

Measures of Academic Progress (MAP) North Dakota State-Aligned Version 3

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.

Mathematics 2-5 Goal Structure	Mathematics 2-5 DesCartes	Mathematics 2-5 Report Names
Concepts of Number and Number Systems	Concepts of Number and Number Systems	Numbers and Number Systems
Numbers, relationships, and systems: Order and compare whole numbers, fractions, and decimals; identify place value; identify the odd, even, prime, and composite numbers; round whole numbers and decimals; read and represent numbers in standard, expanded, and short word form; compare equivalent fractions, decimals, and percents; place integers on a number line; use negative integers in real-world situations; represent ratios and percents as parts of a whole; demonstrate the relationship between exponential notation and repeated multiplication.	Number, Number Relationships, & Number Systems	

Operations and their properties: Demonstrate the inverse relationship between operations; add, subtract, multiply, and divide whole numbers and decimals; add and subtract fractions; use commutative, associative, distributive, and identity properties; use divisibility rules for 2 and 5; determine the prime factors for a number using a factor tree; determine least common multiple and greatest common factor; use order of operations to simplify numeric expressions.	Operations and Their Properties	
Computational fluency, problem solving, and estimation: Recall addition, subtraction, multiplication, and division facts; estimate computations of whole numbers, fractions, and decimals; use a variety of strategies, methods, and tools for problem solving; determine what information is relevant for solving a problem; use estimation to determine if solutions are reasonable; determine when a rounded solution is appropriate.	Computational Fluency, Problem Solving, Estimation	
Geometric Concepts and Spatial Relationships	Geometric Concepts and Spatial Relationships	Geometric Concepts
Two- and three-dimensional shapes, geometric properties and relationships, and coordinate geometry: Describe properties and attributes of two- and three-dimensional figures; identify, describe, and model, parallel, perpendicular, and intersecting lines, and line segments; identify right angles; identify the components of a circle; determine the degrees of the interior angles of triangles; use ordered pairs to identify the locations of points in quadrant 1 of a coordinate grid.	Geometric Shapes, Properties, and Relationships	
Transformation, symmetry, visualization, spatial reasoning, and geometric modeling: Identify shapes that have lines of symmetry; identify two-dimensional shapes that are congruent or similar; describe properties of congruent figures and use them to solve problems; recognize the changes in position and orientation of two-dimensional figures after transformations; identify position and direction; arrange and describe objects in space by proximity, position, and direction.	Transformation, Symmetry, and Spatial Reasoning	



Data, Statistical Methods, and Probability	Data, Statistical Methods, and Probability	Probability and Data
Data collection, display, interpretation, and statistical methods: Sort and classify objects according to their attributes and organize data about the objects; Read and interpret bar, line, picture and circle graphs, pictographs, tally charts, and frequency tables; demonstrate that data can be represented in a variety of ways; solve problems based on data displayed on a graph; determine a sample group to survey; determine or calculate the mode, mean, and range of a set of data.	Data and Statistical Methods	
Probability, predictions, data analysis, and inferences: Use a simple probability experiment to collect data, display the data in a graph, and interpret the likelihood of the outcome; determine the probability of a simple event and express it as a ratio; state possible outcomes for a given situation; make predictions and draw conclusions from simple probability experiments and on data collected from a sample group; describe the likelihood of an event.	Probability, Predictions, and Data Analysis	
Concepts and Tools of Measurement	Concepts and Tools of Measurement	Measurement
Measurable attributes, measurement systems, and units: Name the days of the week and the months in order; tell time to the nearest minute; compare and order lengths, capacities, weights, and temperatures; estimate and measure length, weight, and capacity; identify the approximate size of basic units; estimate and measure perimeter, area, and volume; count mixed coins and bills; make change; measure and apply elapsed time; read and measure temperature; state specific relationships between units within the same measuring system; estimate angle measures.	Measurable Attributes, Measurement Systems & Units	

