometric figures in two dimensions; define and/or use basic properties of quadrilaterals (parallelograms, squares, rectangles, trapezoids, rhombi), triangles, and circles; identify/draw right angles and right triangles	Two-Dimensional Geometric Shapes	
Analyze characteristics and properties of three-dimensional geometric shapes and demonstrate understanding of geometric relationships: identify/describe the basic properties of geometric figures in three dimensions; define and/or use basic properties of pyramids, cubes, and/or prisms	Three-Dimensional Geometric Shapes	
Identify and/or apply concepts of transformations or symmetry: use properties of reflections, translations, and rotations and/or use symmetry to analyze mathematical situations	Transformations and Symmetry	
Locate points or describe relationships using the coordinate plane: represent and/or use properties or relationships of points, lines, line segments, rays and angles; locate points on a simple grid; identify, plot, or match points given an ordered pair	Location and Relationships in the Coordinate Plane	
<b>Algebraic Concepts</b>	<b>Algebraic Concepts</b>	<b>Algebraic Concepts</b>
Demonstrate an understanding of patterns, relations and functions: recognize, describe, extend, create and/or replicate a variety of patterns; demonstrate and apply simple function rules	Patterns, Relations, Functions	
Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs: create/model expressions, equations and inequalities to match a problem situation; use numbers and symbols to model the concepts of expressions and/or equations; select and/or use appropriate strategies, including concrete materials, to solve number sentences	Numbers, Symbols, Words, Tables, Graphs	

Analyze change in various contexts: describe the relationship between rate of change and another variable (e.g., time, temperature)	Analyze Change in Various Contexts	
<b>Data Analysis and Probability</b>	<b>Data Analysis and Probability</b>	<b>Data Analysis and Probability</b>
Formulate or answer questions that can be addressed with data: organize, display and/or interpret data using pictographs, tallies, tables, charts, line, bar and circle graphs and Venn diagrams	Data: Organize, Display, Interpret	
Select and/or use appropriate statistical methods to analyze data: describe data sets using mean, median, mode and/or range	Data Analysis: Central Tendency and Range	
Understand and/or apply basic concepts of probability or outcomes: predict and/or measure the likelihood of events; find all possible combinations or arrangements involving two variables; calculate the probability of a simple event	Basic Concepts of Probability	

\*Denotes that calculator use is not permitted in this goal or sub-goal of the test.

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Mathematics 6+ Goal Structure	Mathematics 6+ DesCartes	Mathematics 6+ Report Names
Numbers and Operations	Numbers and Operations	Numbers and Operations
<p>Demonstrate an understanding of numbers and ways of representing numbers: express numbers in equivalent forms; demonstrate understanding of place value of whole numbers and decimals; apply place-value concepts and numeration to counting and equivalency; use or develop models and/or words to represent quantities as decimals, fractions, mixed numbers, or percents; use fractions to represent quantities as part of a whole; use simple applications of negative numbers (number line, counting, temperature; count and make change using a collection of coins and one dollar bills; represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, exponents and scientific notation) *</p>	Numbers and Ways of Representing Numbers	
<p>Demonstrate an understanding of relationships among numbers: compare quantities or magnitudes of numbers; compare amounts of money using a collection of coins and one dollar bills*</p>	Relationships Among Numbers: Compare and Order	
<p>Demonstrate an understanding of number systems: develop and/or apply number theory concepts (i.e., primes, factors, multiples, composites) to represent numbers in various ways; apply number theory concepts to show relationships between real numbers in problem solving settings</p>	Number Systems: Number Theory Concepts	

