

New Mexico
Curricular Standards
Mathematics - Grade 7
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<i>Benchmark Number</i>	<i>Benchmark</i> • <i>Instructional Targets</i>	<i>Gourmet Resource</i>	<i>Taught</i>	<i>Tested</i>
NUMBER AND OPERATIONS				
Content Standard	Students will understand numerical concepts and mathematical operations.			
Grade 7 Benchmark	Understand numbers, ways of representing numbers, relationships among numbers, and number systems.			
1	<ul style="list-style-type: none"> Determine the absolute value of rational numbers. 	Appetizers 1 A; 1 (Number Concepts)		
2	<ul style="list-style-type: none"> Illustrate the relationships among natural (i.e., counting) numbers, whole numbers, integers, rational and irrational numbers. 	Appetizers 1 A & C; 1 (Number Concepts)		
3	<ul style="list-style-type: none"> Use properties of the real-numbers system to explain reasoning and to formulate and solve real-world problems. 			
4	<ul style="list-style-type: none"> Read, write, and compare rational numbers in scientific notation (e.g., positive and negative powers of 10) with approximate numbers using scientific notation. 	Appetizers 1 D; 1 (Number Concepts)		
5	<ul style="list-style-type: none"> Simplify numerical expressions using order of operations. 	Appetizers 2 A; 2 (Mathematical Relations)		

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Grade 7 Benchmark	Understand the meaning of operations and how they relate to one another.			
1	<ul style="list-style-type: none"> Add, subtract, multiply, and divide rational numbers (e.g., integers, fractions, terminating decimals) and take positive rational numbers to whole-number powers. 	Appetizers 1 D; 6 A; 7 A; 8 A; 9 A; 11 A; 1 (Number Concepts); 6 (Addition); 7 (Subtraction); 8 (Multiplication); 9 (Division); 11 (Problem Solving)		
2	<ul style="list-style-type: none"> Convert terminating decimals into reduced fractions. 	Appetizers 2 H; 2 (Mathematical Relations)		
3	<ul style="list-style-type: none"> Calculate given percentages of quantities and use them to solve problems (e.g., discounts of sales, interest earned, tips, markups, commission, profit, simple interest.) 	Appetizers 1 C; 2 B; 1 (Number Concepts); 2 (Mathematical Relations)		
4	<ul style="list-style-type: none"> Add and subtract fractions with unlike denominators. 	Appetizers 6 A; 7 A; 11 A; 6 (Addition); 7 (Subtraction); 11 (Problem Solving)		
5	<ul style="list-style-type: none"> Multiply, divide, and simplify rational numbers by using exponent rules. 	Appetizers 1 D; 8 A; 9 A; 11 A; 1 (Number Concepts); 8 (Multiplication); 9 (Division); 11 (Problem Solving)		
6	<ul style="list-style-type: none"> Understand the meaning of the absolute value of a number: <ul style="list-style-type: none"> interpret the absolute value as the distance of the number from zero on a number line determine the absolute value of real numbers 	Appetizers 2 F; 2 (Mathematical Relations)		
7	<ul style="list-style-type: none"> Find square roots of perfect whole-number squares. 	Appetizers 1 G; 1 (Number Concepts)		
8	<ul style="list-style-type: none"> Simplify and evaluate positive rational numbers raised to positive whole number powers. 	Appetizers 1 D; 1 (Number Concepts)		

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9	<ul style="list-style-type: none"> Solve addition, subtraction, multiplication, and division problems that use positive and negative integers and combinations of these operations. 	Appetizers 2 D & G; 6 A; 7 A; 8 A; 9 A; 11 A; 2 (Mathematical Relations); 6 (Addition); 7 (Subtraction); 8 (Multiplication); 9 (Division); 11 (Problem Solving)		
Grade 7 Benchmark	Compute fluently and make reasonable estimates.			
1	<ul style="list-style-type: none"> Use estimation to check reasonableness of results, and use this information to make predictions in situations involving rational numbers, π, and simple algebraic equations. 	Appetizers 1 B; 10 A & B; 13 A; 15 B; 1 (Number Concepts); 10 (Estimation); 13 (Reasonableness); 15 (Make Conjectures and Verify Conclusions)		
2	<ul style="list-style-type: none"> Convert fractions to decimals and percents and use these representations in estimations, computations, and applications. 	Appetizers 1 C; 1 (Number Concepts)		
3	<ul style="list-style-type: none"> Read, write, and compare rational numbers in scientific notation (e.g., positive and negative powers of 10) with approximate numbers using scientific notation. 	Appetizers 1 D; 1 (Number Concepts)		
4	<ul style="list-style-type: none"> Calculate the percentage of increases and decreases of a quantity. 	Appetizers 2 B; 10 B; 11 A; 2 (Mathematical Relations); 10 (Estimation); 11 (Problem Solving)		
5	<ul style="list-style-type: none"> Add and subtract fractions with unlike denominators. 	Appetizers 1 C; 6 A; 7 A; 11 A; 1 (Number Concepts); 6 (Addition); 7 (Subtraction); 11 (Problem Solving)		
6	<ul style="list-style-type: none"> Use the inverse relationship between raising to a power and extracting the root of a perfect square integer. 	Appetizers 1 G; 1 (Number Concepts)		

