5th Grade New Mexico Mathematics Standards

Strand 1: NUMBER AND OPERATIONS **Standard:** Students will understand numerical concepts and mathematical operations					
Mathematics Benchmarks and Performance Standards	**Expectations for Students in Mathematics**				
	Mathematics Skills		**Problem Solving**		
	Recall Information	Apply Procedural Knowledge	Communicate & Represent Understanding	Analyze, Reason, & Prove	Make Connections & Evaluate
5-8 Benchmark 1: Understand numbers, ways of representing numbers, relationships among numbers, and number systems.	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standards					
1. Compare and order using concrete or illustrated models:					
a. Whole numbers (to millions)					
b. Common fractions (halves, thirds, fourths, eighths)					
c. Decimals (thousandths)					
2. Demonstrate understanding of the magnitude of the value of numbers from thousandths to millions, including common fractions.					
3. Represent place value using concrete or illustrated models up to one billion (1,000,000,000).					
4. Interpret percents as part of a hundred (i.e., find decimal and percent equivalents for common fractions, explain how they represent the same value, and compute a given percent of a whole number).					
5. Identify and represent on a number line decimals, fractions, and mixed numbers.					
6. Identify prime and composite numbers to 50.					

Strand 1: NUMBER AND OPERATIONS
Standard: Students will understand numerical concepts and mathematical operations

Mathematics Benchmarks and Performance Standards	Expectations for Students in Mathematics				
	Mathematics Skills		**Problem Solving**		
	Recall Information	Apply Procedural Knowledge	Communicate & Represent Understanding	Analyze, Reason, & Prove	Make Connections & Evaluate
5-8 Benchmark 2: Understands the meaning of operations and how they relate to one another.	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standards					
1. Explain and perform whole number division and express remainders as a whole number or a fractional part as appropriate to the context of real-life problems.					
2. Add and subtract decimals.					
3. Add and subtract fractions and mixed numbers without regrouping and express answers in simplest form.					
4. Find the factors and multiples of whole numbers.					
5. Use arithmetic operations and inverse relationships to represent and solve real-world problems.					
6. Identify and represent on a number line decimals, fractions, and mixed numbers.					
7. Demonstrate proficiency with division, including one- and two-digit divisors.					
8. Solve simple problems involving the addition and subtraction of fractions and mixed numbers.					
9. Represent and use fractions and decimals in equivalent forms.					
5-8 Benchmark 3: Compute fluently and make reasonable estimates.	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standards					
1. Add, subtract, multiply, and divide whole numbers.					
2. Add and subtract decimals.					

Strand 1: NUMBER AND OPERATIONS
Standard: Students will understand numerical concepts and mathematical operations

Mathematics Benchmarks and Performance Standards	Expectations for Students in Mathematics				
	Mathematics Skills		**Problem Solving**		
	Recall Information	Apply Procedural Knowledge	Communicate & Represent Understanding	Analyze, Reason, & Prove	Make Connections & Evaluate
5-8 Benchmark 3: Compute fluently and make reasonable estimates.	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standards (continued):					
3. Use estimation strategies to verify the reasonableness of calculated results.					
4. Explain how the estimation strategy impacts the result.					
5. Relate the basic arithmetic operations to one another (e.g., multiplication and division are inverse operations).					
6. Simplify numerical expressions using order of operations.					
7. Recognize and explain the differences between exact and approximate values.					

5th Grade New Mexico Mathematics Standards

Strand 2: ALGEBRA
Standard: Students will understand algebraic concepts and applications.

Mathematics Benchmarks and Performance Standards	Expectations for Students in Mathematics				
	Mathematics Skills		**Problem Solving**		
	Recall Information	Apply Procedural Knowledge	Communicate & Represent Understanding	Analyze, Reason, & Prove	Make Connections & Evaluate
5-8 Benchmark 1: Understand patterns, relations, and functions	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standards					
1. Identify and graph ordered pairs in the first quadrant of the coordinate plane.					
2. Describe, represent, and analyze patterns and relationships.					
3. Identify, describe, and continue patterns presented in a variety of formats (e.g., numeric, visual, oral, written, kinesthetic, pictorial).					
4. Generate a pattern using a written description.					
5-8 Benchmark 2: Represent and analyze mathematical situations and structures using algebraic symbols.	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standards					
1. Compute the value of the expression for specific numerical values of the variable.					
2. Use a letter to represent an unknown number.					
3. Understand the differences between the symbols for “less than”, “less than or equal to”, “greater than”, and “greater than or equal to”.					

