

**New Paltz Central School District  
Mathematics  
Seventh Grade**

TIME	CONTENT	SKILLS	ASSESSMENTS
000+0E00L   00+000L	<p><b>UNIT 1: Number Sets</b></p> <ul style="list-style-type: none"> <li>• What are Real Numbers?</li> <li>• How do you distinguish between the subsets of the Real Number system?</li> <li>• What is the relationship between absolute value and distance?</li> <li>• What are the process similarities and differences when adding, subtracting, multiplying and dividing integers?</li> </ul> <p style="text-align: center;">-----</p> <ul style="list-style-type: none"> <li>• Real Number system and Real Number subsets</li> <li>• Rational vs. irrational numbers</li> <li>• Ordering/comparing real numbers*</li> <li>• Rounding decimal numbers (to hundredth)*</li> <li>• Decimal operations*</li> <li>• Fraction operations*</li> <li>• Absolute value*</li> <li>• Integer operations*</li> </ul>	<ul style="list-style-type: none"> <li>• Identify the number set(s) a given number is a member of</li> <li>• Classify a number as rational or irrational (positive and negative, including absolute value)</li> <li>• Order/compare/graph rational and irrational numbers on the number line (positive and negative, including absolute value)</li> <li>• Provide justification for rational and irrational number placements on the number line</li> <li>• Add and subtract two integers (with or without the use of a number line)</li> <li>• Add, subtract, multiply, and divide integers (like and unlike signs)</li> <li>• Interpret and solve word problems involving decimals and fractions</li> <li>• Interpret and solve word problems involving integers and signed numbers</li> <li>• Round decimal numbers (to hundredth)*</li> <li>• Add, subtract, multiply, and divide decimals*</li> <li>• Add, subtract, multiply, and divide fractions and mixed numbers*</li> <li>• Calculate the absolute value of a number*</li> </ul>	<ul style="list-style-type: none"> <li>• Homework</li> <li>• Quizzes</li> <li>• Tests</li> </ul>

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TIME	CONTENT	SKILLS	ASSESSMENTS
<b>00+0000</b>	<p><b>UNIT 2: Powers/Roots/Scientific Notation</b></p> <ul style="list-style-type: none"> <li>• What is exponential notation?</li> <li>• What is scientific notation?</li> <li>• What makes a square a “perfect square”?</li> <li>• Why is a number raised to the zero power equal to 1?</li> <li>• Why is a number raised to a negative power equal to a value less than 1? -----</li> <li>• Powers (positive, negative and zero exponents)</li> <li>• Square roots</li> <li>• Scientific notation (positive and negative exponents)</li> <li>• Law of exponents</li> </ul>	<ul style="list-style-type: none"> <li>• Multiply and divide powers with the same base</li> <li>• Evaluate a power raised to a power</li> <li>• Determine the square root of a perfect square (up to 225)</li> <li>• Determine the square root of a non-perfect square using a calculator</li> <li>• Identify two consecutive whole numbers between which the square root of a non-perfect square whole number less than 225 lies (with and without the use of a number line)</li> <li>• Convert numbers written in scientific notation to standard form and vice versa (positive and negative exponents)</li> <li>• Compare numbers written in scientific notation</li> <li>• Identify parts of a power*</li> <li>• Write a power in standard, expanded, and exponential form*</li> <li>• Evaluate a power*</li> <li>• Write a power of 10 in standard, expanded and exponential form (positive and negative exponents)*</li> <li>• Evaluate powers of 10 mentally*</li> </ul>	<ul style="list-style-type: none"> <li>• Homework</li> <li>• Quizzes</li> <li>• Tests</li> </ul>

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TIME	CONTENT	SKILLS	ASSESSMENTS
<b>20&lt;0E00L</b>	<p><b>UNIT 3: Number Theory</b></p> <ul style="list-style-type: none"> <li>• What is the difference between factors and multiples?</li> <li>• What is the difference between GCF and LCM?</li> <li>• Why does a number have only one prime factorization? -----</li> <li>• Factors (common and greatest common)</li> <li>• Multiples (common and least common)</li> <li>• Prime factorization</li> <li>• Divisibility rules*</li> <li>• Prime number vs. composite number*</li> <li>• Simplest form (lowest terms) of a fraction (relating to GCF)*</li> <li>• Common denominator of 2 or more fractions (relating to LCM)*</li> </ul>	<ul style="list-style-type: none"> <li>• Determine the prime factorization of a number in exponential form using factor trees</li> <li>• Determine the greatest common factor of two or more numbers (listing factors and prime factorization)</li> <li>• Determine the least common multiple of two or more numbers (listing multiples and prime factorization)</li> <li>• Simplify a fraction by dividing by the GCF/common factors into the numerator and denominator</li> <li>• Determine if it is necessary to calculate GCF or LCM when given a word problem and solve</li> <li>• Categorize a number as prime or composite (by listing factors and using divisibility rules)*</li> <li>• Determine if a number/written in exponential form is a prime factorization*</li> </ul>	<ul style="list-style-type: none"> <li>• Homework</li> <li>• Quizzes</li> <li>• Tests</li> </ul>

