

## Mathematics Department Pacing Guide @ 754X

		Algebra Semester I	Algebra Semester II	Consumer Math	Geometry	
<b>Unit 1</b>	<b>Topic</b>	<b>Pre-Algebraic Thinking</b>  <u>Week 1:</u> Assessing Prior Knowledge <u>Week 2:</u> Foundations of Algebra I <u>Week 3:</u> Foundations of Algebra II	<b>Part 1: Linear &amp; Exponential Functions</b>  <u>Week 1:</u> Integer Sequences <u>Week 2:</u> Arithmetic & Geometric Sequences <u>Week 3:</u> Exponential Growth	<b>Financial Responsibility</b>  <u>Weeks 1 and 2:</u> Money Matters: Why It Pays to Be Financially Responsible & Making Decisions <u>Week 3:</u> Dream Big- Money and Goals & The Cost of College: Financing Your Education:	<b>Pre-Geometric Thinking</b>  <u>Week 1:</u> Assessing Prior Knowledge <u>Week 2:</u> Foundations of Geometry I <u>Week 3:</u> Foundations of Geometry II	
	<b>CCLS</b>	Review of Grades 6-8 NQ and A standards	Linear and Exponential Sequences (F-IF.A.1, F-IF.A.2, F-IF.A.3, F-IF.B.6, F-BF.A.1a, F-LE.A.1, F-LE.A.2, F-LE.A.3)	A.SSE.1, A.REI.1, A.REI.2, F.IF.6, N.Q.2	Review of Grades 6-8 strands NQ & G and HS level strands A and F standards	
	<b>Instructional Shift</b>	#2: Reason Abstractly and Quantitatively: Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents, and the ability to contextualize—to pause as needed during the manipulation process in order to probe into the referents for the symbols involved.				
	<b>Essential Questions</b>	(1) How is thinking algebraically different from thinking arithmetically? (2) How do the properties contribute to algebraic understanding? (3) How can you represent quantities, patterns, and relationships? (4) Why is the ability to solve problems the heart of mathematics?	How can you solve a system of linear equations?	(1) What does it mean to be financially responsible? (2) What are my financial goals and how can I achieve them? (3) What financial factors do I need to consider in deciding what the right choice is for me?	(1) What are the building blocks of geometry? (2) How can you represent a three-dimensional figure with a two-dimensional drawing?	
	<b>Assessment</b>	excerpts of EngageNY Algebra Module Assessments (Grades 6-8)	EngageNY Algebra Module 3 Mid-Module Assessment	<ul style="list-style-type: none"> <li>Using The Wall Street Journal, obtain information about current economic trends that influence various saving, investing, spending, and borrowing decisions.</li> <li>Research and reflect on some of the factors that go into selecting a college; including areas of interest, tuition and starting salaries for potential careers.</li> </ul>	excerpts of EngageNY Geometry Module Assessments (Grades 6-8)	