<p>Understand the meanings of operations, compute accurately and fluently, and make reasonable estimates for problems involving addition and subtraction: understand various meanings of operations and the relationship between them; compute accurately without the use of a calculator (straight computation or 1 operation word problems), and apply rounding and/or estimation strategies to solve a variety of problems involving addition and subtraction with whole numbers, decimals money, fractions, integers, and irrational numbers; select and/or use operations to simplify or solve problems; complete calculations by applying the order of operations</p>	<p>Compute and Estimate: Addition and Subtraction</p>	
<p>Understand the meanings of operations, compute accurately and fluently, and make reasonable estimates for problems involving multiplication and division: understand various meanings of operations and the relationship between them; compute accurately without the use of a calculator (straight computation or 1 operation word problems) , and apply rounding and/or estimation strategies to solve a variety of problems involving multiplication and division of whole numbers, decimals, money, integers, and irrational numbers; select and/or use operations to simplify or solve problems; complete calculations by applying the order of operations; apply ratio, proportion, rates, and/or percents in problem-solving situations; use exponents, roots and/or absolute value to solve problems</p>	<p>Compute and Estimate: Multiplication and Division</p>	
<p><b>Measurement</b></p>	<p><b>Measurement</b></p>	<p><b>Measurement</b></p>
<p>Demonstrate an understanding of measurable attributes of objects and figures: determine time and/or calculate elapsed time; use the attributes of length, area, volume and weight of objects; estimate measurements of figures; draw, label, measure and/or list properties of angles</p>	<p>Measurable Attributes of Objects and Figures</p>	

Demonstrate an understanding of the units, systems and processes of measurement: select appropriate units (customary or metric) to measure specific attributes of objects; determine the measurement of objects with non-standard and standard units	Units, Systems, and Processes of Measurement	
Apply appropriate techniques, tools and formulas to determine measurements: use appropriate tools to determine measurements solve problems using simple conversions and/or add and subtract measurements; solve problems involving length, time, weight, mass, capacity, temperature, perimeter, area, money, circumference, surface area, and/or volume; use and/or compare measurements of angles; determine the measurement of a missing side(s) or angle(s) in a polygon; describe how a change in one dimension of a figure (2 or 3 dimensional) affects other measurements of that figure; construct, interpret and/or use scale drawings to solve real-world problems	Measurement Techniques, Tools and Formulas	
<b>Geometry</b>	<b>Geometry</b>	<b>Geometry</b>
Analyze characteristics and properties of two-dimensional geometric shapes and demonstrate understanding of geometric relationships: identify/describe the basic properties of geometric figures in two dimensions; define and/or use basic properties of quadrilaterals (parallelograms, squares, rectangles, trapezoids, rhombi), triangles, circles, pentagons, hexagons, heptagons, octagons, nonagons, decagons; identify/draw right angles and right triangles; identify and/or use parts of circles and segments associated with circles; identify congruence and/or similarity in polygons; use properties of congruence, correspondence and similarity in problem-solving settings involving two-dimensional figures; compute measures of sides of right triangles and solve problems using the Pythagorean Theorem	Two-Dimensional Geometric Shapes	

Analyze characteristics and properties of three-dimensional geometric shapes and demonstrate understanding of geometric relationships: identify/describe the basic properties of geometric figures in three dimensions; define and/or use basic properties of pyramids, cubes, prisms, cones, and/or cylinders; use properties of congruence, correspondence and similarity in problem-solving settings involving three-dimensional figures	Three-Dimensional Geometric Shapes	
Identify and/or apply concepts of transformations or symmetry: use properties of reflections, translations, and rotations and/or use symmetry to analyze mathematical situations; describe, analyze and/or draw translations, rotations (90, 180 and 360 degrees) and reflections	Transformations and Symmetry	
Locate points or describe relationships using the coordinate plane: represent and/or use properties or relationships of points, lines, line segments, rays and angles; locate points on a simple grid; identify, plot, or match points given an ordered pair; plot and/or identify ordered pairs on a coordinate plane; solve problems using analytic geometry	Location and Relationships in the Coordinate Plane	
<b>Algebraic Concepts</b>	<b>Algebraic Concepts</b>	<b>Algebraic Concepts</b>
Demonstrate an understanding of patterns, relations and functions: recognize, describe, extend, create and/or replicate a variety of patterns, sequences and relationships; demonstrate and apply simple function rules; analyze, extend or develop descriptions of patterns or functions	Patterns, Relations, Functions	

Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs: create/model expressions, equations and inequalities to match a problem situation; use numbers and symbols to model the concepts of expressions and/or equations; select and/or use appropriate strategies, including concrete materials, to solve number sentences; select and/or use a strategy to simplify an expression, solve an equation or inequality and/or check the solution for accuracy; solve and/or graph linear equations and inequalities using various methods; create and/or interpret expressions, equations, or inequalities that model problem situations; simplify expressions involving polynomials	Numbers, Symbols, Words, Tables, Graphs	
Analyze change in various contexts: describe the relationship between rate of change and another variable (e.g., time, temperature); interpret relationships between data tables, variables, and corresponding graphs and/or functions; describe and/or determine change; compute and/or use the slope of a line	Analyze Change in Various Contexts	
Describe or use models to represent quantitative relationships: represent relationships with tables or graphs on the coordinate plane; interpret and/or use linear, quadratic and/or exponential functions and their equations, graphs or tables	Models and Quantitative Relationships	
<b>Data Analysis and Probability</b>	<b>Data Analysis and Probability</b>	<b>Data Analysis and Probability</b>
Formulate or answer questions that can be addressed with data: organize, display and/or interpret data using pictographs, tallies, tables, charts, line, bar and circle graphs and Venn diagrams, frequency tables, histograms, double bar graphs, double line graphs, line plots, box-and-whisker plots, or scatter plots	Data: Organize, Display, Interpret	
Select and/or use appropriate statistical methods to analyze data: describe data sets using mean, median, mode and/or range; describe data represented in box-and-whisker plots; describe, compare and/or contrast different plots of data using measures of central tendency	Data Analysis: Central Tendency and Range	

<p>Understand and/or apply basic concepts of probability or outcomes: predict and/or measure the likelihood of events; find all possible combinations or arrangements involving two variables; calculate the probability of a simple event; determine or calculate theoretical or experimental probability; apply probability and/or odds to practical situations; determine the number of combinations and/or permutations for an event; apply counting techniques in problem-solving settings</p>	<p>Basic Concepts of Probability</p>	
<p>Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays: draw conclusions, make inferences and/or evaluate hypotheses based on statistical and data displays; make predictions using data displays and probability; analyze and/or interpret data on a scatter plot and/or use a scatter plot to make predictions</p>	<p>Inferences, Predictions, Conclusions from Data</p>	

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## Measures of Academic Progress (MAP) Pennsylvania State-Aligned Version 2

Reading Goal Structure	Reading DesCartes	Reading Report Names
<b>Learning to Read Independently (Text Structure and Vocabulary)</b>	<b>Learning to Read: Text Structure and Vocabulary</b>	<b>Text Structure and Vocabulary</b>
Identify and establish the purposes and types of text; locate appropriate texts for an assigned purpose before reading	Identify and Establish Purposes	
Identify and use common organizational structures and graphic features to comprehend information	Identify Organizational Structures and Features	
Read a variety of genres and types of text	Read a Variety of Genres and Types of Text	
Use knowledge of phonics, word analysis (e.g., root words, prefixes and suffixes), syllabication, picture and context clues to decode and understand new words and specialized vocabulary during reading	Use Knowledge of Phonics, Word Analysis	
Acquire a reading vocabulary by correctly identifying and using words (e.g., synonyms, homophones, homographs)	Acquire Vocabulary by Correctly Identifying Words	
<b>Learning to Read Independently (Comprehension Strategies)</b>	<b>Learning to Read: Comprehension Strategies</b>	<b>Comprehension Strategies</b>
Read text using self-monitoring comprehension strategies (predict, revise predictions, reread, use text organization including headings, graphics, and charts, and adjust reading rate); identify, describe, evaluate and synthesize the essential ideas in text	Use Comprehension Strategies, Evaluate Ideas	
Demonstrate after-reading understanding and interpretation of both fiction and nonfiction text	Demonstrate Understanding and Interpretation	

