

MIDDLETOWN MATH SCOPE & SEQUENCE

Grade: 8 – Enriched Marking Periods 1-4

Resource	NYS Standard	Performance Indicator	# of Days	Notes	Compass Learning Resources
Unit 1 – The Tools of Algebra					
Vocabulary: Numerical Expressions, Evaluate, Order of Operations, Grouping Symbols, Variable, Algebraic Expressions, Substitution Property of Equality, Commutative Property of Addition and Multiplication, Associative Property of Addition and Multiplication, Additive and Multiplicative Identity, Multiplicative Property of Zero, Counter Example, Simplify Equation, Open Sentence, Solution					
Supplement	8A15	<ul style="list-style-type: none"> Understand that numerical information can be represented in multiple ways; arithmetically, algebraically, and graphically. 	2		
RM1	8A2	<ul style="list-style-type: none"> Write verbal expressions that match given mathematical expressions. 	1	RM1	
1.2	8A2 7N11	<ul style="list-style-type: none"> Write verbal expressions that match given mathematical expressions. Simplify (evaluate) expressions using order of operations. 	1	SQ19, 6Q19, 8Q2, SQ10, SQ28, 6Q3, 6Q9, 8Q11	
1.3	8A2 7A1	<ul style="list-style-type: none"> Write verbal expressions that match given mathematical expressions. Translate <u>2-step verbal expressions</u> into algebraic expressions. Use substitution to evaluate algebraic expressions. 	1	SQ2, SQ17, 6Q8, 6Q11, 6Q14, 7Q11, 8Q33	
1.4	6N2 6N4 6N5	<ul style="list-style-type: none"> Define and identify the commutative and associative properties of + and x. Define and identify the identity and inverse properties of + and x. 	2	6Q9, 7Q8, 6Q1, SQ7, 8Q5	

Bold Standards – Indicates standards that are new to the 8th grade.

Underlined portions of performance indicator are focus points.

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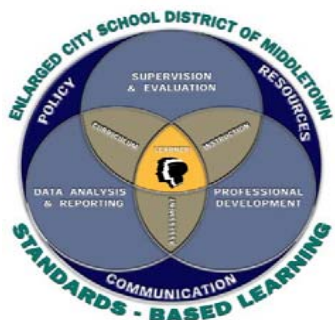
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		<ul style="list-style-type: none"> Define and identify the 0 property of x. 			
1.5	6A3	<ul style="list-style-type: none"> Translate 2-step verbal sentences into algebraic equations. 	1	6Q23, 7Q14, 8Q15	
7.3 RM	8A1	<ul style="list-style-type: none"> Translate verbal sentence into algebraic inequality and graph. 	1	SQ13, SQ14, SQ20, SQ42, 6Q15, 6Q22, 6Q26, 7Q26, 7Q33, 8Q8	
		Review and test	1		
		Total	11		
Unit 2 – Integers					
Vocabulary: Integers, Negative Number, Absolute Value, Coordinate, Inequality, Zero Pair, Opposite, Additive, Inverse					
2.1	6N13 6N14 6N15	<ul style="list-style-type: none"> Define absolute value and determine the absolute value of rational numbers and expressions. Evaluate expressions with absolute values. Locate rational numbers on a number line. Order rational numbers. 	1	7Q20, 8Q3, 6Q12, 6Q25, SQ9, 7Q17, 7Q26	
2.2P	7N12	<ul style="list-style-type: none"> Add, subtract, multiply and divide integers. Using tiles and number lines. 	1	SQ1, 6Q1, 6Q15, 6Q33, 7Q8, 8Q25	