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	ALGEBRA			
Content Standard	Students will understand algebraic concepts and applications.			
Grade 7 Benchmark	Understand patterns, relations, and functions.			
1	<ul style="list-style-type: none"> Identify and continue patterns presented in a variety of formats. 	Appetizers 2 B; 15 A; 2 (Mathematical Relations); 15 (Make Conjectures and Verify Conclusions)		
2	<ul style="list-style-type: none"> Represent a variety of relationships using tables, graphs, verbal rules, and possible symbolic notation, and recognize the same general pattern presented in different representations. 	Appetizers 2 B, C, & H; 5 D; 12 B; 14 A; 15 B; 2 (Mathematical Relations); 5 (Probability/Statistics); 12 (Mathematical Representation); 14 (Mathematical Language, Representations, and Models); 15 (Make Conjectures and Verify Conclusions)		
3	<ul style="list-style-type: none"> Simplify numerical expressions by applying properties of rational numbers, and justify the process used. 	Appetizers 1 E & G; 2 A & D; 12 A; 1 (Number Concepts); 2 (Mathematical Relations); 12 (Mathematical Representations)		
4	<ul style="list-style-type: none"> Interpret and evaluate expressions involving integer powers and simple roots. 	Appetizers 1 D & G; 1 (Number Concepts)		
5	<ul style="list-style-type: none"> Graph and interpret linear functions. 	Appetizers 1 D; 2 G & H; 1 (Number Concepts); 2 (Mathematical Relations)		
6	<ul style="list-style-type: none"> Solve problems involving rate, average speed, distance, and time. 	Appetizers 2 B, C, & D; 12 A; 2 (Mathematical Relations); 12 (Mathematical Representation)		

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Grade 7 Benchmark	Represent and analyze mathematical situations and structures using algebraic symbols.			
1	<ul style="list-style-type: none"> Write verbal expressions and sentences as algebraic expressions and equations: <ul style="list-style-type: none"> evaluate algebraic expressions solve simple linear equations graph and interpret results 	<p>Appetizers 2 B; 2 (Mathematical Relations)</p> <p>Appetizers 2 D; 2 (Mathematical Relations)</p> <p>Appetizers 2 H; 12 B; 2 (Mathematical Relations); 12 (Mathematical Representation)</p>		
2	<ul style="list-style-type: none"> Use variables and appropriate operations to write an expression, an equation, or an inequality that represents a verbal description. 	Appetizers 2 B & D; 12 B; 2 (Mathematical Relations); 12 (Mathematical Representation)		
3	<ul style="list-style-type: none"> Use the order of operations to evaluate algebraic expressions. 	Appetizers 2 A; 15 B; 2 (Mathematical Relations); 15 (Make Conjectures and Verify Conclusions)		
4	<ul style="list-style-type: none"> Simplify numerical expressions by applying properties of rational numbers. 	Appetizers 2 A; 12 A; 2 (Mathematical Relations); 12 (Mathematical Representation)		
5	<ul style="list-style-type: none"> Graph linear functions and identify slope as positive or negative. 	Appetizers 2 H; 2 (Mathematical Relations)		
6	<ul style="list-style-type: none"> Use letters as variables in mathematical expressions to describe how one quantity changes when a related quantity changes. 	Appetizers 2 B & D; 12 B; 14 A; 2 (Mathematical Relations); 12 (Mathematical Representation); 14 (Mathematical Language, Representations, and Models)		

