7th Grade Advanced Math

Course Syllabus

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1. INTRODUCTION

Primary Resource: Ohio Department of Education Academic Standards and Learning Targets and Youngstown City Schools Pacing Guides

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The following document provides a detailed layout of how a 6th grade math class can be taught. The pacing guide table provides information on each lesson, when a lesson should be taught, and the length of time each lesson will take.

2. PACING GUIDE

The intent of this course pacing guide is to provide a practical guide that educators can follow for a yearlong 7th grade advanced math class. The intent of this pacing guide is to provide a bridge between 6th grade and high school. This pacing guide will give the second year in a two year path to have a student ready to entire into high school level Algebra 1 as an eighth grade student. This pacing guide will bridge the 7th grade level standards along with 8th grade level standards. Seventh grade standards were replaced with 8th grade standards when standards aligned and matched up. Additional 8th grade standards were integrated to enrich specific lessons. This part 2 of 2 should be taught during the students 7th grade year, and will cover all 7th grade standards a teacher should cover during a year.

The pacing guide is based on Ohio Content Standards and Learning Targets. The content pacing guide provides the Domain from which the content comes. The percentage of questions from each Domain that will appear on the Ohio AIR State Test is also included as well as the Ohio Content Standard(s) and the Ohio Learning Target that each lesson covers. The title of each lesson, the order in which each lesson should be taught, and the amount of time each lesson should take is also given. Finally, a column is provided to allow for teach notes regarding the effectiveness of changes a lesson might need, offering each teacher the opportunity to edit the document to fit their individual classroom needs.

2.1. PACING GUDE KEYS

Table 1 provides a Key so teachers can gain a better understanding of the pacing guide that follow.

Table 1: Pacing Guide Format

Font Style	Description
Green	Critical Areas of Focus on State Testing
Black	Minor Areas of Focus on State Testing
Bold	Standard(s) covered
Underline	Percentage of questions from each Domain appearing on the Ohio AIR State Test

Table 2 provides a Key so teachers understand what percentage of questions are on the state test, what domain each unit falls into, as well as what standard is in each lesson and if it is a major or minor area for state testing.

Table 2: Pacing Guid

Percentage of Questions on State Test	Unit & Domain	Major Areas	Minor Areas
22% - 31%	***Unit 1*** Proportional Relationships	7.RP.1 / 7.RP.2.a / 7.RP.2.c	
20% - 29%	***Unit 2*** Expressions & Equations	7.EE.1 / 7.EE.2 / 7.EE.3 / 8.EE.7.a / 8.EE.7.b	
20% - 29%	***Unit 3*** Functions	8.F.1 / 8.F.2 / 8.F.3 / 8.F.4 / 8.F.5	
20% - 29%	***Unit 4*** Expressions & Equations	8.EE.5 / 8.EE.6 / 8.EE.7.b / 8.F.4	
28% - 37%	***Unit 5*** The Number System / Expressions & Equations	7.NS.3 / 8.EE.1 / 8.EE.2 / 8.EE.3 / 8.EE.4	8.NS.1 / 8.NS.2
20% - 29%	***Unit 6*** Expressions & Equations	8.EE.7.b / 8.EE.8.a / 8.EE.8.b / 8.EE.8.c	
20% - 25%	***Unit 7*** Geometry	8.EE.2 / 8.G.6 / 8.G.7 / 8.G.8	8.NS.2 / 7.G.2
28% - 37%	***Unit 8*** Geometry	8.G.1.a / 8.G.1.b / 8.G.2 / 8.G.3 / 8.G.8	
28% - 37%	***Unit 9*** Geometry	8.G.1.a / 8.G.1.b / 8.G.1.c / 8.G.2 / 8.G.3 / 8.G.4 / 8.G.5 / 8.EE.6 / 8.F.3	7.G.5
20% - 25%	***Unit 10*** Geometry		7.G.4 / 8.G.9
20% - 29%	***Unit 11*** Statistics & Probability		8.SP.1 / 8.SP.2 / 8.SP.3 / 8.SP.4