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2.2	7N12 7N13	<ul style="list-style-type: none"> • <u>Add</u>, subtract, multiply, and divide integers. • <u>Add</u> and subtract two integers (without the use of the number line). 	1	SQ1, 6Q1, 6Q15, 6Q33, 7Q8, 8Q25, 7Q31, SQ31	
2.3	7N12 7N13	<ul style="list-style-type: none"> • Add, <u>subtract</u>, multiply, and divide integers. • Add and <u>subtract</u> two integers (without the use of the number line). 	1	SQ1, 6Q1, 6Q15, 6Q33, 7Q8, 8Q25, 7Q31, SQ31	
2.4	7N12	<ul style="list-style-type: none"> • Add, subtract, <u>multiply and divide integers</u>. 	1	SQ1, 6Q1, 6Q15, 6Q33, 7Q8, 8Q25	
Supplement	7N12	<ul style="list-style-type: none"> • <u>Add, subtract, multiply, and divide integers</u>. 	1	SQ1, 6Q1, 6Q15, 6Q33, 7Q8, 8Q25	
2.6 1.6 Supplement	8A16 8A15	<ul style="list-style-type: none"> • Find a set of ordered pairs to satisfy a linear numerical pattern then plot ordered pairs and graph the line. • Given an equation, find ordered pairs that satisfy the equation and graph. • Understand that numerical information can be expressed in multiple ways; arithmetically, algebraically, and graphically. 	2	8Q28	

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		<ul style="list-style-type: none"> Review vocabulary of coordinate system. Discuss characteristics of points in each quadrant. Table of values. 			
		Review and test	1		
		Total	10		
Unit 3 – Equations					
Vocabulary: Equivalent Expressions, Distributive Property, Term, Coefficient, Like Terms, Constant, Simplest Form, Simplifying the Expression, Inverse Operations, Subtraction and Addition Property of Equality, Equivalent Equations, Two-Step Equations					
3.1	6N3	<ul style="list-style-type: none"> Define and identify the distributive property of x over $+$. 	2		
3.2	8PS3 6N3	<ul style="list-style-type: none"> Understand and demonstrate how written symbols represent mathematical ideas. Identify and become comfortable with parts of an algebraic expression. Define and identify the distributive property of x over $+$. Include expressions containing variables and integers. 	2		
3.3P	5A5	<ul style="list-style-type: none"> Solve and explain simple one-step equations using inverse operations involving whole numbers. Include positives and negatives in equations (refer to <u>Hands on</u> 	1	7Q27	

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		<u>Algebra</u> .			
3.3 3.4	5A5	<ul style="list-style-type: none"> Solve and explain simple one-step equations using inverse operations involving whole numbers. 	1		
3.5	7A4	<ul style="list-style-type: none"> Solve multi-step equations by combining like terms, using the distributive property, or moving variables to one side of the equation. Limit to combining like terms and inverse operations. 	2-3	SQ8, SQ24, SQ33, SQ39, 6Q11, 6Q18, 6Q24, 6Q31, 6Q38, 6Q41, 7Q5, 7Q30, 7Q45, 8Q16	
3.6RM 3.6	8A1 8A2	<ul style="list-style-type: none"> Write verbal expressions that match given mathematical expressions. Write and solve two-step equations. 	2	SQ13, SQ14, SQ20, SQ42, 6Q15, 6Q22, 6Q26, 7Q26, 7Q33, 8Q8, SQ19, 6Q19, 8Q2	
		Review and test	2		
		Total	13-14		

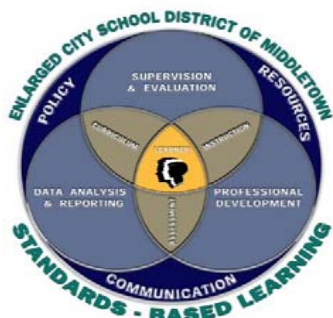
Unit 4 – Algebra and Rational Numbers

Vocabulary: Base, Exponent, Power, Standard Form, Expanded Form, Negative Exponents, Prime Number, Composite Number, Prime Factorization, Factor Tree, Venn Diagram, Greatest Common Factor, Simplest Form, Algebraic Fraction, Product of Powers

