

Montana Instructional Alignment

HPS Critical Competencies

Mathematics

First Grade

Content Standards

Content Standard 1 - Number Sense and Operations:

A student, applying reasoning and problem solving, will use number sense and operations to represent numbers in multiple ways, understand relationships among numbers and number systems, make reasonable estimates and compute fluently within a variety of relevant cultural contexts.

Content Standard 2 - Data Analysis:

A student, applying reasoning and problem solving, will use data representation and analysis, probability, statistics and statistical methods to evaluate information and make informed decisions within a variety of relevant cultural contexts.

Content Standard 3 - Geometric Reasoning:

A student, applying reasoning and problem solving, will understand geometric properties and spatial relationships, transformation of shapes, representational systems, spatial reasoning and geometric models to analyze mathematical situations within a variety of relevant cultural contexts.

Content Standard 4 - Algebraic and Functional Reasoning:

A student, applying reasoning and problem solving, will use algebraic and functional concepts and procedures to understand patterns, quantitative and functional relationships, algebraic representations, models and change within a variety of relevant cultural contexts.

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Content Standard 1 -

Number Sense and operations:

A student, applying reasoning and problem solving, will use number sense and operations to represent numbers in multiple ways, understand relationships among numbers and number systems, make reasonable estimates and compute fluently within a variety of relevant cultural contexts.

Essential Learning Expectations (ELE's / Critical Competencies) should be addressed in contexts that promote problem solving, reasoning, communication, making connections, and designing and analyzing representations. – Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics – NCTM – National Council for Teachers of Mathematics

State Established Benchmark At the end of 4th grade, a proficient student will:	OPI Essential Learning Expectation (ELE) (HPS Critical Competencies)	NCTM	Assessment Statements (Specific Examples)	Vocabulary (for instructional purposes)
1.1 Place Value: Demonstrate the relationship among whole numbers, identify place value up to 100,000, and compare numbers (i.e., greater than, less than, equal).	<ul style="list-style-type: none"> Will identify both verbally and written, place value to 99 	Numbers and Operations <ul style="list-style-type: none"> Developing an understanding of whole numbers. 	<ul style="list-style-type: none"> Identify the greater number, when given two numbers 	whole number, one-digit, two-digit, greater than, less than, equal
1.2 Estimation: Estimate and calculate sums, differences, and products when solving problems including cultural situations when relevant.			<ul style="list-style-type: none"> Identify the greater number, when given two numbers 	
1.3 Whole Number Operations: Develop multiplication and division concepts and strategies, demonstrate fluency with basic facts, and compute up to three-by two-digit whole number multiplication problems.	<ul style="list-style-type: none"> Know addition facts to 12 Know subtraction facts to 6 Orally count whole numbers to 100 Write whole numbers to 100 	Numbers and Operations <ul style="list-style-type: none"> Develop understanding of addition and subtraction and strategies for basic addition facts and related subtraction facts. Develop an understanding of whole number relationships, including grouping in terms of tens and ones 	<ul style="list-style-type: none"> Solves story problems embedded with basic facts with fluency Counting assessment Observations/antidotal records 	addend, sum, subtractor, difference
1.4 Fractions/Decimals: Identify and model common fractions (i.e., tenths, quarters, halves) and decimals (e.g., money and place value to 0.001) and recognize and compare equivalent representations.	<ul style="list-style-type: none"> Identify and give value of a penny, nickel, and dime Count groups of pennies, nickels, and dimes to .50 cents 		<ul style="list-style-type: none"> Show student variety of coins, ask for a name, and value Give various combinations of dime, penny, nickels to 50¢ ask for value 	penny nickel, dime
1.5 Measurement: Select and apply appropriate standard units and tools to measure weight, time, and temperature.	<ul style="list-style-type: none"> Know the days of the week Know the months of the year Provide the date in month/day/year form 		<ul style="list-style-type: none"> putting days and months in order – Monday – Sunday, January - December 	

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Content Standard 2 -

Data Analysis:

A student, applying reasoning and problem solving, will use data representation and analysis, probability, statistics and statistical methods to evaluate information and make informed decisions within a variety of relevant cultural contexts.