2.2. SEMESTER 1

Domain	Standards	Learning Target	Lesson	Pacing	Teacher Notes
Unit 1: Proportional Relationship 5 Days	**7.RP.1** **7.RP.2.a** **7.RP.2c**		**Pre-Test**	1 Day	
Proportional Relationship 5 Days *Major Area*	**7. RP-1.** Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.	• I can compute a unit rate from a ratio.	**Domain 1:** **Lesson 1 -** Problem Solving with Equivalent Ratios & Rates / Proportions:	1 Day	
Proportional Relationship 5 Days *Major Area*	**7. RP-2a.** Recognize and represent proportional relationships between quantities.	• I can recognize when two quantities are in a proportional relationship by looking at a table of values or graph of the relationships.	**Domain 1:** **Lesson 2 –** Proportions & Direct Variation	1 Day	
Proportional Relationship 5 Days *Major Area*	**7. RP-2c.** Recognize and represent proportional relationships between quantities.	• I can write an equation to represent a proportional relationship.	**Domain1:** **Lesson 3 –** Equations of Direct Variation	1 Day	
Unit 1: Proportional Relationship 5 Days	**7.RP.1** **7.RP.2.a** **7.RP.2c**		**Post-Test & Summative Assessment**	1 Day	

Unit 2: Expressions & Equations 20 Days	**7.EE.1** **7.EE.2** **7.EE.3** **8.EE.7.a** **8.EE.7b**		**Pre-Test**	1 Day	**Teach 7.EE.1 , 7.EE.2, & 7.EE.3/ 8.EE.7.a replaces standard 7.EE.4.a /8.EE.7.b replaces standard 7.EE.4.a**
Expressions & Equations 20 Days *Major Area*	**7. EE-1.** Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients	• I can apply the properties of operations to simplify and change linear expressions.	**Domain 3:** **Lesson 4 –** Writing Algebraic Expressions / Linear Expression Factoring	2 Days	
Expressions & Equations 20 Days *Major Area*	**7. EE-2.** Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."	• I can explain the advantages of rewriting an expression to better explain how quantities are related in a real world context.	**Domain 3:** **Lesson 5 –** Order of Operations with Variable Expressions	2 Days	
Expressions & Equations 20 Days *Major Area*	**7. EE-3.** Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.	• I can solve real-world problems that involve positive and negative rational numbers. • I can calculate and/or convert between the various forms of rational numbers. • I can determine the reasonableness of my answers using estimation strategies.	**Domain 3:** **Lesson 6 -** Add & Subtract Algebraic Expressions/ Problem Solving with Expressions	. 2 Days	
Expressions & Equations 20 Days *Major Area*	**8. EE-7.a.** Solve linear equations in one variable. - Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation	• I can classify linear equations that have one solution, infinite solutions, and no solutions.	**Domain 3:** **Lesson 7 –** Linear Equations and the Distributive Property	5 Days	**8.EE.7.a replaces standard 7.EE.4.a**

	into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers).				
Expressions & Equations 20 Days *Major Area*	**8. EE-7.b.** Solve linear equations in one variable. - Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	• I can solve any linear equation with rational numbers.	**Domain 3:** **Lesson 8 –** Linear Equations and the Distributive Property	6 Days	**8.EE.7.b replaces standard 7.EE.4.a**
Unit 2: Expressions & Equations 20 Days	**7.EE.1** **7.EE.2** **7.EE.3** **8.EE.7.a** **8.EE.7b**		**Post-Test & Summative Assessment**	2 Days	**Teach 7.EE.1 , 7.EE.2, & 7.EE.3/ 8.EE.7.a replaces standard 7.EE.4.a /8.EE.7.b replaces standard 7.EE.4.a**
Unit 3: Functions 13 Days	**8.F.1** **8.F.2** **8.F.3** **8.F.4** **8.F.5**		**Pre-Test**	1 Day	
Functions 13 Days *Major Area*	**8. F-1.** Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	• I can define and explain in my words what function is and how it relates to input/output tables at earlier grades. • I can explain how the graph of a function relates to its set of ordered pairs.	**Domain 4:** **Lesson 9 –** Relations & Functions	3 Days	
Functions 13 Days *Major Area*	**8. F-2.** Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression,	• I can compare the properties of two functions that are displayed in different ways (equation, graph, table, or words)	**Domain 4:** **Lesson 10 –** Graphs of Functions / Work with Linear Functions	2 Days	