Strand 2: ALGEBRA
Standard: Students will understand algebraic concepts and applications.

Mathematics Benchmarks and Performance Standards	Expectations for Students in Mathematics				
	Mathematics Skills		**Problem Solving**		
	Recall Information	Apply Procedural Knowledge	Communicate & Represent Understanding	Analyze, Reason, & Prove	Make Connections & Evaluate
5-8 Benchmark 3: Use mathematical models to represent and understand quantitative relationships.	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standards					
1. Use mathematical models to represent and explain mathematical concepts and procedures.					
2. Understand and use mathematical models such as:					
a. Number line to model the relationship between rational numbers and rational number operations					
b. Pictorial representation of addition and subtraction of rational numbers with regrouping					
c. Manipulatives or pictures to model computational procedures					
d. Graphs, tables, and charts to describe data					
e. Diagrams or pictures to model problem situations					
3. Demonstrate how a situation can be represented in more than one way.					
5-8 Benchmark 4: Analyze changes in various contexts.	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standards					
1. Recognize and create patterns of change from everyday life using numerical or pictorial representations.					
2. Generalize patterns of change and recognize the same general patterns presented in different representations					

5th Grade New Mexico Mathematics Standards

Strand 3: GEOMETRY
Standard: Students will understand geometric concepts and applications.

Mathematics Benchmarks and Performance Standards	Expectations for Students in Mathematics				
	Mathematics Skills		**Problem Solving**		
	Recall Information	Apply Procedural Knowledge	Communicate & Represent Understanding	Analyze, Reason, & Prove	Make Connections & Evaluate
5-8 Benchmark 1: Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standards					
1. Identify, describe, and classify two-dimensional shapes and three-dimensional figures by their properties.					
2. Recognize and describe properties of regular polygons having up to ten sides.					
3. Identify faces, edges, and bases on three-dimensional objects.					
5-8 Benchmark 2: Specify locations and describe spatial relationships using coordinate geometry and other representational systems	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standard					
1. Recognize perpendicular and parallel lines.					
5-8 Benchmark 3: Apply transformations and use symmetry to analyze mathematical situations.	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standard					
1. Identify line of symmetry in simple geometric figures.					
5-8 Benchmark 4: Use visualization, spatial reasoning, and geometric modeling to solve problems.	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standards					
1. Understand and compute the perimeter of regular polygons.					
2. Identify and explain circumference, radius, and diameter.					

5th Grade New Mexico Mathematics Standards

Strand 4: MEASUREMENT
Standard: Students will understand measurement systems and applications.

Mathematics Benchmarks and Performance Standards	Expectations for Students in Mathematics				
	Mathematics Skills		**Problem Solving**		
	Recall Information	Apply Procedural Knowledge	Communicate & Represent Understanding	Analyze, Reason, & Prove	Make Connections & Evaluate
5-8 Benchmark 1: Understand measurable attributes of objects and the units, systems, and process of measurement.	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standards					
1. Understand properties (e.g., length, area, weight, volume) and select the appropriate type of unit for measuring each using both U.S. customary and metric systems.					
2. Select and use appropriate units and tools to measure according to the degree of accuracy required in a particular problem-solving situation.					
3. Solve problems involving linear measurement, weight, and capacity (e.g., measuring to the nearest sixteenth of an inch or nearest millimeter; using ounces, milliliters, or pounds and kilograms) to the appropriate degree of accuracy.					
4. Perform one-step conversions within a system of measurement (e.g., inches to feet, centimeters to meters).					
5-8 Benchmark 2: Apply appropriate techniques, tools, and formulas to determine measurements.	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standards					
1. Solve measurement problems using appropriate tools involving length, perimeter, weight, capacity, time, and temperature.					
2. Select and use strategies to estimate measurements including length, distance, capacity, and time.					
3. Apply strategies and use tools for estimating and measuring the perimeter of regular and irregular shapes.					