Measurement tools, techniques and formulas: Measure length with non-standard units; select a variety of tools for measuring length, weight, time, temperature, and capacity; select the appropriate units for measuring time, length, weight, and temperature; select and use appropriate units when measuring length, area, and volume; use the symbols for the dollar and cent; use formulas to calculate the perimeter and area of squares and rectangles; use formulas to calculate the volume of rectangular prisms.	Measurement Tools, Techniques and Formulas	
Algebraic Concepts, Functions, and Patterns	Algebraic Concepts, Functions, and Patterns	Algebraic Concepts
Patterns, relations, and functions: Identify, sort, and classify objects by two or more attributes; recognize, extend, create, and describe patterns; identify the rule for a pattern and then use the rule to solve a problem; determine the missing elements of a pattern of multiples and of complex repeating patterns; analyze patterns represented by tables and graphs.	Patterns, Relations, and Functions	
Numeric and algebraic representations and mathematical modeling: Demonstrate the commutative property of addition; solve addition, subtraction, multiplication, and division equations with unknown numbers; use tools and strategies to model problems; use symbols to write number sentences; use words, objects, and number sentences to represent addition and subtraction problems; solve problems with variables; use equations to solve problems.	Representations & Mathematical Modeling	

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Mathematics 6+ Goal Structure	Mathematics 6+ DesCartes	Mathematics 6+ Report Names
Concepts of Number and Number Systems	Concepts of Number and Number Systems	Numbers and Number Systems
<p>Numbers, relationships, and systems: Use ratios and proportions to represent relationships; find the equivalent forms among fractions, decimals, and whole number percents; express, compare and order fractions, decimals, mixed numbers and integers; determine the greatest common factor and least common multiple; use integers to represent and compare quantities; describe the hierarchical relationships among subsets of the real and complex number system; identify perfect squares and approximate square roots; represent numbers using scientific notation; represent a set of data in a matrix.</p>	<p>Number, Number Relationships, & Number Systems</p>	
<p>Operations and their properties: Explain the effects of arithmetic operations on fractions, decimals, and integers; identify the uses of the commutative and associative properties; apply the order of operations and the commutative, associative, and distributive properties to evaluate and simplify numeric expressions; identify the properties of the real number system; apply basic properties of exponents to simplify and rewrite algebraic expressions; determine which properties of the real number system hold for matrices.</p>	<p>Operations and Their Properties</p>	
<p>Computational fluency: Add, subtract, multiply, and divide fractions, terminating decimals, and integers; express an exponent in standard form; add, subtract, and perform scalar multiplication on matrices; multiply matrices containing no more than three rows or columns without the use of technology; add, subtract, and multiply complex numbers.</p>	<p>Computational Fluency</p>	

<p>Estimation and problem solving: Use problem solving strategies to solve and verify the results of problems; solve real-world problems using integers, fractions, decimals, ratio, proportion, and percents; select and use a computational technique to solve problems involving real numbers; explain the reasonableness of a problem's solution; estimate the results of problems involving whole numbers, fractions, and decimals; apply estimation skills to predict realistic solutions to problems.</p>	<p>Estimation and Problem Solving</p>	
<p>Geometric Concepts and Spatial Relationships</p>	<p>Geometric Concepts and Spatial Relationships</p>	<p>Geometric Concepts</p>
<p>Two- and three-dimensional shapes, geometric properties and relationships, and coordinate geometry: Identify relationships between pairs of angles; identify the angles formed and the relationships between the angles when parallel lines are intersected by a transversal; identify polygons; classify triangles and quadrilaterals; identify the properties and attributes of two- and three-dimensional objects; use trigonometric relationships and the Pythagorean Theorem to determine side lengths and angle measures in right triangles; use ordered pairs to locate a point on a coordinate plane; represent shapes using coordinate geometry; determine distance, midpoint, and slope.</p>	<p>Geometric Shapes, Properties, and Relationships</p>	
<p>Transformation, symmetry, visualization, spatial reasoning, and geometric modeling: Identify and perform transformations of objects in the plane using sketches and coordinates; determine congruence and similarity among geometric objects; use scale, proportion, and congruency to solve problems involving similar figures; draw and construct plane figures; recognize images of the same object shown from different perspectives; use two-dimensional representations of three-dimensional objects to visualize and solve problems; use geometric models to find solutions to problems.</p>	<p>Transformation, Symmetry, and Spatial Reasoning</p>	