	determine which function has the greater rate of change				
Functions 13 Days *Major Area*	**8. F-3.** Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function A = s2 giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.	• I can rewrite linear equations in the form of y = mx + b. • I can recognize when an equation is a linear function • I can generate functions that are not linear and explain why they are not linear.	**Domain 4:** **Lesson 11 –** Functions and Slope-Intercept Form	3 Days	
Functions 13 Days *Major Area*	**8. F-4.** Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	• I can create an equation to model two quantities that are linear. • I can determine the rate of change when given a linear relationship shown by a table or graph. • I can determine the initial value when given a linear relationship shown by a table or graph. • I can explain what the rate of change means when given a linear relationship in a real-world situation. • I can explain what the initial value means when given a linear relationship in a real-world situation.	**Domain 4:** **Lesson 12 –** Linear Models & Multiple Representation	1 Day	
Functions 13 Days *Major Area*	**8. F-5.** Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	• I can describe where a graph is increasing, decreasing, constant, linear, and nonlinear. • I can sketch a graph if I am told where and how it is increasing, decreasing, constant, linear, and nonlinear.	**Domain 4:** **Lesson 13 -** Use Graphs of Functions to Solve Problems	1 Day	
Unit 3: Functions	**8.F.1** **8.F.2** **8.F.3** **8.F.4**		**Post-Test & Summative Assessment**	2 Days	

	8.F.5				
Unit 4: Expressions & Equations 24 Days	**8.EE.5** **8.EE.6** **8.EE.7.b** **8.F.4**		**Pre-Test**	. . 1 Day	**8.EE.7.b replaces 7.EE.4.b**
Expressions & Equations 24 Days *Major Area*	**8. EE-5.** Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed	• I can explain proportional relationships with a graph. • I can compare two proportional relationships when one is a graph and the other an equation.	**Domain 3:** **Lesson 14 -** Equations of a Line	5 Days	
Expressions & Equations 24 Days *Major Area*	**8. EE-6.** Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.	• I can explain the constant slope of a line using points on the line and similar triangles. • I can determine the equation of a line given on a coordinate graph.	**Domain 3:** **Lesson 15 -** Slope**/**Linear Models & Slope-Intercept Graphs	8 Days	
Expressions & Equations 24 Days *Major Area*	**8. EE-7.b** Solve linear equations in one variable. - Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	• I can solve any linear equation with rational numbers.	**Domain 3:** **Lesson 16 -** Graphs in Point-Slope Form	3 Days	**8.EE.7.b replaces 7.EE.4.b**
Expressions & Equations 24 Days *Major Area*	**8. EE-7.b** Solve linear equations in one variable. - Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	• I can solve any linear equation with rational numbers.	**Domain 3:** **Lesson 17 -** Graphs of Linear Equations in Two Variables	3 Days	

