Measures of Academic Progress (MAP) Iowa State-Aligned Version 1

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
Number and Operations	**Number and Operations**	**Number and Operations**
Number Sense: Count, represent, read, compare, order and conserve whole numbers; extend understanding of place value to numbers up to 10,000, 100,000 and millions and compare both whole numbers and decimals; understand decimal notation as an extension of the base-ten system; recognize and generate equivalent forms of commonly used fractions, decimals and percents*	Number Sense	

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Operations with Whole Numbers: Develop fluency with multi-digit addition and subtraction; develop concepts of multiplication and division through the use of different representations and develop efficient procedures for multiplying and dividing whole numbers and use them to solve problems; solve story problems involving joining, separating, comparing, grouping, and partitioning using a variety of strategies; show the inverse relationship between addition and subtraction and relate multiplication and division as inverse operations*	Operations with Whole Numbers	
Estimation: Develop the ability to estimate the results of computation with whole numbers, fractions or decimals and be able to judge reasonableness; estimate an answer prior to computing; use benchmarks to help develop number sense*	Estimation	
Add and Subtract Fractions and Decimals: Develop an understanding of and fluency with addition and subtraction of fractions and decimals; apply understandings of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators; apply understandings of decimal models, place value, and properties to develop strategies to add and subtract fractions and decimals; add and subtract fractions and decimals to solve problems*	Add and Subtract Fractions and Decimals	
Algebra	**Algebra**	**Algebra**
Patterns and Functions: Recognize, describe, create and extend repeating and growing patterns such as physical, geometric and numeric patterns and translate from one representation to another; represent and analyze patterns and functions, using words, tables, and graphs; sort and classify a set of objects using a Venn diagram	Patterns and Functions	

Equality, Equations, and Properties: Understand and apply the idea of a variable as an unknown quantity and express mathematical relationships using equations; determine if equations involving addition and subtraction are true; write number sentences using mathematical notation to represent mathematical relationships to solve problems; solve equations in which the unknown and the equal sign appear in a variety of positions; identify the commutative, associative, and distributive properties and use them to compute with whole numbers	Equality, Equations, and Properties	
Geometry and Measurement	**Geometry and Measurement**	**Geometry and Measurement**
Geometric Properties: Describe, analyze and classify two-dimensional and three-dimensional shapes; relate two-dimensional shapes to three-dimensional shapes and analyze properties of polyhedral solids, describing them by the number of edges, faces, or vertices as well as the types of faces; compose (combine) and decompose (take apart) two- and three-dimensional figures; explore congruence and similarity	Geometric Properties	
Transformation and Locations: Describe and specify space and location with simple relationships and with coordinate systems; represent points and simple figures on maps using simple coordinate grids with letters and numbers; explore methods for measuring the distance between two locations on the grid along horizontal and vertical lines; predict and describe the results of sliding (translation), flipping (reflection), and turning (rotation) two-dimensional shapes; investigate and describe line and rotational symmetry; describe and represent shapes from different perspective	Transformation and Locations	

Measurement: Length, Weight, Time, Capacity: Identify attributes that are measurable, such as length, weight, time and capacity, and use these attributes to order objects and make direct comparisons; select and apply appropriate standard (customary and metric) units and tools to measure length, weight, time, temperature, and the size of angles; name standard units of time (day, week, month); use both analog and digital clock to tell time to the nearest five-minute interval; describe the relationship among standard units of time: minutes, hours days, weeks, months and years; measure and classify angles	Measurement: Length, Weight, Time, Capacity	
Measurement: Perimeter, Area, Volume: Use geometric models to solve problems, such as determining perimeter, area, volume, and surface area; recognize area as an attribute of two-dimensional regions and that they can quantify area by finding the total number of same-sized units of area that cover the shape without gaps or overlaps; develop, understand and use formulas to find the area of rectangles, related triangles and parallelograms; recognize volume as an attribute of three-dimensional space and understand they can quantify volume by finding the total number of same-sized units of volume that fill the space without gaps or overlaps	Measurement: Perimeter, Area, Volume	
Data Analysis and Probability	**Data Analysis and Probability**	**Data Analysis and Probability**
Collect, Organize and Represent Data: Collect, organize, represent, and interpret data in bar-type graphs, picture graphs, frequency tables, line plots, circle graphs and line graphs; apply understanding of place value to develop and use stem-and-leaf plots; compare a single data set using different types of graphs; use information from data to make observations and inferences, draw conclusions, and make predictions; describe the distribution of the data using mean, median, mode or range; build an understanding of what the measures of center tells them about the data	Collect, Organize and Represent Data	