Retell or summarize the major ideas, themes and/or procedures of the text	Retell Major Ideas, Themes, and Procedures	
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<b>Reading Critically in All Content Areas</b>	<b>Reading Critically in All Content Areas</b>	<b>Read Critically Content Areas</b>
Differentiate fact from opinion within text; distinguish between essential and nonessential information across a variety of texts (identifying stereotypes and exaggeration, bias and propaganda techniques where present)	Differentiate Fact/Opinion, Essential Information	
Make inferences from text when studying a topic and draw conclusions based on text	Make Inferences and Draw Conclusions	
Evaluate text organization and content to determine the author's purpose and effectiveness	Evaluate for Author's Purpose, Effectiveness	
<b>Reading, Analyzing and Interpreting Literature</b>	<b>Reading, Analyzing and Interpreting Literature</b>	<b>Read, Analyze, Interpret Lit</b>
Identify and analyze literary elements in stories describing characters, setting and plot; compare the use of literary elements within and among texts including characters, setting, plot, theme and point of view, tone and style	Identify and Analyze Literary Elements	
Identify, describe and analyze literary devices in stories (e.g., rhyme, rhythm, personification, meter, alliteration)	Identify, Describe and Analyze Literary Devices	
Describe and analyze literary devices used to convey meaning (figurative language, personification, simile, metaphor, hyperbole, allusion)	Describe, Analyze Devices (Figurative Language)	

## Measures of Academic Progress (MAP) Pennsylvania State-Aligned Version 2

Language Usage Goal Structure	Language Usage DesCartes	Language Usage Report Names
<b>Types of Writing</b>	<b>Types of Writing</b>	<b>Types of Writing</b>
Write narrative pieces including literary elements (conflict, detailed descriptions of people, places and things)	Narrative Pieces: Literary Elements	
Write narrative pieces applying varying characteristics and organizational methods (e.g., short stories, poems, plays, multi-paragraph stories from limerick to epic, from whimsical to dramatic)	Narrative Pieces: Characteristics and Organization	
Write narrative pieces using literary devices	Narrative Pieces: Literary Devices	
Write complex multi-paragraph informational pieces (e.g., research papers, analyses, evaluations, essays, letters, descriptions, reports, instructions, articles, interviews, résumés)	Informational Pieces	
Write research pieces (select topic, locate information in appropriate sources, and take notes)	Research Pieces	
Write persuasive pieces including clearly stated position and supporting details	Persuasive Pieces	
<b>Quality of Writing: Focus, Content and Organization</b>	<b>Quality of Writing: Content and Organization</b>	<b>Content and Organization</b>
Gather, analyze, organize and select information appropriate for the topic, task and audience	Prepare to Write: Topic, Task and Audience	
Write paragraphs that have details specific to the topic and relevant to the focus	Write Paragraphs: Topic and Details	

Write with controlled and/or subtle organization sustaining a logical order throughout the piece using meaningful transitions and include an identifiable and effective introduction, body and conclusion	Organize and Order Paragraphs	
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<b>Quality of Writing: Revision</b>	<b>Quality of Writing: Revision</b>	<b>Revision</b>
Revise writing considering sentence variety, paragraph development, level of detail, style, tone, and word choice	Revise Writing: Sentences	
Revise writing considering questions of purpose and audience	Revise Writing: Use Precise Language	
Use precise language that conveys the writer's meaning	Revise Writing: Paragraph Development	
Use complete sentences and different types and lengths of sentences (simple, compound, complex, declarative, interrogative, exclamatory and imperative)	Revise Writing: Purpose and Audience	
<b>Quality of Writing: Editing</b>	<b>Quality of Writing: Editing</b>	<b>Editing</b>
Edit writing using the conventions of language	Edit Writing Using the Conventions of Language	
Spell all words correctly	Spell All Words Correctly	
Use capital letters correctly	Use Capital Letters Correctly	
Punctuate correctly (periods, exclamation points, question marks, commas, quotation marks, apostrophes, colons, semicolons, parentheses, hyphens, brackets, ellipses)	Punctuate Correctly	
Use parts of speech correctly (nouns, pronouns, verbs, adjectives, adverbs, conjunctions, prepositions and interjections)	Use Parts of Speech Correctly	