Expressions & Equations 24 Days *Major Area*	**8. F-4.** Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	• I can create an equation to model two quantities that are linear. • I can determine the rate of change when given a linear relationship shown by a table or graph. • I can determine the initial value when given a linear relationship shown by a table or graph. • I can explain what the rate of change means when given a linear relationship in a real-world situation. • I can explain what the initial value means when given a linear relationship in a real-world situation.	**Domain 3:** **Lesson 18 -** Linear Functions	2 Days	
Unit 4: Expressions & Equations 24 Days	**8.EE.5** **8.EE.6** **8.EE.7.b** **8.F.4**		**Post-Test & Summative Assessment**	2 Days	**8.EE.7.b replaces 7.EE.4.b**
Unit 5: The Number System / Expressions & Equations 14 Days	**7.NS.3** **8.NS.1** **8.NS.2** **8.EE.1** **8.EE.2** **8.EE.3** **8.EE.4**		**Pre-Test**	1 Day	**Teach 7.NS.3**
The Number System / Expressions & Equations 14 Days *Minor Area*	**7. NS-3.** Solve real-world and mathematical problems involving the four operations with rational numbers.	• I can solve real-world problems involving the four operations and rational numbers.	**Domain 2&3:** **Lesson 19 -** Order of Operations with Rational Numbers	1 Day	
The Number	**8. NS-1.** Know that numbers that are not	• I can explain the difference between	**Domain 2 & 3:**		

System / Expressions & Equations 14 Days *Minor Area*	rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number	rational and irrational numbers. • I can identify and explain the decimal expansion for rational numbers.	**Lesson 20-** Real Number System / Rational & Irrational Numbers	2 Days	
The Number System / Expressions & Equations 14 Days *Minor Area*	**8. NS-2.** Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., pi^2). For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.	• I can find the approximate value of an irrational numbers by a system of better approximations. • I can locate the approximate the value of an irrational number on a number line.	**Domain 2 & 3: Lesson 21 –** Compare and Order Rational & Irrational Numbers	1 Day	
The Number System / Expressions & Equations 14 Days *Major Area*	**8. EE-1.** Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 32 × 3–5 = 3–3 = (1/3)3 = 1/27.	• I can simplify expressions with integer exponents	**Domain 2 & 3: Lesson 22 –** Exponent Rules	2 Days	
The Number System / Expressions & Equations 14 Days *Major Area*	**8. EE-2.** Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3 = p, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.	• I can solve simple equations involving squares and cubes. • I can evaluate the square roots of small perfect squares. • I can evaluate the cube roots of small perfect cubes. • I know radical 2 is irrational.	**Domain 2 & 3: Lesson 23 –** Square Roots & Cube Roots	2 Days	
The Number System / Expressions	**8. EE-3.** Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities,	• I can express very large and small numbers in scientific notation. • I can determine the proportional	**Domain 2 & 3: Lesson 24 -** Scientific Notation		

& Equations 14 Days *Major Area*	and to express how many times as much one is than the other. For example, estimate the population of the United States as 3 × 108 and the population of the world as 7 × 10^9, and determine that the world population is more than 20 times larger.	difference between scientific numbers.		2 Days	
The Number System / Expressions & Equations 14 Days *Major Area*	**8. EE-4.** Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	• I can add, subtract, multiply, and divide combinations of numbers in scientific notation. • I can appropriately use scientific notations and units of measurement in real-world situations. • I can explain scientific notation generated by technology.	**Domain 2 & 3:** **Lesson 25-** Solving Problems Using Scientific Notation	1 Day	
Unit 5: The Number System / Expressions & Equations 14 Days	**7.NS.3** **8.NS.1** **8.NS.2** **8.EE.1** **8.EE.2** **8.EE.3** **8.EE.4**		**Post-Test & Summative Assessment**	2 Days	**Teach 7.NS.3**
Unit 6: Expressions & Equations 17 Days	**8.EE.7.b** **8.EE.8.a** **8.EE.8.b** **8.EE.8.c**		**Pre-Test**	1 Day	
Expressions & Equations 17 Days *Major Area*	**8. EE-7.b** Solve linear equations in one variable. - Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	• I can solve any linear equation with rational numbers	**Domain 3:** **Lesson 26 –** Linear Equations with Variables on Both Sides	2 Days	