		<b>Algebra Semester I</b>	<b>Algebra Semester II</b>	<b>Consumer Math</b>	<b>Geometry</b>
<b>Unit 2</b>	<b>Topic</b>	<b>Part 1: Relationships Between Quantities and Reasoning with Equations and Their Graphs</b>  <u>Weeks 1 and 2:</u> Graphs of Functions: Linear, Quadratic, and Exponential <u>Week 3:</u> <u>Analyzing Graphing Stories</u>	<b>Part 2: Linear &amp; Exponential Functions</b>  <u>Week 1:</u> Representing, Naming, and Evaluating Functions <u>Week 2:</u> The Graph of a Function <u>Week 3:</u> The Graph of the Equation $y = f(x)$	<b>Career Choices &amp; Banking</b>  <u>Week 1:</u> A Perfect Fit: Finding the Right Career for You, Making Money, & Understanding Take Home Pay <u>Week 2:</u> Banking Services & Selecting a Banking Partner <u>Week 3:</u> Financial Forces- Understanding Taxes & Inflation	<b>Congruence, Proof, and Constructions</b>  <u>Week 1:</u> Construct an Equilateral Triangle and Bisect an Angle <u>Week 2:</u> Solve for Unknown Angles & Write Proofs <u>Week 3:</u> Transformations, Rotations, & Reflections
	<b>CCLS</b>	Introduction to Functions Studied this Year—Graphing Stories (N-Q.A.1, N-Q.A.2, N-Q.A.3, A-CED.A.2)	Functions and Their Graphs (F-IF.A.1, F-IF.A.2, F-IF.B.4, F-IF.B.5, F-IF.C.7a)	A.CED.1, A.SSE.1, CC.9-12.A.CED.2, F.LE.1b	Experiment with transformations in the plane (G-CO.1- G-CO.5) Understand congruence in terms of rigid motions (G-CO.6- G-CO.8) Prove geometric theorems (G-CO.9- G-CO.11) Make geometric constructions (G-CO.12- G-CO.13)
	<b>Instructional Shift</b>	Mathematical Practice #1: Make Sense of Problems and Persevere in Solving Them: Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. Students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others so solving. Mathematical Practice #8: Express Regularity in Repeated Expression: Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. They continually evaluate the reasonableness of the intermediate results.			
	<b>Essential Questions</b>	(1) How can you formalize descriptions of what you learned before (variable, solution sets, etc.)? (2) How can we use algebra, in general, to solve problems for nonlinear equations?		(1) How do I determine the right career path for me? (2) How much money will I take home from my paycheck? (3) How do I choose a financial institution that is right for me? (4) How do taxes and inflation affect my money?	(1) How can you make a conjecture and prove that it is true?
	<b>Assessment</b>	EngageNY Algebra Module 1 Mid-Module Assessment	EngageNY Algebra Module 3 Mid-Module Assessment	<ul style="list-style-type: none"> <li>Evaluate the current employment market</li> <li>Read and interpret pay stubs</li> <li>Listen to an FDIC podcast and distinguish between the features of a bank, credit union and thrift; evaluating which is right for them</li> </ul>	EngageNY Geometry Module 1 Mid-Module Assessment

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<b>Unit 3</b>	<b>Topic</b>	<b>Part 2: Relationships Between Quantities and Reasoning with Equations and Their Graphs</b>  <u>Week 1:</u> Algebraic Expressions- Distributive, Associative, and Commutative Properties <u>Week 2:</u> Adding and Subtracting Polynomials <u>Week 3:</u> Multiplying Polynomials	<b>Part 3: Linear &amp; Exponential Functions</b>  <u>Week 1:</u> Transformation of Functions <u>Week 2:</u> Comparing Linear & Exponential Models <u>Week 3:</u> Using Graphs to Solve Problems	<b>Budgeting for Financial Dreams</b>  <u>Week 1:</u> The Art of Budgeting & A Plan for the Future- Making a Budget <u>Week 2:</u> Savvy Spending, The Influence of Advertising, & Consumer Awareness <u>Week 3:</u> Make it Happen- Saving for a Rainy Day & The Tools to Build Your Financial Dream	<b>Similarity, Proof, and Trigonometry</b>  <u>Week 1:</u> Scale Drawings using Ratio Method & Parallel Methods <u>Week 2:</u> Similarity & Dilations <u>Week 3:</u> Expressions with Radicals	
	<b>CCLS</b>	The Structure of Expressions (A-SSE.A.2, A-APR.A.1)	Transformations of Functions (A-REI.D.11, F-IF.C.7a, F-BF.B.3) Using Functions and Graphs to Solve Problems (A-CED.A.1, A-SSE.B.3c, F-IF.B.4, F-IF.B.6, F-IF.C.9, F-BF.A.1a, F-LE.A.2, F-LE.B.5).	A.CED.3, A.REI.1, A.CED.2	Understand similarity in terms of similarity transformations (G-SRT.1- G-SRT.3) Prove theorems involving similarity (G-SRT.4- G-SRT.5) Define trigonometric ratios and solve problems involving right triangles (G-SRT.6- G-SRT.8) Apply geometric concepts in modeling situations (G-MG.1 - G-MG.3)	
	<b>Instructional Shift</b>	Mathematical Practice #3: Construct Viable Arguments and Critique the Reasoning of Others. Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They can build a logical progression of statements to explore the truth of their conjectures. They can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They can compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—				
	<b>Essential Questions</b>	(1) How do the tools of algebra relate to equations and modeling relationships in graphic or chart form?	(1) What types of relationships can be modeled by linear graphs?	(1) How do I create and follow through with a budget? (2) What strategies should I use to save and invest my money? (3) How can I spend my money responsibly	(1) How do you show two triangles are similar? (2) What is the sum of the measures of the angles of a triangle? (3) How do you identify corresponding parts of congruent triangles? (4) How do trigonometric ratios relate to similar right triangles?	
	<b>Assessment</b>	EngageNY Algebra Module 1 Mid-Module Assessment	EngageNY Algebra Module 3 End-of-Module Assessment	<ul style="list-style-type: none"> <li>Analyze three different budgeting scenarios to determine which is the best and why</li> <li>Research savings strategies offered by different banks to assess the fees, requirements and savings</li> </ul>	EngageNY Geometry Module 2 Mid-Module Assessment	
<b>Unit 4</b>	<b>Topic</b>	<b>Part 3: Relationships Between Quantities and Reasoning with Equations and Their Graphs</b>  <u>Week 1:</u> Solving Equations & Inequalities <u>Week 2:</u> Solution Sets to Equations with Two Variables <u>Week 3:</u> Solution Sets to Inequalities with Two Variables	<b>Part 1: Polynomial and Quadratic Expressions, Equations, and Functions</b>  <u>Week 1:</u> Multiplying and Factoring Polynomial Expressions <u>Week 2:</u> Creating and Solving Quadratic Equations in One Variable <u>Week 3:</u> Interpreting Quadratic Functions from Graphs and Tables	<b>Home &amp; Auto</b>  <u>Week 1:</u> Living on Your Own & Money and Roommates <u>Week 2:</u> Buying a Home & Home Sweet Home <u>Week 3:</u> Cars and Loans & Researching/ Buying a Car	<b>Extending to Three Dimensions</b>  <u>Week 1:</u> Properties of Area <u>Week 2:</u> Prisms, Cylinders, Pyramids, & Cones and their Cross Sections <u>Week 3:</u> Scaling Principle for Volume	