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4.2	8N1	<ul style="list-style-type: none"> Develop and apply laws of exponents for multiplication and division. Use numbers and variables with positive exponents only. 	2	SQ5	
4.7	8N2	<ul style="list-style-type: none"> Evaluate expressions with integral exponents. 	1	SQ26, 7Q11, 8Q18	
4.1 4.3	8A10	<ul style="list-style-type: none"> Factor algebraic expressions using GCF. Prime factorization of a number. Prime factorization of a monomial. 	1	6Q1, 8Q23	
4.4	8A10	<ul style="list-style-type: none"> Factor algebraic expressions using GCF. GCF of numbers using a T-chart and using Venn diagram. GCF of monomials using a t-chart and using Venn diagram. 	2		
4.5	8A6	<ul style="list-style-type: none"> Multiply and <u>divide</u> monomials. Simplify algebraic fraction by factoring. 	1	6Q7, 7Q10, 7Q17, 8Q30	
4.6	8A6 8N1	<ul style="list-style-type: none"> Multiply and divide monomials. Develop and <u>apply</u> the laws of exponents for multiplication and division. 	1		
		Review and test	1		
		Total	9		

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Resource	NYS Standard	Performance Indicator	# of Days	Notes	Compass Learning Resources
Unit 5 – Percents					
Vocabulary: Percent, Percent Proportion, Base, Part, Cross-Products, Percent Equation, Discount, Simple Interest, Principal, Rate (of interest), Percent of Change, Percent of Increase, Percent of Decrease					
6.4	8N3 8N5	<ul style="list-style-type: none"> Read, write, and identify <u>percents <1% and >100%</u>. Procedure for changing between fractions, decimals, and percents. Estimate a percent of quantity given an application. 	1	SQ11, SQ23, 6Q13, 7Q41, 8Q14	
6.5P	8N5	<ul style="list-style-type: none"> Estimate a percent of quantity, given an application. 	1		
6.5	8PS10	<ul style="list-style-type: none"> Read, write, and identify percents <1% and >100%. Find percents, parts, and whole using a proportion. 	1		
6.6	8N5 8N6	<ul style="list-style-type: none"> Estimate a percent of quantity given an application. Focus on relation solutions to benchmark percents ie: 25%, 50%, and 75%. 		6Q44, 7Q14, SQ19	
6.7 Supplement	8N4 8N5	<ul style="list-style-type: none"> Apply percents to tax, percent of change, <u>simple interest, sale price, commission, interest rates, and gratuity.</u> Estimate a percent of quantity given an application. 	6	SQ17, SQ40, 6Q4, 6Q28, 6Q39, 7Q2, 7Q8, 7Q31, 8Q10, 8Q29, 8Q40	

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6.8	8N4	<ul style="list-style-type: none"> Apply percents to tax, percent of change, simple interest, sale price, commission, interest rates, and gratuity. 	2		
		Review and test	1		
		Total	11		
Unit 6 – Linear Equations, Inequalities, and Functions					
Vocabulary: Null (or empty), Identity					
7.1P	8A5	<ul style="list-style-type: none"> Use physical models to perform operations with polynomials. Model equations with variables on both sides (see <u>Hands on Algebra</u>). 	1	SQ11, SQ23, 6Q13, 7Q41, 8Q14	
7.1	7A4	<ul style="list-style-type: none"> Solve multi-step equations by combining like terms, using the distributive property, or <u>moving variables to one side of the equation</u>. 	3	SQ8, SQ24, SQ33, SQ39, 6Q11, 6Q18, 6Q24, 6Q31, 6Q38, 6Q41, 7Q5, 7Q30, 7Q45, 8Q16	
7.2	7A4	<ul style="list-style-type: none"> Solve multi-step equations by combining like terms, using the distributive property, or moving variables to one side of the equation. 	4		