Expressions & Equations 17 Days *Major Area*	**8. EE-8.a** Analyze and solve pairs of simultaneous linear equations. - Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously**.**	• I can explain how a solution to a pair of simultaneous equations relates to the intersection of their graphs.	**Domain 3:** **Lesson 27 –** System of Equations Modeling / Graphing	4 Days	
Expressions & Equations 17 Days *Major Area*	**8. EE-8.b** Analyze and solve pairs of simultaneous linear equations. - Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6.	• I can solve a system of linear equations algebraically • I can solve a system of linear equations graphically • I can determine solutions or special conditions to simple linear simultaneous equations mentally	**Domain 3:** **Lesson 28 –** Linear System Solving Using Substitution & Elimination	5 Days	
Expressions & Equations 17 Days *Major Area*	**8. EE-8.c** Analyze and solve pairs of simultaneous linear equations. - Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair	• I can solve real-world problems using simultaneous equations.	**Domain 3:** **Lesson 29 –** Linear System Solving Using Linear Combinations	3 Days	
Unit 6: Expressions & Equations 17 Days	**8.EE.7.b** **8.EE.8.a** **8.EE.8.b** **8.EE.8.c**		**Post-Test & Summative Assessment**	2 Days	

2.3. SEMESTER 2

Domain	Standards	Learning Target	Lesson	Pacing	Teacher Notes
Unit 7: Geometry 12 Days	**8.NS.2** **8.EE.2** **7.G.2** **8.G.6** **8.G.7** **8.G.8**		**Pre-Test**	1 Day	
Geometry 12 Days *Minor Area*	**8. NS-2.** Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., pi^2). For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.	• I can find the approximate value of an irrational numbers by a system of better approximations.	**Domain 5:** **Lesson 30 -** Approximations of Square & Cube Roots	1 Day	
Geometry 12 Days *Major Area*	**8. EE-2.** Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3 = p, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	• I can solve simple equations involving squares and cubes.	**Domain 5:** **Lesson 31 -** Simplification and Operations with Radicals	2 Days	
Geometry 12 Days *Minor Area*	**7. G-2.** Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	• I can draw geometric figures, especially triangles, freehand (with ruler and protractor). • I can draw geometric figures, especially triangles, using software. (i.e. Sketchpad, Cabri, etc.) • I can determine under what conditions a particular drawing would be a unique triangle, many	**Domain 5:** **Lesson 32 -** Constructing Geometric Shapes / Triangle Properties	2 Days	

		triangles, or no triangle.			
Geometry 12 Days *Major Area*	**8. G-6.** Explain a proof of the Pythagorean Theorem and its converse.	• I can explain at least one method of proof of the Pythagorean Theorem. • I can explain a proof of the converse of the Pythagorean Theorem which says, if the square of one side of a triangle is equal to the sum of the squares of the other two sides, then the triangle is a right triangle.	**Domain 5:** **Lesson 33 -** Pythagorean Theorem	2 Days	
Geometry 12 Days *Major Area*	**8. G-7.** Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	• I can solve real-world problems using the Pythagorean Theorem.	**Domain 5:** **Lesson 34 –** Special Right Triangles	1 Day	
Geometry 12 Days *Major Area*	**8. G-8.** Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	• I can find the distance between two points on a coordinate grid.	**Domain 5:** **Lesson 35 –** Distance of the Coordinate Plane	1 Day	
Unit 7: ***Geometry*** 12 Days	**8.NS.2** **8.EE.2** **7.G.2** **8.G.6** **8.G.7** **8.G.8**		**Post-Test &** **Summative** **Assessment**	2 Days	
Unit 8: ***Geometry*** 13 Days	**8.G.1.a** **8.G.1.b** **8.G.2** **8.G.3** **8.G.8**		**Pre-Test**	1 Day	
Geometry	**8. G-1.a** Verify experimentally the properties of rotations, reflections, and translations: -	• I can demonstrate and explain what happens to a line when it is rotated,	**Domain 5:** **Lesson 36 -**		

