

6th 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 rational numbers.					
2. Use equivalent representations for rational numbers (e.g., integers, decimals, fractions, percents, ratios, numbers with whole-number exponents).					
3. Use appropriate representations of positive rational numbers in the context of real-life applications.					
4. Identify greatest common factor and least common multiples for a set of whole numbers.					
5. Identify and represent on a number line decimals, fractions, mixed numbers, and positive and negative integers					
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. Calculate multiplication and division problems using contextual situations.					
2. Factor a whole number into a product of its primes.					
3. Demonstrate the relationship and equivalency among ratios and percents.					
4. Use proportions to solve problems.					

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5. Explain and perform:					
a. Whole number division and express remainders as decimals or appropriately in the context of the problem					
b. Addition, subtraction, multiplication, and division with decimals					
c. Addition and subtraction with integers					
d. Addition, subtraction, and multiplication with fractions and mixed numerals					
6. Determine the least common multiple and the greatest common divisor of whole numbers and use them to solve problems with fractions.					
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. Estimate quantities involving rational numbers using various estimations.					
2. Use estimates to check reasonableness of results and make predictions in situations involving rational numbers.					
3. Determine if a problem situation calls for an exact or approximate answer and perform the appropriate computation.					
4. Compare and order positive and negative fractions, decimals, and mixed numbers and place them on a number line.					
5. Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.					
6. Interpret and use ratios in different contexts.					
7. Compute and perform multiplication and division of fractions and decimals and apply these procedures to solving problems.					

*Adapted from the PED NM Mathematics Standards, June 2002
Developed by MathStar/MC² Team at NMSU, October 2004

6th 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. Solve problems involving proportional relationships.					
2. Graph ordered pairs in the coordinate plane.					
3. Explain and use symbols to represent unknown quantities and variable relationships.					
4. Explain and use the relationships among ratios, proportions, and percents.					
5. Make generalizations based on observed patterns and relationships					
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. Solve problems involving proportional relationships.					
2. Use letters to represent an unknown in an equation.					
3. Solve one-step linear equations and inequalities in one variable with positive whole-number solutions.					
4. Demonstrate that a variable can represent a single quantity that changes.					

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	Mathematics Skills		Problem Solving		
	Recall Information	Apply Procedural Knowledge	Communicate & Represent Understanding	Analyze, Reason, & Prove	Make Connections & Evaluate
5. Demonstrate how changes in one variable affect other variables.					
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. Develop and use mathematical models to represent and justify mathematical relationships found in a variety of situations.					
2. Create, explain, and use mathematical models such as:					
a. Venn diagrams to show the relationships between the characteristics of two or more sets					
b. Equations and inequalities to model numerical relationships					
c. Three-dimensional geometric models					
d. Graphs, tables, and charts to interpret and analyze data					
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. Represent and explain changes using one-step equations with one variable.					
2. Solve problems that involve change using proportional relationships.					
3. Use ratios to predict changes in proportional situations.					
4. Use tables and symbols to represent and describe proportional and other relationships involving conversions, sequences, and perimeter.					
5. Generate formulas to represent relationships involving changes in perimeter.					

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6th 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 the properties of, and the relationships between, plane and solid geometric figures:					
a. Measure, identify, and draw angles, perpendicular and parallel lines, rectangles, and triangles by using appropriate tools (e.g., straightedge, ruler, compass, protractor, drawing software)					
b. Understand that the sum of angles of any triangle is 180 degrees and the sum of the angles of any quadrilateral is 360 degrees and use this information to solve problems					
c. Visualize and draw two-dimensional views of three-dimensional objects made from rectangular solids					
2. Classify angles as right, obtuse, or straight.					
3. Describe the properties of geometric figures that include regular polygons, circles, ellipses, cylinders, cones, spheres, and cubes.					
4. Classify polygons as regular or irregular.					
5. Classify triangles as scalene, isosceles, or equilateral and by angles (i.e., right, acute, and obtuse).					
6. Identify angle, line, segment, and ray and use the symbols for each.					

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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
7. Describe the relationship between radius, diameter, and circumference of a circle.					
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 Standards					
1. Use coordinate geometry to describe location on a plane.					
2. Recognize skewed lines in space.					
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 with rotation and scaling.					
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 Standard					
1. Use appropriate technology, manipulatives, constructions, or drawings to recognize or compare geometric figures.					