5th Grade New Mexico Mathematics Standards

Strand 5: DATA ANALYSIS AND PROBABILITY
Standard: Students will understand how to formulate questions, analyze data, and determine probabilities.

Mathematics Benchmarks and Performance Standards	Expectations for Students in Mathematics				
	Mathematics Skills		Problem Solving		
	Recall Information	Apply Procedural Knowledge	Communicate & Represent Understanding	Analyze, Reason, & Prove	Make Connections & Evaluate
5-8 Benchmark 1: Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standards					
1. Construct, read, analyze, and interpret tables, charts, graphs, and data plots					
2. Construct, interpret, and analyze data from graphical representations and draw simple conclusions using bar graphs, line graphs, circle graphs, frequency tables, and Venn diagrams.					
3. Display, analyze, compare, and interpret different data sets, including data sets of different sizes.					
4. Organize and display single-variable data in appropriate graphs and representations.					
5. Organize, read, and display numerical (quantitative) and non-numerical (qualitative) data in a clear, organized, and accurate manner including correct titles, labels, and intervals or categories including:					
a. frequency tables					
b. stem and leaf plots					
c. bar, line, and circle graphs					
d. Venn diagrams					
e. pictorial displays					
f. charts and tables					

Strand 5: DATA ANALYSIS AND PROBABILITY
Standard: Students will understand how to formulate questions, analyze data, and determine probabilities.

Mathematics Benchmarks and Performance Standards	Expectations for Students in Mathematics				
	Mathematics Skills		Problem Solving		
	Recall Information	Apply Procedural Knowledge	Communicate & Represent Understanding	Analyze, Reason, & Prove	Make Connections & Evaluate
6. Formulate questions and identify data to be collected to correctly answer a question.					
5-8 Benchmark 2: Select and use appropriate statistical methods to analyze data.	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standards					
1. Organize and display single-variable data in appropriate graphs and representations and determine which types of graphs are appropriate for various data sets.					
2. Use fractions and percentages to compare data sets of different sizes.					
3. Correctly rank the values of a numerical data set containing simple fractions and decimals, identify maximum and minimum data values, and calculate the range for a data set.					
5-8 Benchmark 3: Develop and evaluate inferences and predictions that are based on data.	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standards					
1. Make and justify valid inferences, predictions, and arguments based on statistical analysis.					
2. Compare a given prediction with the results of an investigation.					
3. Use counting strategies to determine all the possible outcomes of a particular familiar event.					
4. Find all possible outcome sets involving four or more sets of objects.					
5. Evaluate the reasonableness of inferences that are based on data in the context of the original solution.					

Strand 5: DATA ANALYSIS AND PROBABILITY
Standard: Students will understand how to formulate questions, analyze data, and determine probabilities.

Mathematics Benchmarks and Performance Standards	Expectations for Students in Mathematics				
	Mathematics Skills		Problem Solving		
	Recall Information	Apply Procedural Knowledge	Communicate & Represent Understanding	Analyze, Reason, & Prove	Make Connections & Evaluate
6. Identify the method used to make an inference and/or a prediction on a given data set and solve similar problems.					
7. Determine the accuracy of a prediction or an inference based on the accuracy of the data in a given data set.					
8. List all possible outcomes of simple events.					
5-8 Benchmark 4: Understand and apply basic concepts of probability.	**Time Spent in Each Performance Standard** Indicate **N** (never), **S** (sometimes), or **U** (usually) for each expectation				
Performance Standards					
1. Determine probabilities through experiments and/or simulations and compare the results with mathematical expressions.					
2. Make predictions from the results of student-generated experiments of single events.					
3. Identify simple experiments where the probabilities of all outcomes are equal.					
4. Describe and predict the results of a probability experiment.					
5. Use fractions to describe the results of an experiment.					
6. Use probability to generalize from a simple pattern or set of examples and justify why the generalization is reasonable.					