13 Days *Major Area*	Lines are taken to lines, and line segments to line segments of the same length.	reflected, and translated by various amounts. • I can demonstrate and explain what happens to a line segment when it is rotated, reflected, and translated by various amounts.	Translations & Rotations of Plane Figures	3 Days	
Geometry 13 Days *Major Area*	**8. G-1.b** Verify experimentally the properties of rotations, reflections, and translations: b. Angles are taken to angles of the same measure.	• I can demonstrate and explain what happen to a angle when it is rotated, reflected, and translated by various amounts.	**Domain 5:** **Lesson 37 -** Reflections of Plane Figures	. 3 Days	
Geometry 13 Days *Major Area*	**8. G-2.** Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	• I can define congruence in terms of rotating, reflecting, or translating the first to obtain the second. • I can specifically name the rotation, reflection, or translation of one 2-D shape necessary to obtain the second congruent figure.	**Domain 5:** **Lesson 38 –** Geometric Transformations	3 Days	
Geometry 13 Days *Major Area*	**8. G-3.** Describe the effect of dilations, translations, rotations, and reflections on two dimensional figures using coordinates. **8. G-8.** Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	• I can explain how a translation changes a figure on a coordinate graph. • I can find the distance between two points on a coordinate grid.	**Domain 5:** **Lesson 39 –** Similar Triangles / Applying the Pythagorean Theorem	3 Days	
Unit 8: ***Geometry*** 13 Days	**8.G.1.a** **8.G.1.b** **8.G.2** **8.G.3** **8.G.8**		**Post-Test &** **Summative** **Assessment**	2 Days	
Unit 9: ***Geometry*** 14 Days	**8.G.1.a** **8.G.1.b** **8.G.1.c** **8.G.2** **8.G.3**		**Pre-Test**	1 Day	**7.G.5 Add on to 8.G.5**

	8.G.4 **8.G.5** **7.G.5** **8.EE.6** **8.F.3**				
Geometry 14 Days *Major Area*	**8. G-1.a.** Verify experimentally the properties of rotations, reflections, and translations: - Lines are taken to lines, and line segments to line segments of the same length. **8. G-1.b.** Verify experimentally the properties of rotations, reflections, and translations: b. Angles are taken to angles of the same measure. **8. G-1.c.** Verify experimentally the properties of rotations, reflections, and translations: c. Parallel lines are taken to parallel lines. **8. G-2.** Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	• I can specifically name the rotation, reflection, or translation of one 2-D shape necessary to obtain the second congruent figure. • I can demonstrate and explain what happen to parallel lines when they are rotated, reflected, and translated by various amounts.	**Domain 4:** **Lesson 40 –** Dilations of Plane Figures	3 Days	
Geometry 14 Days *Major Area*	**8. G-3.** Describe the effect of dilations, translations, rotations, and reflections on two dimensional figures using coordinates. **8. G-4.** Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	• I can explain how a translation changes a figure on a coordinate graph/ I can explain how two geometric figures are similar when you can dilate, rotate or reflect or translate the first to obtain the second. • I can specifically name the dilation, rotation or reflection or translation of one geometric figure necessary to obtain the second similar figure.	**Domain 4:** **Lesson 41 –** Similar Triangles	2 Days	
Geometry	**8. G-5.** Use informal arguments to establish facts about the angle sum and exterior angle	• I can explain why the interior angles of a triangle always add to 180.	**Domain 4:** **Lesson 42 –**		**7.G.5 is an add on to 8.G.5**