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TIME	CONTENT	SKILLS	ASSESSMENTS
<b>20&lt;&gt;E&lt;E&gt;Z</b>	<p><b><u>UNIT 4: Algebraic Expression and Equations</u></b></p> <ul style="list-style-type: none"> <li>• What is algebra?</li> <li>• What are the differences/similarities between solving algebraic expressions and algebraic equations?</li> <li>• When solving an algebraic equation, why do you perform the same operation on both the left and right side of the equation?</li> <li>• How does the order of operations relate to solving two-step equations?</li> <li>• When is it necessary to use an inequality instead of an equation to represent a situation?</li> </ul> <p style="text-align: center;">-----</p> <ul style="list-style-type: none"> <li>• Expression vs. equation</li> <li>• Inverse operations</li> <li>• Monomials and polynomials</li> <li>• Simple proportions</li> <li>• Property of operations (review in context, as applied to solving multi-step equations)</li> <li>• Order of operations</li> <li>• Numeric expressions*/algebraic expressions/verbal phrase (one-step* and two-step)</li> <li>• Inequalities (numeric*, algebraic, verbal, graphed)</li> </ul>	<ul style="list-style-type: none"> <li>• Simplify numeric expressions using order of operations. Note: Expressions may include absolute value and/or integral exponents greater than 0.</li> <li>• Use substitution to evaluate algebraic expressions (may include exponents of one, two, and three and formulas [surface area, rate, and density])</li> <li>• Solve/check/explain two-step equations involving whole numbers using inverse operations</li> <li>• Solve simple proportions within context</li> <li>• Add and subtract monomials with exponents of one</li> <li>• Identify an algebraic expression as a monomial or a polynomial and explain why the categorization is correct</li> <li>• Solve multi-step equations by combining like terms, using the distributive property, or moving variables to one side of the equation</li> <li>• Solve one-step inequalities and graph solutions on a number line (positive coefficients only)</li> <li>• Translate verbal phrases/sentences into expressions/equations/inequalities and solve</li> </ul>	<ul style="list-style-type: none"> <li>• Homework</li> <li>• Quizzes</li> <li>• Tests</li> </ul>

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TIME	CONTENT	SKILLS	ASSESSMENTS
<b>7-EE-01</b>		<ul style="list-style-type: none"> <li>• Translate one-step* and two-step verbal phrases into algebraic expressions and vice versa</li> <li>• Translate one-step* verbal sentences into algebraic equations and vice versa</li> <li>• Solve/check/explain one-step equations (involving whole and non-whole numbers) using inverse operations*</li> <li>• Identify/name inequality symbols*</li> <li>• Translate a simple verbal inequality and one-step verbal inequality into numeric inequalities and vice versa (e.g., <math>3 &lt; 5</math>, <math>7 - 4 &lt; 5</math>)*</li> <li>• Translate a simple verbal inequality and one-step verbal inequality into algebraic inequalities and vice versa (e.g., <math>n &gt; 2</math>, <math>n + 2 &gt; 15</math>)*</li> </ul>	

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TIME	CONTENT	SKILLS	ASSESSMENTS
<b>November</b>	<p><b>UNIT 5: Geometry</b></p> <ul style="list-style-type: none"> <li>• How do you find the measure of the unknown angle of a triangle? quadrilateral?</li> <li>• What is the meaning of an x, y coordinate?</li> <li>• Where is coordinate geometry used in the real world?</li> <li>• How do you calculate the area of a polygon drawn on the coordinate plane?</li> <li>• What are the differences between perimeter, area, surface area, and volume?</li> <li>• What are the differences/similarities between prisms and pyramids?</li> <li>• How is Pi related to diameter and circumference?</li> <li>• What is the difference between radius and diameter? circumference and area?</li> <li>• When asked to calculate radius or diameter, given circumference or diameter, why is knowing how to solve an equation algebraically an important skill? -----</li> <li>• Plotting and labeling (all four quadrants)</li> <li>• Area of polygons on the coordinate plane</li> <li>• Surface area</li> <li>• Volume</li> <li>• Pi</li> <li>• Circumference</li> </ul>	<ul style="list-style-type: none"> <li>• Find a missing angle when given angles of a quadrilateral</li> <li>• Plot, label, and connect ordered pairs on all 4 quadrants</li> <li>• Calculate the area of basic polygons drawn on a coordinate plane (rectangles and shapes composed of rectangles having sides with integer lengths)</li> <li>• Identify the two-dimensional shapes that make up the faces and bases of three-dimensional shapes (prisms, pyramids, cylinders, and cones)</li> <li>• Estimate surface area (cube, rectangular prism, triangular prism, cylinder)</li> <li>• Determine the surface areas of prisms (cube, rectangular prism, and triangular prism) and cylinders using a calculator and a variety of methods</li> <li>• Calculate the volume of prisms (cube, rectangular prism, and triangular prism) and cylinders using a given formula and calculator</li> <li>• Interpret and solve word problems involving surface area, volume, and circumference</li> <li>• Identify/describe linear figures*</li> </ul>	<ul style="list-style-type: none"> <li>• Homework</li> <li>• Quizzes</li> <li>• Tests</li> </ul>

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<b>TIME</b>	<b>CONTENT</b>	<b>SKILLS</b>	<b>ASSESSMENTS</b>
<b>November</b>	<ul style="list-style-type: none"> <li>• Area of a circle</li> <li>• Three-dimensional circular figures</li> <li>• Linear terms/figures*</li> <li>• Angle classification*</li> <li>• Angle measurement/construction*</li> <li>• Parallel and perpendicular lines*</li> <li>• Classifying polygons*</li> <li>• Quadrilaterals*</li> <li>• Perimeter*</li> <li>• Area*</li> <li>• Coordinate plane*</li> <li>• Ordered pairs (x, y coordinates)*</li> </ul>	<ul style="list-style-type: none"> <li>• Classify angles according to degree measure*</li> <li>• Measure/construct angles using a protractor*</li> <li>• Describe/identify parallel lines and perpendicular lines*</li> <li>• Identify regular polygons*</li> <li>• Name polygons using letters*</li> <li>• Identify/name all quadrilateral subtype classifications, given a 4-sided figure*</li> <li>• Calculate perimeter of a triangle, square, parallelogram, and rectangle. Should be able to state/use formulas*</li> <li>• Calculate area of a triangle, square, parallelogram, rectangle, and trapezoid. Should be able to use state/use formulas*</li> <li>• Calculate the perimeter and area of irregularly shaped polygons*</li> <li>• Calculate the area of the shaded region of a figure*</li> <li>• Interpret and solve word problems involving perimeter and area*</li> <li>• Label the coordinate plane and identify mandatory vs. optional (requested only) labels*</li> <li>• Identify the quadrants of a coordinate plane*</li> </ul>	

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<b>November</b>		<ul style="list-style-type: none"> <li>• Determine if a figure is a polyhedron*</li> <li>• Name a polyhedron according to its bases/faces (i.e., triangular prism)*</li> <li>• Identify/describe parts of a circle*</li> <li>• Calculate the radius of a circle if given the diameter and vice versa*</li> <li>• Explain the relationship between Pi, circumference, and diameter*</li> <li>• Use the circumference formulas to calculate circumference, radius, or diameter*</li> <li>• Use the area formula to calculate the area of a circle*</li> <li>• Determine the area of the shaded region of a figure comprised of a circle and a polygon*</li> <li>• Identify solid figures related to a circle (sphere, cylinder, cone)</li> </ul>	



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	<p><b><u>UNIT 6: Data and Statistics</u></b></p> <ul style="list-style-type: none"> <li>• What is the difference between data and statistics?</li> <li>• When is it best to use mode/mean/median to describe a set of data?</li> <li>• Given a set of data, how do you determine which type of graphic representation is most appropriate?</li> <li>• Why is the magnitude of relative error greater when making a \$1 mistake on a \$5 purchase as opposed to a \$1 error on a \$500,000 purchase? -----</li> <li>• Measures of central tendency</li> <li>• Graphs (line, circle, bar)</li> <li>• Frequency tables</li> <li>• Data collection (i.e., newspapers, magazines, polls, charts, surveys)</li> <li>• Venn diagram</li> <li>• Error analysis</li> <li>• Misleading statistics</li> </ul>	<ul style="list-style-type: none"> <li>• Define/calculate/interpret range, mode, median, and mean</li> <li>• Create and interpret frequency tables</li> <li>• Create and interpret pictographs, line graphs, bar graphs, histograms, and circle graphs</li> <li>• Create and interpret double line graphs and double bar graphs</li> <li>• Construct Venn diagrams given a set of data</li> <li>• Determine the appropriate graphic representation for a given set of data</li> <li>• Select appropriate measure of central tendency for data</li> <li>• Identify and explain misleading statistics</li> <li>• Describe/determine the magnitude of given relative errors</li> </ul>	<ul style="list-style-type: none"> <li>• Homework</li> <li>• Quizzes</li> <li>• Tests</li> </ul>

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<b>אמצעים להערכת הישגים</b>	<p><b><u>UNIT 7: Probability</u></b></p> <ul style="list-style-type: none"> <li>• What is the range of values for probabilities when written as a fraction, decimal, and percent?</li> <li>• When is it more appropriate to use a tree diagram than the counting principle, and vice versa?</li> <li>• How does the way you sample data affect your outcome?</li> </ul> <p style="text-align: center;">-----</p> <ul style="list-style-type: none"> <li>• Theoretical vs. experimental probability</li> <li>• Probability of a simple event</li> <li>• Probability of compound events (dependent and independent)</li> <li>• Tree diagrams</li> <li>• Fundamental counting principle</li> <li>• Sample space/total possible outcomes</li> <li>• Probability terminology</li> <li>• Biased objects</li> </ul>	<ul style="list-style-type: none"> <li>• Categorize a probability as theoretical or experimental</li> <li>• Find the probability of a simple event using the probability formula</li> <li>• Construct a tree diagram to determine the sample space and total number of possible outcomes of multiple independent events (compound events)</li> <li>• Use the counting principle to determine the total number of possible outcomes of multiple independent events (compound events)</li> <li>• Calculate the probabilities related to multiple independent events (compound events)</li> <li>• Calculate the probabilities related to multiple dependent events (compound events)</li> <li>• Predict outcomes based on theoretical probabilities</li> <li>• Interpret data to provide the basis for predictions and to establish experimental probabilities</li> <li>• Interpret and solve word problems related to probability</li> <li>• Define probability and state the range of possible probability values (0 to 1)*</li> <li>• Identify a biased/unbiased object*</li> </ul>	<ul style="list-style-type: none"> <li>• Homework</li> <li>• Quizzes</li> <li>• Tests</li> </ul>

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TIME	CONTENT	SKILLS	ASSESSMENTS
<b>1005007</b>	<p><b>UNIT 8: Measurement</b></p> <ul style="list-style-type: none"> <li>• How are conversions made between small and large units of measure?</li> <li>• When is it most appropriate to use a length measurement, a weight measurement, or a capacity measurement?</li> <li>• What are the customary/metric units of length, weight/mass, and capacity?</li> </ul> <p style="text-align: center;">-----</p> <ul style="list-style-type: none"> <li>• Capacity (liquid measure)</li> <li>• Volume</li> <li>• Mass</li> <li>• Length*</li> <li>• Weight*</li> <li>• Time*</li> </ul>	<ul style="list-style-type: none"> <li>• Identify and convert units within the customary system</li> <li>• Identify and convert units within the metric system</li> <li>• Identify a reasonable mass for a given object</li> <li>• Determine and use appropriate tools to measure (ruler, scale, water displacement) to desired level of precision</li> </ul>	<ul style="list-style-type: none"> <li>• Homework</li> <li>• Quizzes</li> <li>• Tests</li> </ul>

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TIME	CONTENT	SKILLS	ASSESSMENTS
<b>30-45</b>	<p><b><u>UNIT 9: Functions</u></b></p> <ul style="list-style-type: none"> <li>• How is a function like a pasta machine or a bread maker?</li> <li>• How are recipe ingredients like inputs and outputs?</li> <li>• What are real life examples of positive and negative slope?</li> <li>• What is the rule for determining the sum of the measures of the interior angles of a polygon? (Explain how you know this is correct and provide examples.)</li> </ul> <p style="text-align: center;">-----</p> <ul style="list-style-type: none"> <li>• Functions</li> <li>• Tables</li> <li>• Linear graph</li> <li>• Algebraic patterns</li> <li>• Slope*</li> </ul>	<ul style="list-style-type: none"> <li>• Define a function</li> <li>• Describe the relationship between algebraic equations and functions</li> <li>• Complete an (x,y) table given the rule for a function</li> <li>• Graph a linear function using data from an (x,y) table</li> <li>• Create a function based on observed patterns (i.e., charts/tables, graphs, equations, and expressions)</li> <li>• Interpret linear graphs</li> <li>• Build a pattern to develop a rule for determining the sum of the interior angles of polygons</li> <li>• Identify positive and negative slopes*</li> </ul>	<ul style="list-style-type: none"> <li>• Homework</li> <li>• Quizzes</li> <li>• Tests</li> </ul>
<b>30-45</b>	<p><b><u>UNIT 10: Triangle Geometry</u></b></p> <ul style="list-style-type: none"> <li>• What is the Pythagorean Theorem? (statement of the formula is not acceptable)</li> <li>• Why does every triangle have two and only two classifications?</li> </ul> <p style="text-align: center;">-----</p> <ul style="list-style-type: none"> <li>• Right triangles</li> <li>• Pythagorean Theorem</li> <li>• Triangle classification*</li> <li>• Sum of the interior angles of a triangle*</li> </ul>	<ul style="list-style-type: none"> <li>• Identify parts of a right triangle</li> <li>• Explain the Pythagorean Theorem</li> <li>• Use the Pythagorean Theorem to determine if a triangle is right</li> <li>• Use the Pythagorean Theorem to determine unknown lengths of sides of a right triangle</li> <li>• Use the Pythagorean Theorem to set up and solve word problems and indirect measurement problems involving right triangles</li> <li>• Classify a triangle by angles and by sides*</li> </ul>	<ul style="list-style-type: none"> <li>• Homework</li> <li>• Quizzes</li> <li>• Tests</li> </ul>

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		<ul style="list-style-type: none"> <li>• Find a missing angle in a triangle given two*</li> <li>• Identify the largest and smallest side of a triangle, if the smallest and largest angles are known (vice versa)*</li> <li>• Identify interior and exterior angles of a triangle*</li> <li>• Find the measure of an unknown angle of a triangle, using the fact that the sum of the angles is <math>180^\circ</math></li> </ul>	
<b>A p r i l</b>	<p><b><u>UNIT 11: Ratios and Proportions</u></b></p> <ul style="list-style-type: none"> <li>• How is a rate converted to a unit rate?</li> <li>• What is the relationship between a ratio and a proportion?</li> <li>• What are some basic comparisons that can be made using unit rate?</li> <li style="text-align: center;">-----</li> <li>• Scale drawings</li> <li>• Word problem interpretation (ratio, rate, unit rate, proportion, similar, congruent or scale drawing)</li> <li>• Using exchange rate tables</li> <li>• Ratio*, rate*, and unit rate</li> <li>• Proportions*</li> <li>• Similar/congruent*</li> </ul>	<ul style="list-style-type: none"> <li>• Convert rates to unit rates</li> <li>• Solve “better buy” problems using unit rates</li> <li>• Use proportions to find a missing length, given the scale in a scale drawing</li> <li>• Make a simple scale drawing</li> <li>• Define ratio and state three ways to write one*</li> <li>• Determine if two ratios are equivalent*</li> <li>• Write a ratio in simplest form*</li> <li>• Explain the difference between ratio and rate*</li> <li>• Solve word problems involving ratio and rate*</li> <li>• Solve for an unknown in a proportion using cross products*</li> <li>• Describe the characteristics of similar figures and congruent figures*</li> </ul>	<ul style="list-style-type: none"> <li>• Homework</li> <li>• Quizzes</li> <li>• Tests</li> </ul>

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		<ul style="list-style-type: none"> <li>• Use proportions to determine if two figures are similar*</li> <li>• Use proportions to determine the unknown length of a figure, given similar figures*</li> <li>• Describe the relationship between scale drawings and similar figures*</li> </ul>	
<b>Σ          זמן ישיבה</b>	<p><b><u>UNIT 12: Fractions, Decimals, and Percents*</u></b></p> <ul style="list-style-type: none"> <li>• Why is it acceptable to represent the same number as a fraction, a decimal, and a percent?</li> <li>• What are the steps for converting between fractions, decimals, and percents?</li> <li>• What are the steps for adding/subtracting/multiplying/ dividing fractions and mixed numbers?            -----</li> <li>• Percents</li> <li>• Fraction/decimal/percent conversions</li> <li>• Percent proportions involving percent, ratio, and base</li> <li>• Addition/subtraction/multiplication/ division of fractions and mixed numbers</li> <li>• Evaluate numeric expressions (including fractions and decimals)</li> </ul>	<ul style="list-style-type: none"> <li>• Read, write, and identify percents of a whole (0% to 100%)</li> <li>• Solve percent problems involving percent, rate, and base</li> <li>• Add/subtract/multiply/divide fractions and mixed numbers with like and unlike denominators</li> <li>• Evaluate numeric expressions (including fractions and decimals)</li> </ul>	<ul style="list-style-type: none"> <li>• Homework</li> <li>• Quizzes</li> <li>• Tests</li> </ul>