Data, Statistical Methods, and Probability	Data, Statistical Methods, and Probability	Probability and Data
<p>Data collection, display, and interpretation and statistical methods: Choose, construct, and interpret a display to represent a set of data using frequency tables, line, circle, and bar graphs, scatter, box-and-whisker, and stem-and-leaf plots, and histograms; formulate a question and select a random or representative sample; select, calculate, and use appropriate measures of central tendency and spread to draw meaningful conclusions about a set of data; identify an outlier within a set of data and discuss its effects on the measures of central tendency and spread.</p>	<p>Data and Statistical Methods</p>	
<p>Probability, predictions, data analysis, and inferences: Determine the number of possible outcomes for a given event; compute probabilities for simple and compound events; calculate and make predictions based on experimental and theoretical probabilities; make inferences based on analysis of data and interpretation of graphs; given a set of data exhibiting a linear trend, approximate an equation for the line of best fit and use that model to make predictions; identify the trend of a set of data and estimate the strength of the correlation between two variables.</p>	<p>Probability, Predictions, and Data Analysis</p>	
Concepts and Tools of Measurement	Concepts and Tools of Measurement	Measurement
<p>Measurable attributes, measurement systems, and units: Select an appropriate unit of measure; select an appropriate degree of precision when using measurements for calculations; convert unit measurements within the same system; use approximations to compare the standard and metric systems of measurement; given a conversion factor, convert between standard and metric measurements; select appropriate units and scales for problem situations involving measurement; describe the effects of scalar change on the area and volume of a figure.</p>	<p>Measurable Attributes, Measurement Systems & Units</p>	

Measurement tools, techniques and formulas: Select and use appropriate tools and units to determine measurements; use formulas to determine the circumference and area of circles, the perimeter and area of triangles, trapezoids, and parallelograms, the area of a regular polygon, and the surface area and volume of a right prism, right cylinder, right pyramid, right cone, and sphere; apply indirect measurement techniques to solve problems involving irregular shapes or inaccessible objects; evaluate reasonableness of results in measurement situations; solve problems involving scale factors.	Measurement Tools, Techniques and Formulas	
Algebraic Concepts, Functions, and Patterns	Algebraic Concepts, Functions, and Patterns	Algebraic Concepts
Patterns, relations, and functions: Identify and describe patterns represented by tables, graphs, and sequences; extend numerical patterns; given the explicit and/or the recursive definition of a sequence, generate a specific term or a specified number of terms; express relations and functions using a variety of representations; determine whether a relation is a function; perform operations on algebraic functions; identify the independent variable, dependent variable, domain, and range of a function; generate graphs of a variety of functions.	Patterns, Relations, and Functions	
Numeric and algebraic representations, mathematical modeling, and rates of change: Solve linear equations and inequalities, systems of two linear equations or inequalities, and quadratic equations; solve a literal equation for a specified variable; develop algebraic expressions, equations, or inequalities involving one or two variables to represent relationships; determine whether a relationship can be modeled by a linear function; graphically represent the solution or solutions to an equation, inequality, or system; determine and write an equation for a function that models a mathematical relationship; solve problems involving rates.	Representations & Mathematical Modeling	

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Reading Goal Structure	Reading DesCartes	Reading Report Names
Literary and Informational Genres	Literary and Informational Genres	Genres
<p>Identify and compare and contrast characteristics and organizational features of a variety of fiction genres; e.g., short stories, novels, mysteries, poetry, fables, myths, plays, parody, satire and allegory, multi-cultural texts, folktales, fantasy, fairy tales, plays, historical fiction, realistic fiction, tall tales, legends, science fiction. Analyze religious writing, biographies, and political writings.</p>	<p>Identify Characteristics of Literary Genres</p>	
<p>Identify and compare and contrast characteristics of a variety of nonfiction genres and books; i.e., newspapers, magazines, picture dictionaries, reference materials electronic texts, biographies, autobiography, memoir, informational articles, editorials, essays, speeches. Determine and analyze the features and characteristics of a non-fiction text; i.e., table of contents, index, boldfaced words, glossary, headings, subheadings, captions, graphics, tables, and conventions of print. Use glossaries, table of contents, and indexes to locate information (informational genre).</p>	<p>Identify Nonfiction Genres and Features</p>	