6th 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
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. Perform multi-step conversions of measurement units to equivalent units within a given system (e.g., 36 inches equals 3 feet or 1 yard).				
2. Estimate measurement in both U.S. customary and metric units.				
3. Select and use units of appropriate size and type to measure angles (e.g., degrees, radians), perimeter, area, and capacity in both U.S. customary and metric systems.				
4. Use standard units of linear measurement to the nearest sixteenth of an inch; metric measurements to the nearest millimeter.				
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. Apply various measurement techniques and tools, units of measure, and degrees of accuracy to find accurate rational number representations for length, liquid, weight, perimeter, temperature, and time.				
2. Select and use formulas for perimeters of squares and rectangles.				
3. Select and use strategies to estimate measurements including angle measure and capacity.				
4. Select and justify the selection of measurement tools, units of measure, and degrees of accuracy appropriate to the given situation.				

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6th 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
Time Spent in Each Performance Standard Indicate N (never), S (sometimes), or U (usually) for each expectation					
Performance Standards					
1. Use statistical representations to analyze data.					
2. Draw and compare different graphical representations of the same data.					
3. Use mean, median, mode, and range to describe data.					
4. Sketch circle graphs to display data.					
5. Solve problems by collecting, organizing, displaying and interpreting data.					
6. Compare different samples of a population with the entire population and determine the appropriateness of using a sample.					
7. Conduct and explain sampling techniques such as observations, surveys, and random sampling for gathering data.					
8. Determine the median for a rational number data set containing an odd number of data points.					
9. Calculate and explain the median for a whole number data set containing an even number of data points.					
10. Explain advantages and disadvantages of using various display formats for a specific data set.					

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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
11. Formulate and solve problems by collecting, organizing, displaying, and interpreting data.					
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. Choose an appropriate graphical format to organize and represent data.					
2. Describe the effects of missing or incorrect data.					
3. Compute and analyze statistical measurements for data sets:					
a. Understand how additional data added to data sets may affect the computations of central tendency					
b. Understand how the inclusion or exclusion of outliers affects measures of central tendency					
c. Know why a specific measure of central tendency provides the most useful information in a given context					
4. Use data samples of a population and describe the characteristics and limitations of the sample.					
5. Identify different ways of selecting a sample (e.g., convenience sampling, responses to a survey, random sampling) and which method makes a sample more representative for a population.					
6. Explain how the way a question is asked in a survey might influence the results obtained.					
7. Identify data that represent sampling errors and explain why the sample and the display might be biased.					

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	Recall Information	Apply Procedural Knowledge	Communicate & Represent Understanding	Analyze, Reason, & Prove	Make Connections & Evaluate
8. Identify claims based on statistical data and, in sample cases, evaluate the validity and usefulness of the claims.					
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. Identify claims based on statistical data and evaluate the validity of the claim.					
2. Conduct observations, surveys, experiments and/or simulations, record the results in charts, tables, or graphs, and use the results to draw conclusions and make predictions.					
3. Find all possible combinations in a given set (e.g., the number of ways a set of books can be arranged on a shelf).					
4. Compare expected results with actual results in a simple experiment.					
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. List all possible outcomes for a compound event composed of two independent events and recognize whether an outcome is certain, impossible, likely, or unlikely.					
2. Determine and compare experimental (empirical) and mathematical (theoretical) probabilities (e.g., flipping two color counters).					
3. Determine theoretical and experimental probabilities and use them to make predictions about events.					
4. Represent all possible outcomes for compound events in an organized way (e.g., tables, grids, tree diagrams) and express the theoretical probability of each outcome.					

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Time Spent in Each Performance Standard Indicate N (never), S (sometimes), or U (usually) for each expectation					
5-8 Benchmark 4: Understand and apply basic concepts of probability.					
Performance Standards (continued)					
5. Use data to estimate the probability of future events (e.g., batting averages).					
6. Represent probabilities as ratios, proportions, decimals between 0 and 1, and percentages between 0 and 100 and verify that the probabilities computed are reasonable; know that if P is the probability of an event, 1- P is the probability of the event not occurring.					
7. Describe the difference between independent and dependent events and identify situations involving independent or dependent events.					