New Paltz Central School District
Mathematics
Third Grade

Time	Essential Questions/Content	Standards/Skills	Assessments
September - October	**<u>Unit 1: Place Value and Numeration/Addition and Subtraction</u>** • What is place value? • How do I use what I know about numbers to add and subtract efficiently? • How are addition and subtraction alike and different? • How are digits in numbers related? • How can estimation strategies help us to build our addition skills? • What can we learn about the value of a number by examining its digits? • How do I use what I know about numbers to add and subtract efficiently? ---------- • Number systems • Number theory • Operations • Comparing and ordering • Use place value understanding and properties of operations to perform multi-digit arithmetic. • Solve problems involving addition and subtraction and identify and explain patterns in arithmetic. • Solve problems involving the four operations, and identify and explain patterns in arithmetic.	• Use hundred charts and number lines. • Read and write numbers to 1,000. • Order numbers greatest to least and least to greatest to 1,000. • Use symbols < and >. • Write numbers from standard to expanded form and from expanded to standard form. • Skip count by 25s, 50s, 100s, to 1,000. • Identify odd and even numbers. • Understand the place value structure of the base ten number system. • Estimate numbers to 200. • Describe and extend numeric patterns. • Use place value understanding to round whole numbers to the nearest 10 or 100. • Fluently add and subtract within 100 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. • Solve two-step word problems using addition and subtraction. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	• Place Value Pre-Assessment • Place Value and Numeration unit assessment • Addition and Subtraction unit assessment • Teacher observation • Student discussion • Teacher determined checkpoints

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October - December	**<u>Unit 2: Multiplication and Division</u>** • What is multiplication? • What is division? • How do we use multiplication? • How is multiplication related to addition? • How do I use what I know about numbers to multiply and divide more efficiently? ---------- • Understand concepts of area and relate area to multiplication and to addition. • Represent and solve problems involving multiplication and division. • Understand properties of multiplication and the relationship between multiplication and division. • Multiply and divide within 100. • Solve problems involving the four operations, and identify and explain patterns in arithmetic. • Use place value understanding and properties of operations to perform multi-digit arithmetic (2-digit by 1-digit in multiplication).	• Multiply one- digit whole numbers by multiples of 10 in the range of 10-90 (e.g., 9 x 80, 5 x 60) using strategies based on place value and properties of operations. • Interpret products of whole numbers, e.g. interpret 5 x 7 as the total number of digits in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5 x 7. • Interpret whole-number quotients of whole numbers, e.g., interpret 56 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as 56 8. • Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. • Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 x ? = 48, 5 = ? ÷ 3, 6 x 6 = ?	• Pre Assessment: Write everything you know about multiplication. Include ideas you think may be right but you aren't sure about and also things others have told you about multiplication. • Post Assessment: Write everything you know about multiplication. • Multiplication and Division unit assessment • Teacher observation • Timed multiplication grid • Student discussion • Teacher determined checkpoints

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		• Apply properties of operations as strategies to multiply and divide. Examples: If 6 x 4 = 24 is known, then 4 x 6 = 24 is also known. (Commutative property of multiplication) 3 x 5 x 2 can be found by 3 x 5 = 15, then 15 x 2 = 30, or by 5 x 2 = 10, then 3 x 10 = 30. (Associative property of multiplication) Knowing that 8 x 5 = 40 and 8 x 2 = 16, one can find 8 x 7 as 8 x (5 + 2) = (8 x 5) + (8 x 2) = 40 + 16 = 56. (Distributive property) (Students need not use formal terms for these properties.) • Understand division as an unknown-factor problem. For example, find 32 ÷ 8 by finding the number that makes 32 when that number is multiplied by 8. • Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 x 5 = 40, one knows 40 ÷5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers • Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. • Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.	

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January - February	**<u>Unit 3: Fractions</u>**
	• What is a fraction?
	• How do we compare whole numbers and unit fractions?
	• What is an equivalent fraction?
	• How are fractions and division related?
	• How do we use fractions?
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	• Develop understanding of fractions as numbers.
	• Reason with shapes and their attributes.
		• Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a/b* as the quantity formed by *a* parts of size 1/*b*.
		• Understand a fraction as a number on the number line; represent fractions on a number line diagram.
		  • Represent a fraction 1/*b* on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size 1/*b* and that the endpoint of the part based at 0 locates the number 1/*b* on the number line.
		  • Represent a fraction *a/b* on a number line diagram by marking off a lengths 1/*b* from 0. Recognize that the resulting interval has size *a/b* and that its endpoint locates the number *a/b* on the number line.
		• Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
		  • Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
		  • Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3).Explain why the fractions are equivalent, e.g., by using a visual fraction model.
		  • Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line*
			• Pre Assessment: Write everything you know about fractions (include pictures, symbols, and/or words)
			• Post Assessment: Write everything you know about fractions.
			• Fractions unit assessment
			• Teacher observation
			• Student discussion and participation
			• Teacher determined checkpoints

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		diagram. • Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. • Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as ¼ of the area of the shape.*	
March - April	**<u>Unit 4: Measurement and Data</u>** • What does it mean to tell time to the nearest minute? • How can we determine the amount of time that has passed between two events? • How does estimation help me when I measure? • Why do we need a standard unit of measurement? • What does the liquid volume of an object tell me? • How can estimating help me to determine the liquid volume of something? • What does the mass of an object tell me about? • What is the difference between area and perimeter?	• Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram. • AngeMeasure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). • Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For examples, draw a bar graph in which each square in the bar graph might represent 5 pets • Recognize area as an attribute of plane figures and understand concepts of area measurement.	• Measurement and Data unit assessment • Teacher observation • Student discussion • Teacher determined checkpoints

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	• How can graphs help me understand and compare data? ---------- • Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects. • Represent and interpret data	a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area. b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units. • Measure areas by counting unit squares (Square cm, square m, square in, square ft., and improvised units). • Relate area to the operations of multiplication and addition. a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning. • Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a x b and a x c. Use area models to represent the distributive property in mathematical reasoning.	

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April - June	**<u>Unit 5: 2-D Geometry and Review</u>** • What is a 2-D shape? • What is area? • What is perimeter? • Can you find area without perimeter? Perimeter without area? --- • Reason with shapes and their attributes. • Understand how to find perimeter and area. • Organize and analyze measurement data.	• Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units-whole numbers, halves or quarters. • Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters. • Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these sub categories.	• Teacher observation • Student discussion • Teacher determined checkpoints