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		<ul style="list-style-type: none"> • Include integers, fractions, and decimals. 			
		Review and test	1		
		Total	10		
Unit 7 – Functions and Graphing					
Vocabulary: Linear, Nonlinear					
Supplement	8A4	<ul style="list-style-type: none"> • Create a graph given a description or an expression for a situation involving linear or nonlinear relationships. 	2	7Q34	
Supplement	8A3	<ul style="list-style-type: none"> • Describe a situation involving relationships that matches a given graph. 	1	7Q13, 8Q39	
		Quiz	1		
		Total	4		
Unit 8 – Two-Dimensional Figures (Geometry)					
Vocabulary: Parallel Lines, Transversal, Interior Angles, Exterior Angles, Alternate Interior Angles, Alternate Exterior Angles, Corresponding Angles, Vertical Angles, Adjacent Angles, Complementary Angles, Supplementary Angles, Perpendicular Lines, Congruent, Transformation, Translation, Reflection, Rotation, Dilation, Scale Factor					
10.1	8G1 8G2	<ul style="list-style-type: none"> • Identify pairs of vertical angles as congruent. • Identify pairs of supplementary and complementary angles. 	2 (1 st 4 standards)	SQ15, SQ21, 6Q2, 6Q17, 7Q4, 8Q1,	

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Resource	NYS Standard	Performance Indicator	# of Days	Notes	Compass Learning Resources
	8G3 8G6 8G4 8G5 8A12	<ul style="list-style-type: none"> Calculate the missing angle measurements when given two intersecting lines and an angle. Calculate the missing angle in a supplementary and complementary pair. Determine angle pair relationships when given two parallel lines cut by a transversal. Calculate the missing angle measurements when given two parallel lines cut by a transversal. Apply algebra to determine the measure of angles formed by or contained in parallel line cut by a transversal and by intersecting lines. 	3 (last 3 standards)	SQ1, SQ9, SQ43, 6Q10, 7Q15, 7Q16, 8Q22, 8Q9, SQ3, SQ6, SQ25, 6Q3, 6Q25, 7Q25, 8Q13, 8Q45, SQ12, 7Q9, 8Q15, 8Q37, SQ41, 6Q20, 6Q29, 7Q28, 8Q3, SQ37, SQ45, 6Q36, 7Q38, 7Q43, 8Q31, 8Q44	
10.3 10.3f	8G7 8G8 8G9 8G10 8G11 8G12	<ul style="list-style-type: none"> Describe and identify transformations in the plane using proper function notation (rotations, reflections, dilations, translations). <u>Stress notation of original figure and use of prime notation for all transformations.</u> Draw the image of a figure under a reflection over a given line. Draw the image of a figure under translation. Draw the image of a figure under dilation. 	2	6Q8, 6Q21, 6Q43, 7Q1, 7Q29, 8Q32, SQ32, 8Q17, 7Q44, SQ38, 6Q37, 7Q37, 8Q41, SQ35, 8Q43, 8Q26	

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		<ul style="list-style-type: none"> Identify the properties preserved and not preserved under the four transformations. 			
		Review and test	1		
		Total	13		
Unit 9 – Polynomials and Nonlinear Functions					
Vocabulary: Polynomial, Binomial, Trinomial, Degree					
13.1	7A3	<ul style="list-style-type: none"> Identify a polynomial as an algebraic expression containing one or more terms. 	1	8Q24	
13.1f 13.2	8A5 8A7	<ul style="list-style-type: none"> Use physical models to perform operations with polynomials. Add and subtract polynomials with integer coefficients. 	1	SQ4, SQ10, SQ22, SQ28, 6Q9, 7Q12, 7Q23, 8Q27, 8Q35	
13.3	8A7	<ul style="list-style-type: none"> Add and subtract polynomials with integer coefficients. 	2		
13.4p	8A5	<ul style="list-style-type: none"> Use physical models to perform operations with polynomials. 	1		
13.4 Supplement	8A6 8A8	<ul style="list-style-type: none"> Multiply a binomial by a monomial or a binomial. Monomial X polynomial. 	4	7Q7, 7Q10, 7Q17, 8Q30, SQ7, SQ16,	