Reading Strategies and Purpose	Reading Strategies and Purpose	Strategies and Purpose
Use a variety of strategies to improve comprehension; e.g., summarizing, fact/opinion, compare/contrast, drawing conclusions, questioning, clarify, building background with connections, main idea/details, predicting, inferring, questioning, synthesizing, summarizing, visualizing/verbalizing, analyzing, graphic organizers, skimming, paraphrasing, summarizing, brainstorming, and discussing, vocabulary building strategies, recall/retell details/events in sequence. Identify techniques used in persuasive writing; i.e., deductive reasoning and use of fact and opinion, inductive reasoning and propaganda, fallacies of logic, faulty reasoning, and manipulative language. Locate redundancies and ambiguities in written text.	Strategies for Comprehension; Identify Persuasion	
Use reading for a variety of purposes, including to be informed, entertained, and persuaded.	Read for a Variety of Purposes	
Literary Elements and Techniques	Literary Elements and Techniques	Elements and Techniques
Identify and analyze literary elements, including plot, setting, characters, conflict, resolution, dialogue, flashback, foreshadowing, point of view, protagonist, antagonist, theme, dialect in literary texts, stanza, act, scene, chapter, verse, article, fiction, nonfiction, mood, poetic license, author's use of syntax and word choice/diction (From genres - problem, solution, rising action, universal themes).	Identify and Analyze Literary Elements	
Identify and interpret figurative language, including personification, simile, metaphor, hyperbole, allusion, imagery, symbolism, alliteration, onomatopoeia, rhyme, repetition, and rhythm.	Identify and Interpret Figurative Language	

Word Recognition and Vocabulary Skills	Word Recognition and Vocabulary Skills	Recognition and Vocabulary
<p>Identify and manipulate individual phonemes (sounds) in a one syllable word (distinguishing initial and final consonant sounds and vowel sounds) /h/-/a/-/t/, blend phonemes. Break or separate a word into parts - onset and rime. Identify and create rhymes. Know that words make up sentences and syllables make up words. Recognize the relationship between letters and their sounds and apply knowledge of letter/sound relationship when reading, including consonant blend and long and short vowel patterns. Use knowledge of phonics to decode words with a variety of spelling patterns. Identify and name upper and lower case letters (Demonstrate book handling knowledge; i.e., locate front of book, beginning and end of sentence and story and early reading behaviors i.e., one-to-one match, directionality, locating letters and words, upper and lowercase letters, periods, and question marks, using authentic texts). Use word recognition skills and vocabulary building skills and strategies to determine the meaning of unfamiliar words, make sense of text and apply new vocabulary; e.g., synonyms/antonyms, homonyms, word origins, prefixes/suffixes, analogies, multiple meaning words, context clues, decoding/encoding, connotation, and denotation, etymology, technical language/jargon, Greek and Latin roots, content area terminology, word reference aids - dictionary, glossary, thesaurus, base words, Greek/Latin root histories.</p>	<p>Use Word Recognition and Vocabulary Skills</p>	



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Language Usage Goal Structure	Language Usage DesCartes	Language Usage Report Names
Writing Process	Writing Process	Writing Process
<p>Use strategies to determine purpose and audience; i.e., inform, entertain, or persuade. Use prewriting strategies; e.g., prior knowledge, webbing, listing, other grade appropriate graphic organizers using lists and webs, gathering information, taking notes to develop a topic or purpose, brainstorming, graphic organizers, outlining.</p>	<p>Prewriting: Audience, Purpose, Research, Sources</p>	
<p>Organize and develop paragraphs with topic sentences, additional details, and supporting details, smooth transitions, indentation, punctuation, and capitalization and organizational patterns; e.g., introduction, body, conclusion or exposition/body/resolution for self and family, school, peers, town, city, and state, nation and world. Elaborate ideas through detail, word choice and description, incorporating grade-level vocabulary in writing.</p>	<p>Drafting: Organization, Detail, Word Choice</p>	

