Jemez Valley Public Schools

FIFTH GRADE MATHEMATICS • CONTENT MAP

Quadrant I	Quadrant II	Quadrant III	Quadrant IV
Strand 1: Number and Operations **Standard: Students will understand numerical concepts and mathematical operations**			
Computational Fluency Expectation Addition and Subtraction 0-20 Multiplication and Division 0-12 (all year long) Identify prime and composite numbers to 50 Represent place value using concrete or illustrated models up to one billion (1,000,000,000) (year-long) Demonstrate understanding of the magnitude of the value of numbers from thousandths to billions Explain and perform whole number division and express remainders as a whole number or a fractional part or decimal as appropriate to the context of real-life problems (year-long) Find the factors and multiples of whole numbers Use arithmetic operations and inverse relationships to represent and solve real-world problems (year-long). Demonstrate proficiency with division, including one- and two-digit divisors. Add, subtract, multiply, and divide whole numbers (year-long). Use estimation strategies to verify the reasonableness of calculated results. Explain how the estimation strategy impacts the result. Simplify numerical expressions using order of operations (year-long). Recognize and explain the differences between exact and approximate values. Compare and order using concrete or illustrated models for whole numbers (to millions) Relate the basic arithmetic operations to one another (e.g., multiplication and division are inverse operations). (year-long)	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). Add and subtract fractions and mixed numbers without regrouping and express answers in simplest form. Identify and represent on a number line decimals, fractions, and mixed numbers (year-long) Solve simple problems involving the addition and subtraction of fractions and mixed numbers. Represent and use fractions and decimals in equivalent forms. Add and subtract decimals.	Simplify numerical expressions using order of operations. *Use appropriate representations of positive rational numbers in the context of real-life applications* *Identify and represent on a number line decimals., fractions, mixed numbers and positive and negative integers*	*Demonstrate the relationship and equivalency among ratios and percents* *Interpret and use ratios in different context.* *Explain and perform (b) addition, subtraction, multiplication, and division with decimals* *Convert fractions to decimals and percents and use these representations in estimations, computations, and applications*
Quadrant I	**Quadrant II**	**Quadrant III**	**Quadrant IV**

Strand 2: Algebra Standard II: Students will understand algebraic concepts and applications.			
Use mathematical models to represent and explain mathematical concepts and procedures. (year-long) Demonstrate how a situation can be represented in more than one way. Develop simple formulas in exploring quantities and their relationships Understand and use mathematical models such as diagrams or pictures to model problem situations *Use and interpret formulas (e.g., Area = Length X Width) to answer questions about quantities and their relationships.*	Understand the differences between the symbols for “less than”, “less than or equal to”, “greater than”, and “greater than or equal to”. (year-long) *Express mathematical relationships using equations*	Understand and use mathematical models such as (c) the number line to model the relationship between rational numbers and rational number operations, (d) pictorial representation of addition and subtraction of rational numbers with regrouping, and (e) manipulatives or pictures to model computational procedures. Identify and graph ordered pairs in the first quadrant of the coordinate plane. Describe, represent, and analyze patterns and relationships. Identify, describe, and continue patterns presented in a variety of formats (e.g., numeric, visual, oral, written, kinesthetic, and pictorial). Generate a pattern using a written description. *Explain and use symbols to represent unknown quantities and variable relationships.* *Make generalizations based on observed patterns and relationships*	*Create, explain, and use mathematical models such as equations and inequalities to model numerical relationships*. *Use ratios to predict changes in proportional situations.* *Solve problems that involve change using proportional relationships*
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Strand 3: Geometry Standard: Students will understand geometric concepts and applications.			
Identify, describe, and classify two-dimensional shapes and three-dimensional figures by their properties to include symmetry (year-long) Identify faces, edges, and bases on three-dimensional objects to include grids and nets. *Make and test conjectures about geometric properties and relationships and develop logical arguments to justify conclusions*	Recognize and describe properties of regular polygons having up to ten sides. Recognize perpendicular and parallel lines. (year-long) Identify line of symmetry in simple geometric figures. (year-long) Understand and compute the perimeter of regular polygons. (year-long) Identify and explain circumference, radius, and diameter. (year-long) *Use ordered pairs to graph, locate, identify points, and describe paths in the first quadrant of the coordinate plane* *Describe the relationship between radius, diameter, and circumference of a circle(protractor)*	*Use geometric models such as number lines, arrays, and computer simulations to investigate number relationships* *Develop and use mental images of geometric shapes to solve problems*	*Describe the properties of geometry figures that include ellipses, cylinders, cones, spheres, and cubes.* *Identify, describe, and classify the properties of, and the relationships between, plane and solid geometric figures* *Use coordinate geometry to describe location on a plane.*

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Strand 4: Measurement **Standard: Students will understand measurement systems and applications.**			
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. (year-long) Select and use appropriate units and tools to measure according to the degree of accuracy required in a particular problem-solving situation. (year-long) Solve problems involving linear measurement, weight, and capacity to the appropriate degree of accuracy (year-long). Perform one-step conversions within a system of measurement Solve measurement problems using appropriate tools involving length, perimeter, weight, capacity, time, and temperature. Select and use strategies to estimate measurements including length, distance, capacity, and time (year-long). *Select the appropriate type of unit for measuring perimeter and size of an angle.* *Identify the inverse relationship between the size of the units and the number of units.*	*Develop, understand, and use formulas to find the area of rectangles and related triangles and parallelograms* *Develop formulas to determine the surface area of rectangular solids.* Apply strategies and use tools for estimating and measuring the perimeter of regular and irregular shapes. *Use tools to measure angles (e.g., protractor, compass).*	*Estimate, measure, and solve problems involving length, area, mass, time, and temperature using appropriate standard units and tools.* *Identify common measurements of turns (e.g., 360 degrees in one turn, 90 degrees in a quarter-turn).* *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*.	*Select and use formulas for perimeters of squares and rectangles.* *Estimate measurements in both U.S. customary and metric units* *Select and use strategies to estimate measurements including angle measure and capacity*
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Strand 5: Data Analysis and Probability **Standard: Students will understand how to formulate questions, analyze data, and determine probabilities.**			
Organize, represent, and interpret numerical and categorical data and clearly communicate findings by; (a) choosing and constructing representations that are appropriate for the data set, and (b) recognizing the differences in representing categorical and numerical data *Compare and describe related data sets.* *Use the concepts of median, mode, maximum, minimum, and range and draw*	Use fractions and percentages to compare data sets of different sizes. Correctly rank the values of a number data set containing simple fractions and decimals, identify maximum and minimum data values, and calculate the range for a data set. List all possible outcomes of simple events. Determine probabilities through experiments and/or simulations and compare the results with mathematical expressions.	Organize, read, and display numerical (quantitative) and non-numerical (qualitative) data in a clear and 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, and (f) charts and tables. *Propose and justify conclusions and predictions based on data.*	*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* *Describe the difference between independent and dependent events and identify situations involving independent or dependent events.*

conclusions about a data set. *Use data analysis to make reasonable inferences/predictions and to develop convincing arguments from data described in a variety of formats*	Make predictions from the results of student-generated experiments of single events. Identify simple experiments where the probabilities of all outcomes are equal. 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 and (f) charts and tables. *Developing convincing arguments from data displayed in a variety of formats. Describe events as "likely", "unlikely", or "impossible" and quantify simple probability situations by (a) representing all possible outcomes for a simple probability situation in an organized way and (b) expressing outcomes of experimental probability situations verbally and numerically*	*Draw and compare different graphical representations of the same data.* *Explain advantages and disadvantages of using various display formats for a specific data set*	