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Grade 7 Benchmark	Use mathematical models to represent and understand quantitative relationships.			
1	<ul style="list-style-type: none"> • <i>Create scale models and use them for dimensional drawings.</i> 	Appetizers 2 B; 2 (Mathematical Relations)		
2	<ul style="list-style-type: none"> • <i>Understand and use the coordinate plane to graph ordered pairs and linear equations.</i> 	Appetizers 2 E; 2 (Mathematical Relations)		
3	<ul style="list-style-type: none"> • <i>Select and use an appropriate model for a particular situation.</i> 	Appetizers 2 G; 14 A; 2 (Mathematical Relations); 14 (Mathematical Language, Representations, and Models)		
Grade 7 Benchmark	Analyze changes in various contexts.			
1	<ul style="list-style-type: none"> • <i>Use variables and appropriate operations to write an expression, an equation, and/or an inequality that represents a verbal description involving change.</i> 	Appetizers 2 A, B, & D; 12 A; 2 (Mathematical Relations); 12 (Mathematical Representation)		
2	<ul style="list-style-type: none"> • <i>Interpret and evaluate expressions involving integer powers and simple roots as they relate to change.</i> 	Appetizers 1 D; 2 G; 1 (Number Concepts); 2 (Mathematical Relations)		
3	<ul style="list-style-type: none"> • <i>Graph and interpret linear functions as they are used to solve problems.</i> 	Appetizers 2 H; 12 B; 2 (Mathematical Relations); 12 (Mathematical Representation)		
4	<ul style="list-style-type: none"> • <i>Solve two-step equations and inequalities with one variable over the rational numbers, interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results.</i> 	Appetizers 12 A; 13 A; 15 B; 12 (Mathematical Representation); 13 (Reasonableness); 15 (Make Conjectures and Verify Conclusions)		

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	GEOMETRY			
Content Standard	Students will understand geometric concepts and applications.			
Grade 7 Benchmark	Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.			
1	<ul style="list-style-type: none"> Classify geometric figures as similar or congruent. 	Appetizers 3 A; 3 (Geometry)		
2	<ul style="list-style-type: none"> Understand the concept of a constant (e.g., pi) and use the formulas for the circumference and area of a circle. 	Appetizers 3 E; 3 (Geometry)		
3	<ul style="list-style-type: none"> Explain and use the Pythagorean theorem. 			
4	<ul style="list-style-type: none"> Determine the radius, diameter, and circumference of a circle and explain their relationship. 	Appetizers 3 E; 3 (Geometry)		
5	<ul style="list-style-type: none"> Use properties to classify solids including pyramids, cones, prisms, and cylinders. 	Appetizers 3 A; 3 (Geometry)		
Grade 7 Benchmark	Specify locations and describe spatial relationships using coordinate geometry and other representational systems.			
1	<ul style="list-style-type: none"> Construct and use coordinate graphs to plot simple figures, determine lengths and areas related to them, and determine the image under translations and reflections. 	Appetizers 2 E, G, & H; 3 B; 2 (Mathematical Relations); 3 (Geometry)		
Grade 7 Benchmark	Apply transformations and use symmetry to analyze mathematical situations.			
1	<ul style="list-style-type: none"> Determine how perimeter and area are affected by changes of scale. 	Appetizers 2 B & H; 2 (Mathematical Relations)		

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Grade 7 Benchmark	Use visualization, spatial reasoning, and geometric modeling to solve problems.			
1	<ul style="list-style-type: none"> • Compute the perimeter and area of common geometric shapes and use the results to find measures of less common objects. 	Appetizers 2 H; 2 (Mathematical Relations)		
2	<ul style="list-style-type: none"> • Identify and describe the properties of two-dimensional figures: <ul style="list-style-type: none"> - identify angles as vertical, adjacent, complementary, or supplementary and provide descriptions of these terms - use the properties of complementary and supplementary angles and the sum of the angles of a triangle to solve problems involving an unknown angle - draw quadrilaterals and triangles from given information 	Appetizers 3 D; 3 (Geometry) Appetizers 3 D; 3 (Geometry) Appetizers 3 A & E; 3 (Geometry)		
MEASUREMENT				
Content Standard	Students will understand measurement systems and applications.			
Grade 7 Benchmark	Understand measurable attributes of objects and the units, systems, and process of measurement.			
1	<ul style="list-style-type: none"> • Choose appropriate units of measure and ratios to recognize new equivalences (e.g., 1 square yard equals 9 square feet) to solve problems. 	Appetizers 4 A, B, & C; 4 (Measurement)		
2	<ul style="list-style-type: none"> • Select and use the appropriate size and type of unit for a given measurement situation. 	Appetizers 4 E; 4 (Measurement)		
3	<ul style="list-style-type: none"> • Compare masses, weights, capacities, geometric measures, times, and temperatures within measurement systems. 	Appetizers 4 A, B, C, D, & E; 4 (Measurement)		

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4	<ul style="list-style-type: none"> Approximate the relationship between standard and metric measurement systems (e.g., inches and centimeters, pounds and kilograms, quarts and liters). 	Appetizers 4 A, B, & C; 4 (Measurement)		
5	<ul style="list-style-type: none"> Use measures expressed as rates and measures expressed as products to solve problems, check the units of the solutions, and analyze the reasonableness of the answer. 	Appetizers 4 A, B, C, D, & E; 4 (Measurement)		
Grade 7 Benchmark	Apply appropriate techniques, tools, and formulas to determine measurements.			
1	<ul style="list-style-type: none"> Apply strategies and formulas to find missing angle measurements in triangles and quadrilaterals. 	Appetizers 3 D; 3 (Geometry)		
2	<ul style="list-style-type: none"> Select and use formulas to determine the circumference of circles and the area of triangles, parallelograms, trapezoids, and circles. 	Appetizers 4 D & E; 4 (Measurement)		
3	<ul style="list-style-type: none"> Solve problems involving scale factors, ratios, and proportions. 	Appetizers 2 B & C; 10 B; 2 (Mathematical Relations); 10 (Estimation)		
DATA ANALYSIS AND PROBABILITY				
Content Standard	Students will understand how to formulate questions, analyze data, and determine probabilities.			
Grade 7 Benchmark	Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.			
1	<ul style="list-style-type: none"> Describe how data representations influences interpretation. 	Appetizers 2 H; 5 D; 12 B; 15 B; 2 (Mathematical Relations); 5 (Probability/Statistics); 12 (Mathematical Representation); 15 (Make Conjectures and Verify Conclusions)		

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2	<ul style="list-style-type: none"> Select and use appropriate representation for presenting collected data and justify the selection. 	Appetizers 2 H; 5 D; 12 B; 15 B; 2 (Mathematical Relations); 5 (Probability/Statistics); 12 (Mathematical Representation); 15 (Make Conjectures and Verify Conclusions)		
3	<ul style="list-style-type: none"> Use measures of central tendency and spread to describe a set of data. 	Appetizers 5 E; 5 (Probability/Statistics)		
4	<ul style="list-style-type: none"> Choose between median and mode to describe a set of data and justify the choice for a particular situation. 	Appetizers 5 E; 5 (Probability/Statistics)		
5	<ul style="list-style-type: none"> Determine the quartiles of a data set. 	Appetizers 5 E; 5 (Probability/Statistics)		
6	<ul style="list-style-type: none"> Identify ordered pairs of data from a graph and interpret the data in terms of the situation depicted by the graph. 	Appetizers 2 E & H; 2 (Mathematical Relations)		
7	<ul style="list-style-type: none"> Use various scales and formats to display the same data set. 	Appetizers 2 H; 5 D; 2 (Mathematical Relations); 5 (Probability/Statistics)		
8	<ul style="list-style-type: none"> Identify and explain the misleading representations of data. 	Appetizers 5 C; 5 (Probability/Statistics)		
9	<ul style="list-style-type: none"> Collect, organize, and represent data sets that have one or more variables and identify relationships among variables within a data set. 	Appetizers 2 H; 5 D; 12 B; 2 (Mathematical Relations); 5 (Probability/Statistics); 12 (Mathematical Representation)		
10	<ul style="list-style-type: none"> Compute the minimum, lower quartile, median, upper quartile, and maximum of a data set. 	Appetizers 5 E; 5 (Probability/Statistics)		
11	<ul style="list-style-type: none"> Identify and explain the effects of scale and/or interval changes on graphs of whole number data sets. 	Appetizers 2 H; 2 (Mathematical Relations)		

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12	<ul style="list-style-type: none"> Use and explain sampling techniques (e.g., observations, surveys, and random sampling) for gathering data. 	Appetizers 5 B, C, & D; 11 D; 5 (Probability/Statistics); 11 (Problem Solving)		
13	<ul style="list-style-type: none"> Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, and selecting, collecting, and displaying appropriate data to address the problem. 	Appetizers 2 H; 11 A, B, C, & D; 2 (Mathematical Relations); 11 (Problem Solving)		
Grade 7 Benchmark	Select and use appropriate statistical methods to analyze data.			
1	<ul style="list-style-type: none"> Choose and justify appropriate measures of central tendencies (e.g., mean, median, mode, range) to describe given or derived data. 	Appetizers 5 E; 5 (Probability/Statistics)		
2	<ul style="list-style-type: none"> Know various ways to display data sets (e.g., stem and leaf plot, box and whisker plot, scatter plots) and use these forms to display a single set of data or to compare two sets of data. 	Appetizers 2 H; 5 D; 12 B; 14 A; 2 (Mathematical Relations); 5 (Probability/Statistics); 12 (Mathematical Representation); 14 (Mathematical Language, Representations, and Models)		
3	<ul style="list-style-type: none"> Use the analysis of data to make convincing arguments. 	Appetizers 2 H; 5 D; 12 B; 14 A; 2 (Mathematical Relations); 5 (Probability/Statistics); 12 (Mathematical Representation); 14 (Mathematical Language, Representations, and Models)		
4	<ul style="list-style-type: none"> Use appropriate technology to gather and display data sets and identify the relationships that exist among variables within the data set. 			

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5	<ul style="list-style-type: none"> Use data samples of a population and describe the characteristics and limitations of the sample. 	Appetizers 5 C; 5 (Probability/Statistics)		
6	<ul style="list-style-type: none"> Identify data that represent sampling errors and explain why the sample and the display might be biased. 	Appetizers 5 C; 12 B; 5 (Probability/Statistics); 12 (Mathematical Representation)		
7	<ul style="list-style-type: none"> Identify claims based on statistical data and evaluate the validity of the claims. 	Appetizers 5 C & D; 11 D; 5 (Probability/Statistics); 11 (Problem Solving)		
Grade 7 Benchmark	Develop and evaluate inferences and predictions that are based on data.			
1	<ul style="list-style-type: none"> Formulate and justify mathematical conjectures based on data and a general description of the mathematical question or problem posed. 	Appetizers 2 H; 5 D; 12 B; 15 A; 2 (Mathematical Relations); 5 (Probability/Statistics); 12 (Mathematical Representation); 15 (Make Conjectures and Verify Conclusions)		
2	<ul style="list-style-type: none"> Analyze data to make accurate inferences, predictions, and to develop convincing arguments from data displayed in a variety of forms. 	Appetizers 2 H; 5 D; 12 B; 2 (Mathematical Relations); 5 (Probability/Statistics); 12 (Mathematical Representation)		
3	<ul style="list-style-type: none"> Approximate a line of best fit for a data set in a scatter plot form and make predictions using the simple equation of that line. 	Appetizers 5 D; 12 B; 5 (Probability/Statistics); 12 (Mathematical Representation)		

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Grade 7 Benchmark	Understand and apply basic concepts of probability.			
1	<ul style="list-style-type: none"> Determine the probability of a compound event composed of two independent events. 	Appetizers 5 C; 11 D; 5 (Probability/Statistics); 11 (Problem Solving)		
2	<ul style="list-style-type: none"> Identify examples of events having the probability of one or zero. 	Appetizers 5 B & C; 11 D; 5 (Probability/Statistics); 11 (Problem Solving)		
3	<ul style="list-style-type: none"> Describe the probability of events using fractions, decimals, and percents. 	Appetizers 5 B; 5 (Probability/Statistics)		
4	<ul style="list-style-type: none"> Express probability as a fraction, zero, or one. 	Appetizers 5 B; 5 (Probability/Statistics)		
5	<ul style="list-style-type: none"> Use probability to generate convincing arguments, draw conclusions, and make decisions in a variety of situations. 	Appetizers 5 C; 11 D; 15 A; 5 (Probability/Statistics); 11 (Problem Solving); 15 (Make Conjectures and Verify Conclusions)		
6	<ul style="list-style-type: none"> Make predictions based on theoretical probabilities of compound events. 	Appetizers 5 C; 11 D; 15 A; 5 (Probability/Statistics); 11 (Problem Solving); 15 (Make Conjectures and Verify Conclusions)		
7	<ul style="list-style-type: none"> Determine the probability of a simple event or a compound event composed of a simple, independent events. 			