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2.1 Represent Data: Represent and organize data in tables, line plots, bar graphs, pictographs, and stem and leaf plots.				
2.2 Evaluate Data: Use data to solve problems (e.g. ordering or finding range and median when applicable).	<ul style="list-style-type: none"> Interpret a simple graph – i.e., picture graph, bar graph, pie graph 	Data Analysis	<ul style="list-style-type: none"> Looking at a pictograph – tell which has more, less etc. 	key, pictograph
2.3 Probability: Describe events as likely or unlikely and discuss the degree of likelihood using words such as certain, equally likely, and impossible including cultural context when relevant.				

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Content Standard 3 -

Geometric Reasoning:

A student, applying reasoning and problem solving, will understand geometric properties and spatial relationships, transformation of shapes, representational systems, spatial reasoning and geometric models to analyze mathematical situations within a variety of relevant cultural contexts.

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State Established Benchmark At the end of 4th grade, a proficient student will:	OPI Essential Learning Expectation (ELE) (HPS Critical Competencies)	NCTM	Assessment Statements (Specific Examples)	Vocabulary (for instructional purposes)
3.1 2-D Attributes: Describe, compare, and analyze attributes of two-dimensional shapes.	<ul style="list-style-type: none"> Describe likes and differences of basic shapes. Identify similar shapes' 	Geometry <ul style="list-style-type: none"> Composing and decomposing geometric shapes. 	<ul style="list-style-type: none"> Identify the number of sides and corners for a: triangle, square, and rectangle 	closed figure, congruent, similar, symmetry
3.2 Area & Perimeter: Define and determine area and perimeter of common polygons.	<ul style="list-style-type: none"> Identify open and closed shapes 	Geometry <ul style="list-style-type: none"> Composing and decomposing geometric shapes. 	<ul style="list-style-type: none"> Show student variety of shapes – Student identifies which is open or closed 	
3.3 3-D Attributes: Identify attributes of three-dimensional shapes (e.g., cubes, rectangular prisms, pyramids, cylinders, cones, spheres).				
3.4 Lines: Recognize, draw, and represent intersecting, parallel, and perpendicular sets of lines.				
3.5 Measurement: Measure linear objects in metric units (e.g., centimeters and meters) and standard units (e.g., half inch, inch, foot, and yard).	<ul style="list-style-type: none"> Accurately measure and compare with non-standard units for length and weight. 	Measurement and Data Analysis	<ul style="list-style-type: none"> Measure the length of a pencil using a standard paper clip 	unit

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Content Standard 4 -

Algebraic and Functional Reasoning:

A student, applying reasoning and problem solving, will use algebraic and functional concepts and procedures to understand patterns, quantitative and functional relationships, algebraic representations, models and change within a variety of relevant cultural contexts.

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4.1 Patterns: Describe, extend, and make generalizations about patterns.	4.1 Skip count by 2's, 5's, 10's 4.1 Construct simple repeating patterns (A,B,AB) (ABC,ABC)	Algebra <ul style="list-style-type: none"> Use number patterns to extend knowledge of properties Applying patterns 	<ul style="list-style-type: none"> Group objects by 2's, 5's, 10's Can skip count beginning at various starting points i.e. start at 25 – then 50, 35, 40, 45 	repeating
4.2 Properties: Use number patterns to investigate properties of numbers (e.g., even or odd) and operations (e.g., multiplicative/additive identities, commutative, associative, distributive).				
4.3 Symbols: Use letters, boxes, or symbols to represent numbers in simple expressions or equations (i.e., demonstrate an understanding and use of variables).	4.3 Solve addition equations to 10 4.3 Solve subtraction equations to 5	Algebra <ul style="list-style-type: none"> Developing an understanding of addition and subtraction. 	<ul style="list-style-type: none"> Given number sentences can solve verbally and written i.e., $\square = 6 + 5$ Can solve story problems with targeted numbers imbedded 	sum, addend, difference, subtractor
4.4 Equivalence: Develop an understanding of equivalence by expressing numbers, measures, or numerical expressions in a variety of ways.				
4.5 Modeling: Model problem situations with objects and use representations such as words, pictures, tables, or graphs to draw conclusions including in cultural contexts when relevant.				