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	<b>CCLS</b> Solving Equations and Inequalities (A-CED.A.3, A-CED.A.4, A-REI.A.1, A-REI.B.3, A-REI.C.5, A-REI.C.6, A-REI.D.10, A-REI.D.12) Creating Equations to Solve Problems (N-Q.A.1, A-SSE.A.1, A-CED.A.1, A-CED.A.2, A-REI.B.3).	Quadratic Expressions, Equations, Functions, and Their Connection to Rectangles (A-SSE.A.1, A-SSE.A.2, A-SSE.B.3a, A-APR.A.1, A-CED.A.1, A-CED.A.2, A-REI.B.4b, A-REI.D.11, F-IF.B.4, F-IF.B.5, F-IF.B.6, F-IF.C.7a)	F.IF.6, F.1F.4 F, N.Q.2	Explain volume formulas and use them to solve problems (G.MD.1, G.MD.3) Visualize relationships between two-dimensional and three-dimensional objects (G.MD.4) Apply geometric concepts in modeling situations (G.MG.1)
	<b>Instructional Shift</b> Mathematical Practice #4: Model with Mathematics: Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. Mathematical Practice #5: Use Appropriate Tools Strategically: Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations.			
	<b>Essential Questions</b> (1) How can we utilize equations to solve problems? (2) Why do we want to compare rather than get an exact answer? (3) What can we do with a system of equations/inequalities that we cannot do with a single equation/inequality?	(1) Why do we need to use exponential notation to model situations? (2) Why should we factor? (3) Can two algebraic expressions that appear to be different be equivalent?	(1) What do I need to consider in a financial partnership? (2) What do I need to know about buying a house? (3) How can I turn my dream of owning a car into reality?	(1) How can you change a figure's size without changing its shape? (2) How can you represent a transformation in the
	<b>Assessment</b> EngageNY Algebra Module 1 End-of-Module Assessment	EngageNY Algebra Module 4 Mid-Module Assessment	<ul style="list-style-type: none"> <li>Calculate the monthly mortgage payment in various scenarios</li> <li>Calculate car payments using five different lending scenarios</li> </ul>	EngageNY Geometry Module 3 Mid-Module Assessment
<b>Unit 5</b>	<b>Topic</b> <b>Part 1: Descriptive Statistics</b> <u>Week 1:</u> