

Walter T. Bergen Middle School Curriculum Map  
8<sup>th</sup> grade Mathematics  
School Year 2007-2008

	Unit 1 September- October-November <b>ALGEBRA , INTEGERS, &amp; PROPORTION and PERCENT(1,2,3)</b>	Unit 2 November- December-January <b>ANALYZING DATA, GEOMETRY PATTERNS, &amp; NUMBER PATTERNS(4,5,6)</b>
Essential Questions	How do we use the basic properties of integers? How do we use the basic properties of algebra to evaluate expressions? How do we solve algebraic equations? How can we use rates, ratios, percents, & proportions to solve real-life problems?	How can we use visual & algebraic models to analyze and represent data? How can we generate geometric patterns? How do we use logic & reasoning to construct and support conjectures about geometric objects? How do we use geometric concepts to find measurements? How can we use number patterns to solve algebraic problems?
Content	<ul style="list-style-type: none"> <li>• Problem Solving</li> <li>• Powers &amp; exponents</li> <li>• Variables &amp; expressions, equations</li> <li>• Solving equations, 1- and 2-step</li> <li>• Writing expressions &amp; equations</li> <li>• Solving inequalities</li> <li>• Integers &amp; Absolute value</li> <li>• Comparing &amp; ordering integers</li> <li>• Properties of addition &amp; multiplication</li> <li>• 4-basic operations &amp; integers</li> <li>• Ordered pairs &amp; the Coordinate system</li> <li>• Distributive property</li> <li>• Simplifying algebraic expressions</li> <li>• Using formulas, perimeter and area</li> <li>• Ratios, rates, &amp; percents</li> <li>• Solving proportions</li> <li>• Fractions, decimals, &amp; percents</li> <li>• Estimate &amp; percents</li> </ul>	<ul style="list-style-type: none"> <li>• Bar graphs &amp; histograms</li> <li>• Circle graphs</li> <li>• Line plots</li> <li>• Measures of central tendency</li> <li>• Measures of variation</li> <li>• Box-and-whisker plots</li> <li>• Scatter plots</li> <li>• Choosing appropriate display</li> <li>• Misleading graphs and statistics</li> <li>• Parallel lines</li> <li>• Classifying triangles and quadrilaterals</li> <li>• Reflections, symmetry</li> <li>• Congruent and similar triangles</li> <li>• Transformations</li> <li>• Divisibility patterns</li> <li>• Prime Factorization, Greatest Common Factor, &amp; Least Common Multiple</li> <li>• Rational numbers and decimals</li> <li>• Comparing &amp; ordering rational numbers</li> <li>• Scientific notation</li> </ul>
Skills	<ul style="list-style-type: none"> <li>• Use a 4-step plan to solve problems</li> <li>• Choose an appropriate method of computation</li> <li>• Use the order of operations to evaluate expressions</li> <li>• Translate verbal phrases into numerical &amp; algebraic expressions</li> <li>• Evaluate algebraic expressions</li> <li>• Identify &amp; use properties of addition &amp; multiplication</li> <li>• Translate verbal sentences into algebraic equations</li> <li>• Compare &amp; order integers</li> <li>• Find the absolute value of an expression</li> <li>• Use the 4-basic operations on integers</li> <li>• Simplify algebraic expressions</li> <li>• Plot ordered pairs &amp; algebraic relationships</li> <li>• Use the Distributive Property to write &amp; simplify equivalent expressions</li> <li>• Solve 1- &amp; 2-step equations using Properties of Equality</li> <li>• Solve problems using formulas, including perimeter &amp; area</li> <li>• Express ratios as fractions and determine unit rates</li> <li>• Solve problems using proportions</li> <li>• Express percents as fractions &amp; decimals</li> <li>• Estimate &amp; compute mentally with percents</li> <li>• Determine reasonable answers in real-world problems</li> </ul>	<ul style="list-style-type: none"> <li>• Solve problems using a table</li> <li>• Make and interpret bar graphs, histograms, circle graphs, line plots, &amp; scatter plots</li> <li>• Find measures of central tendency</li> <li>• Choose an appropriate display of data</li> <li>• Recognize misleading graphs and statistics</li> <li>• Identify parallel lines and types of angles formed by parallel lines and transversals</li> <li>• Solve problems using Venn diagrams</li> <li>• Classify triangles and quadrilaterals</li> <li>• Identify line and rotational symmetry</li> <li>• Identify congruent and similar triangles</li> <li>• Create Escher-like drawings using translations and rotations</li> <li>• Solve problems using a list</li> <li>• Find the GCF and LCM of 2 or more numbers</li> <li>• Identify, simplify, and compare rational numbers</li> <li>• Find the probability of a simple event</li> <li>• Express numbers in scientific notation</li> </ul>
NJCCS	4.1, 4.3, 4.5	4.1, 4.2, 4.4, 4.5
Assessments	Homework, Quizzes, Projects, Tests	Homework, Quizzes, Projects, Tests

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	Unit 3 January- February <b>ALGEBRA: RATIONAL NUMBERS, PROPORTIONAL REASONING(7,8)</b>	Unit 4 March <b>GEOMETRY: AREA &amp; VOLUME(11)</b>
Essential Questions	How do we apply the basic properties of rational numbers to solve algebraic problems? How do we use proportions and percents to solve real-world problems? How do we use geometric concepts to find measurements? How do we solve problems by first solving a simpler problem?	How do we use algebra and geometry to explore volume and area?
Content	<ul style="list-style-type: none"> <li>• 4-basic operations and like and unlike fractions</li> <li>• Properties of rational numbers</li> <li>• Patterns and sequences</li> <li>• Area of triangles &amp; trapezoids</li> <li>• Circles and circumference</li> <li>• Solving equations and inequalities with rational numbers</li> <li>• Using proportions</li> <li>• Percent proportion</li> <li>• Percent equation</li> <li>• Large and small percents</li> <li>• Percents of change</li> <li>• Simple interest</li> <li>• Similar polygons</li> <li>• Indirect measurement</li> <li>• Scale drawings and models</li> <li>• Dilations</li> </ul>	<ul style="list-style-type: none"> <li>• Area of circles</li> <li>• Three-dimensional figures</li> <li>• Volume of prisms and cylinders</li> <li>• Volume of pyramids and cones</li> <li>• Nets</li> <li>• Surface area of prisms and cylinders</li> <li>• Surface area and volume</li> <li>• Precision and significant digits</li> </ul>
Skills	<ul style="list-style-type: none"> <li>• Compute with fractions and mixed numbers</li> <li>• Solve problems using patterns</li> <li>• Recognize and extend arithmetic and geometric sequences</li> <li>• Find areas of triangles and trapezoids, find circumference of circles</li> <li>• Solve equations and inequalities involving rational numbers</li> <li>• Solve problems using proportions</li> <li>• Solve problems using percents</li> <li>• Solve problems by first solving a simpler problem</li> <li>• Find missing measures of similar polygons</li> <li>• Graph dilations on a coordinate plane</li> </ul>	<ul style="list-style-type: none"> <li>• Find area of circles</li> <li>• Solve problems by making a model</li> <li>• Find the volume of prisms, cylinders, pyramids, and cones</li> <li>• Find surface area of prisms and cylinders</li> <li>• Analyze measurements</li> </ul>
NJCCS	4.1, 4.2, 4.3, 4.5	4.2, 4.5
Assessments	Homework, Quizzes, Projects, Tests	Homework, Quizzes, Projects, Tests

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	Unit 3 April-May <b>ALGEBRA: REAL NUMBERS, GRAPHING FUNCTIONS(9,10)</b>	Unit 4 June <b>DISCRETE MATH &amp; PROBABILITY(12)</b>
Essential Questions	How do we apply the basic properties of real numbers? How can we use the graphs of linear models to solve real-world problems?	How can we use probability to simulate chance outcomes?
Content	<ul style="list-style-type: none"> <li>• Square roots</li> <li>• Estimating square roots</li> <li>• Real number system</li> <li>• Pythagorean theorem</li> <li>• Graphing irrational numbers</li> <li>• Distance on the coordinate plane</li> <li>• Special right triangles</li> <li>• Functions</li> <li>• Using tables to graph functions</li> <li>• Equations with 2 variables</li> <li>• Graphing linear functions</li> <li>• Translations, reflections, and rotations</li> </ul>	<ul style="list-style-type: none"> <li>• Counting outcomes</li> <li>• Permutations</li> <li>• Combinations</li> <li>• Pascal's triangle</li> <li>• Probability of compound events</li> <li>• Experimental probability</li> <li>• Using samples to predict</li> </ul>
Skills	<ul style="list-style-type: none"> <li>• Estimate and find square roots</li> <li>• Identify and classify numbers</li> <li>• Use the Pythagorean Theorem</li> <li>• Solve problems by drawing a diagram</li> <li>• Find the distance between points in the coordinate plane</li> <li>• Complete function tables and graph linear &amp; quadratic functions</li> <li>• Find solutions of equations with 2 variables</li> <li>• Solve systems of equations by graphing</li> <li>• Solve problems using a graph</li> <li>• Graph translations, reflections, and rotations on a coordinate plane</li> </ul>	<ul style="list-style-type: none"> <li>• Count outcomes using a tree diagram or the Counting Principle</li> <li>• Find the number of permutations and combinations of objects</li> <li>• Find theoretical and experimental probability</li> <li>• Solve problems by acting them out</li> <li>• Predict the actions of a large group by taking a sample</li> </ul>
NJCCS	4.1, 4.2, 4.3, 4.5	4.4, 4.5
Assessments	Homework, Quizzes, Projects, Tests	Homework, Quizzes, Projects, Tests