<p>Identify and use characteristics of different genres of writing; i.e., personal narratives, memoir, factual and personal persuasive, informational, expository, poetry, fantasy, narrative, expository, traditional tales, lists, journal writing, letter writing. Produce descriptive and narrative writing; e.g., short story, one act plays/drama, poetry, dialogue, action, physical description, background description, character development, journals, personal letters, biographies, short stories, and autobiographical sketches. Produce persuasive writing structuring arguments logically, using rhetorical devices, defending positions with evidence and facts as support, and addressing readers' concerns and biases; e.g., opinion, essay, business letter, editorials, critical reviews. Use techniques in compositions; e.g., description, dialogue, interior monologue, figurative language, tone, syntax, diction, precise language to describe people, places, and things, specific point of view. Produce informative/expository text; e.g., research-based report, instructions, news article, book reports, essay, research, biographies, autobiographies, interviews, directions, business or other formal documents, including resumes, scholarship letters, and letters of inquiry or complaint.</p>	<p>Genre, Literary Elements, Technique, Language</p>	
<p>Revising and Editing</p>	<p>Revising and Editing</p>	<p>Revising and Editing</p>
<p>Review, edit and revise compositions for standard writing conventions, transitional devices, unity, coherence, clarity, meaning, fluency, word choice, organization, elaboration, description, syntax, and effective details, consistent point of view, appropriate tone, an awareness of parallel structures and proper verb tense and agreement, sentence structure and sentence construction and reduction, the use of proper clausal and phrasal patterns.</p>	<p>Revise for Clarity, Meaning, Organization</p>	



<p>Edit and revise compositions for proper mechanics, capitalization, punctuation, spelling, sentence structure, grammar, paragraph indentation, usage, syntax, diction, and order. Use grade appropriate reference tools to edit writing; i.e., dictionary, thesaurus, word wall, environmental print, classroom/library texts, word processor. Compose written text that demonstrates understanding of purpose and audience using a specific genre of writing; i.e., narrative, traditional tale, poetry, fantasy, factual and personal persuasive, informational, memoir. Incorporate visual aids (e.g., graphs, tables, and pictures) into written work and publications to enhance meaning.</p>	<p>Edit for Mechanics, Punctuation, Grammar, Usage</p>	
<p>Principles of Language: Language Conventions</p>	<p>Principles of Language: Language Conventions</p>	<p>Language Conventions</p>
<p>Use sentences to convey a message. Use varied sentence structure and conventions of grammar related to sentence structure; i.e., simple, compound, complex, and inverted order, fragments, run-ons and declarative, interrogative, imperative, exclamatory, sentence reduction, parallel structure, elliptical clauses, conjunctions, and clausal and phrasal patterns.</p>	<p>Use Varied Sentence Structure</p>	
<p>Use parts of speech; i.e., proper and common nouns singular and plural nouns, pronouns, regular and irregular verbs, verbs tense and agreement, adjectives, modifiers, adverbs, prepositions, coordinating conjunctions, and interjections.</p>	<p>Use Parts of Speech</p>	
<p>Principles of Language: Mechanics</p>	<p>Principles of Language: Mechanics</p>	<p>Mechanics</p>
<p>Capitalization: I, dialogue, titles, proper nouns, proper adjectives, in sentences, special events, quotations. Spelling: Homonyms, double negatives, misplaced modifiers, conventions and principles of spelling e.g., pre-phonemic knowledge, commonly used words, double final consonant following short vowel, roots, suffixes, prefixes, Greek/Latin roots to edit and revise.</p>	<p>Capitalization and Spelling</p>	

Punctuation: Ending punctuation, quotation marks, commas, apostrophes, semi colons, colons, quotation marks, hyphens, underlining/italicizing, parentheses.	Punctuation	
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