14 Days *Major Area*	of triangles, about the angles created when parallel lines are cut by a transversal, and the angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so. **7. G-5.** Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	• I can explain the measures of the exterior angles of a triangle and why they add to 360. • I can explain the relationship between all the angles formed by parallel lines cut by a transversal. • I can explain the relationship between all the angles of two similar triangles. • I can define supplementary, complementary, vertical, and adjacent angles. • I can use the properties of supplementary, complementary, vertical, and adjacent angles to solve for unknown values in a figure.	Lines Cut by a Transversal / Parallel and Perpendicular Lines / Angles and Angle Pairs	3 Days	
Geometry 14 Days *Major Area*	**8. EE-6.** Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b. **8. F-3.** Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.	• I can explain the constant slope of a line using points on the line and similar triangles. • I can determine the equation of a line given on a coordinate graph. • I can rewrite linear equations in the form of y = mx + b • I can recognize when an equation is a linear function. • I can generate functions that are not linear and explain why they are not linear.	**Domain 4:** **Lesson 43 –** Angles & Triangles	3 Days	
Unit 9: Geometry 14 Days	**8.G.1.a** **8.G.1.b** **8.G.1.c** **8.G.2** **8.G.3** **8.G.4** **8.G.5** **7.G.5**		**Post-Test & Summative Assessment**	2 Days	**7.G.5 Add on to 8.G.5**

	8.EE.6 **8.F.3**				
Unit 10: Geometry 12 Days	**7.G.4** **8.G.9**		**Pre-Test**	1 Day	
Geometry 12 Days *Minor Area*	**7. G-4.** Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	• I can use the formula for the area of a circle to solve problems. • I can use the formula for the circumference of a circle to solve problems. • I can describe the ways in which the circumference of a circle is related to its area.	**Domain 2:** **Lesson 44 -** Circumference & Area of a Circle	3 Days	
Geometry 12 Days *Minor Area*	**8. G-9.** Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	• I can solve real-world problems involving the volumes of cones, cylinders, or spheres.	**Domain 4:** **Lesson 45 –** Surface Area of Cylinders and Spheres	3 Days	
Geometry 12 Days *Minor Area*	**8. G-9.** Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	• I can find the volume of any cone, cylinder, or sphere.	**Domain 4:** **Lesson 46 –** Volume of Cylinders, Cones, and Spheres	3 Days	
Unit 10: Geometry 12 Days	**7.G.4** **8.G.9**		**Post-Test & Summative Assessment**	2 Days	
Unit 11: Statistics & Probability	**8.SP.1** **8.SP.2** **8.SP.3** **8.SP.4**		**Pre-Test**	1 Day	

9 Days					
Statistics & Probability *9 Days* *Minor Area*	**8. SP-1.** Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	• I can create a scatter plot with data involving two variables (bivariate data). • I can interpret a scatter plot by explaining patterns such as clustering, outliers, positive and negative patterns, linear patterns, and nonlinear patterns.	**Domain 5:** **Lesson 47 –** Scattered Plots	2 Days	
Statistics & Probability *9 Days* *Minor Area*	**8. SP-2.** Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	• I can identify linear patterns in a scatter plot and can estimate a straight line that fits the pattern. • I can judge the quality of a line fitting a scatter plot by judging the closeness of the points to the line.	**Domain 5:** **Lesson 48 –** Trend Lines or Lines of Best Fit	1 Day	
Statistics & Probability *9 Days* *Minor Area*	**8. SP-3.** Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr. as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height	• I can create a linear model of a problem and describe how the slope and/or intercepts relate to the context of the problem.	**Domain 5:** **Lesson 49 –** Interpret Linear Models	2 Days	
Statistics & Probability *9 Days* *Minor Area*	**8. SP-4.** Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they	• I can create a two-way table on data with two variables. • I can recognize patterns of association with categorical data. • I can use the relative frequencies to find possible associations between the bivariate data.	**Domain 5:** **Lesson 50 –** Patterns in Data	1 Day	

	have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores at home?				
Unit 11: Statistics & Probability *9 Days*	**8.SP.1** **8.SP.2** **8.SP.3** **8.SP.4**		**Post-Test & Summative Assessment**	2 Days	