Probability: Understand probability as the measurement of the likelihood of events; describe events as likely or unlikely and discuss the degree of likelihood using words like certain, equally likely and impossible; learn to use common fractions to represent events that are neither certain nor impossible; predict the probability of simple experiments	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
Number and Operations	**Number and Operations**	**Number and Operations**
Number Operations and Properties: Solve problems with solutions involving natural numbers, integers, rational numbers, real numbers, and complex numbers; understand and apply matrices and the operations of matrix addition and multiplication; understand absolute value and simplify numerical expressions involving absolute value; understand positive integer exponents and evaluate simple exponential expressions; effectively compute with and solve problems using negative numbers; understand, estimate, and represent real numbers, including common irrational numbers and with scientific notation*	Number Operations and Properties	
Fractions, Rate, Ratio, and Proportionality: Understand and apply ratio and rate, including percents, and connect ratio and rate to fractions and decimals; use a variety of strategies to solve problems involving ratio and rate; understand and apply proportional reasoning; use ratios and proportionality to solve a wide variety of percent problems, including problems involving discounts, interest, taxes, tips, and percent increase or decrease; use proportionality to solve single and multi-step problems in a variety of other contexts	Fractions, Rate, Ratio, and Proportionality	
Operations with Fractions and Decimals: Understand, apply, and be computationally fluent with multiplication and division of fractions and decimals*	Operations with Fractions and Decimals	
Algebra	**Algebra**	**Algebra**

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Algebraic Expressions, Equations, and Inequalities: Write, interpret, and use mathematical expressions and equations, find equivalent forms, and relate such symbolic representations to verbal, graphical, and tabular representations; use expressions, equations, and formulas to solve problems; understand, analyze, solve, and apply equations and inequalities; analyze, apply, and choose appropriate methods for solving systems of equations (symbolic, graphic, numeric, and matrix methods)	Algebraic Expressions, Equations, and Inequalities	
Recursion and Iteration: Understand and apply recursion and iteration; represent recursive relationships with informal notation, subscript notation, and function notation; understand and apply finite arithmetic and geometric sequences and series, including an analysis with both recursive and explicit formulas	Recursion and Iteration	
Functions and Rate of Change: Analyze families of functions (linear, quadratic, other polynomial, exponential, trigonometric, rational, logarithmic, absolute value, square root, cube root, and piecewise functions); translate among verbal, tabular, graphical, and algebraic representations of functions, and describe how aspects of a linear function as slope, constant rate of change, and intercepts appear in different representations; analyze, approximate, and interpret rate of change based on graphs, numerical data, and real-world situations	Functions and Rate of Change	
Geometry and Measurement	**Geometry and Measurement**	**Geometry and Measurement**

Geometric Properties and Relationships: Understand, apply, examine, and justify properties and relationships of geometric figures including similarity and congruence; describe, reason about, prove, and apply properties and relationships of two- and three-dimensional figures; use trigonometry based on triangles and circles to solve problems about length and angle measures; recognize and model relevant periodic phenomenon with trigonometric functions; explore and explain the relationships among angles when a transversal cuts parallel lines; apply the Pythagorean Theorem	Geometric Properties and Relationships	
Coordinates and Transformations: Represent and solve geometric problems by specifying location using coordinates; analyze the relationships of geometric objects including the use of formulas for distance and midpoint; find and analyze equations that represent circles and parabolas; (Students should be introduced to the other conic sections–ellipses and hyperbolas); understand and apply the basic principles of transformation geometry; Identify, create, describe, and justify transformations using multiple representations; transformations should be represented algebraically (using coordinate rules, matrices, vectors), and those representations should be used to analyze and reason about transformations	Coordinates and Transformations	
Measurement: Perimeter, Area, Volume: Understand, determine, and apply area of polygons; select appropriate two-and three-dimensional shapes to model real-world situations and solve a variety of problems (including multi-step problems) involving surface area, area and circumference of circles, and volume of prisms and cylinders	Measurement: Perimeter, Area, Volume	
Data Analysis and Probability	**Data Analysis and Probability**	**Data Analysis and Probability**

Data Analysis and Statistics: Select, create, explain, and interpret appropriate graphical representations for given data sets (bar graphs, circle graphs, line graphs, histograms, line plots, stem and leaf plots, box-and-whisker plots, scatterplots); students should compare and contrast these different representations, and choose appropriate representations; select, determine, explain, and interpret appropriate measures of center for given data sets (mean, median, mode); analysis of data should include transformations of univariate data, outliers, regression, and correlation	Data Analysis and Statistics	
Probability: Apply basic counting methods including systematic listing, tree diagrams, and the multiplication principle of counting; apply permutations, combinations, and combinatorial reasoning; use theoretical probability and proportions to make approximate predictions; understand and apply the basic ideas of probability; represent the probability of events that are impossible, unlikely, likely, and certain using rational numbers from 0 to 1; compute probabilities for compound events	Probability	

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Reading Goal Structure	Reading DesCartes	Reading Report Names
Demonstrate an understanding of written language and the relationship of letters and words to the sounds of speech; use a variety of strategies to understand unfamiliar vocabulary found in narrative text, technical reading, and literary text	**Understand Letters, Words, Vocabulary Strategies**	**Letters, Words, Vocabulary**
Demonstrate an understanding of the concepts of print; attend to sounds of language as distinct from meaning; demonstrate an understanding of the alphabetic principle	Understand Print Concepts, Alphabetic Principle	
Use multiple decoding strategies to read words in text; use structural analysis to decode words	Use Decoding Strategies and Structural Analysis	
Study word meanings, such as synonyms, antonyms, homographs, homophones and idioms; use knowledge of root words, word origins to determine the meanings of vocabulary found in narrative texts, informational texts, technical reading, and literary text	Use Roots, Synonyms, Antonyms, and Homophones	
Use general context, including text and graphic cues; use a variety of strategies to understand the meaning of specialized and technical terms and idiomatic and figurative terms	Use Context Clues; Understand Figurative Terms	
Use a variety of skills and strategies to comprehend complex non-fiction and informational text	**Comprehend Non-Fiction and Informational Text**	**Informational Text**
Use text structures such as description, sequence, chronological order, compare/contrast, problem-solution, cause/effect, or classification; use graphic cues such as titles, headings, photos, illustrations, charts, and tables	Use Text and Graphic Structures	

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Analyze the logic and use of evidence in author's argument; evaluate information critically based on relevancy, objectivity, and reliability; identify purpose	Identify Purpose; Evaluate Information, Logic	
Use comprehension strategies: predict and verify; create visual images; draw inferences and conclusions	Use Strategies: Predict, Infer, Conclude	
Use comprehension strategies: ask and answer questions	Use Strategies: Answer Questions	
Identify main ideas; summarize; synthesize within text; synthesize information from multiple sources	Identify Main Idea; Summarize and Synthesize	
Use a variety of strategies and skills to comprehend and interpret complex literature	**Comprehend and Interpret Literature**	**Literature**
Analyze elements of fiction: setting, characterization, point of view, and theme	Analyze Setting, Character, Theme, Point of View	
Analyze plot structure cues: exposition, conflict, resolution, mood, tone	Analyze Plot Structure, Tone, and Mood	
Use comprehension strategies: ask and answer questions; identify purpose and main idea; summarize	Identify Purpose, Main Idea, Answers; Summarize	
Use comprehension strategies: predict and verify, draw inferences and conclusions	Predict; Draw Inferences and Conclusions	
Evaluate the text to include character motivation and literary devices; synthesize literary materials; explain the use and meaning of images, symbols, and stereotypes; bias	Evaluate Literary Devices, Stereotypes, Bias	

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Language Usage Goal Structure	Language Usage DesCartes	Language Usage Report Names
Use an effective writing process	**Use an Effective Writing Process**	**Writing Process**
Define individual processes; Pre-write: Take notes; brainstorm; outline; use graphic organizers	Prewrite: Note, Brainstorm, Outline, Organize	
Draft: Use paragraphs to develop separate ideas; concentrate on explaining, supporting, and connecting ideas; use dialogue, sensory words, and figurative language	Draft: Explain, Support, Use Figurative Language	
Revise: Reread, reflect, and make revisions to clarify or elaborate upon ideas	Revise: Reread, Reflect, Clarify, Elaborate	
Edit: Self-edit errors in spelling, capitalization, punctuation, grammar, and usage	Edit: Self-Edit Errors	
Use knowledge of purpose, audience, format, and medium in developing written communication in a variety of genres; engage in the information literacy process: access, evaluate, and communicate information and ideas	**Use Purpose, Audience, Genre, Information Literacy**	**Purpose, Genre, Information**
Write for different communication purposes and audiences	Write for Different Purposes and Audiences	
Write using different formats in a variety of genres	Write in Different Formats in a Variety of Genre	
Engage in the information literacy process: access, evaluate, and communicate information and ideas	Access, Evaluate, and Communicate Information	
Adhere to conventions generally established in spelling, punctuation, and capitalization	**Use Conventions to Spell, Punctuate, Capitalize**	**Spell/Punctuate and Capitalize**

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Spelling	Spelling	
Capitalization	Capitalization	
Punctuation	Punctuation	
Adhere to conventions generally established in grammar, usage, and syntax	**Employ Conventions of Grammar, Usage, and Syntax**	**Grammar, Usage, and Syntax**
Grammar	Grammar	
Usage and Syntax	Usage and Syntax	

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