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	8A9	<ul style="list-style-type: none"> • Binomial X binomial (use vertical and foil method). • Be sure to include integers • Divide a polynomial by a monomial. • Solutions should not contain negative exponents. 		6Q5, 7Q20, 7Q24, 8Q11, 8Q5, SQ2, 8Q7	
Supplement	8A11	<ul style="list-style-type: none"> • Factor a trinomial in the form $ax^2 + bx + c$; $a=1$ and c having no more than 3 sets of factors. 	5	SQ27	
		Review and test	1		
		Total	16		
Unit 10 – Measurement					
Vocabulary: Metric System, Customary System					
PS13	8M1	<ul style="list-style-type: none"> • Solve equations/proportions to convert equivalent measurements. 	2	SQ36, 6Q12, 6Q34, 7Q22	
PS14	8M1	<ul style="list-style-type: none"> • Solve equations/proportions to convert equivalent measurements. 	2		
		Quiz	1		

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		Total Days	5		
Unit 11 – Inequalities					
7.4	8A14 8G9	<ul style="list-style-type: none"> Solve linear inequalities by combining like terms using the distributive property or moving variables to one side of the inequality (include multiplication or division of inequalities by a negative number). Graph the solution set of an inequality on a number line. 	1	7Q44	
7.5	8A14 8G9	<ul style="list-style-type: none"> Solve linear inequalities by combining like terms using the distributive property or moving variables to one side of the inequality (include multiplication or division of inequalities by a negative number – single step). Graph the solution set of an inequality on a number line. 	2		
7.6 Supplement	8A13 8A14	<ul style="list-style-type: none"> Solve multi-step inequalities and graph the solution set on a number line. 	3-4		
		Quiz	1		
		Total	7		

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Unit 12 – Functions and Graphing					
Vocabulary: Function, Vertical Line Test, Linear Equation, Independent Variable, Dependent Variable, Y-Intercept, X-Intercept, Slope, Slope-Intercept Form, Nonlinear Function, Quadratic Function, Cable Function					
8.1	8A17 8A15	<ul style="list-style-type: none"> Define and use correct terminology when referring to a function (domain and range). Determine if a relation is a function. 	1		
8.2	8G15	<ul style="list-style-type: none"> Graph a line using a table of values. 	2		
RM8	8A17	<ul style="list-style-type: none"> Define and use correct terminology when referring to a function (domain and range). 	1		
8.3	8G14	<ul style="list-style-type: none"> Determine the y-intercept of a line from a graph and be able to explain the y-intercept. 	1		
8.4p	8G13	<ul style="list-style-type: none"> Determine the slope of a line from a graph and explain the meaning of slope as a constant rate of change. 	1		
8.4	8G13	<ul style="list-style-type: none"> Determine the slope of a line from a graph and explain the meaning of slope as a constant rate of change. 	1		
8.6	8G17	<ul style="list-style-type: none"> Graph a line from an equation in slope-intercept form. 	2		
8.7	8G16	<ul style="list-style-type: none"> Determine the equation of a line given the slope and y- 	1		

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Resource	NYS Standard	Performance Indicator	# of Days	Notes	Compass Learning Resources
		intercept.			
8.9	8G18	• Solve systems of equations graphically (only linear, integral solutions, $y = mx + b$ form, no vertical or horizontal lines.	4		
13.5	8G20	• Distinguish between linear and nonlinear equations $ax^2 + bx + c$; $a = 1$ (only graphically).	1		
13.6	8G21	• Recognize the characteristics of quadratics in tables, graphs, equations, and situations.	1		
		Review and test	1		
		Total	19		
Unit 13 – Constructions					
Vocabulary: Compass, Straight Edge, Segment, Line Segment, Angle, Perpendicular Bisector, Angle Bisector					
10.1F	8G10	• Construct the following using a straight edge and compass: segment congruent to a segment; angle congruent to an angle; perpendicular bisector; angle bisector.	3		
		Quiz	1		
		Total	4		

Bold Standards – Indicates standards that are new to the 8th grade.

Underlined portions of performance indicator are focus points.

Supplemental (additional) resources – located in 8th grade Teacher Resource Binder and publisher resource booklets. Past state test questions are noted in each Unit matched to the state standard found within the curriculum. Questions are notated in the following manner: the first number indicates the test year (or s for sample test), Q for question and the number of the item on the test. Example: 8Q18 is the 2008 test question 18. Those questions indicated in italics can be found on the 7th grade test. Where the same standard repeats within a unit the questions are not re-printed.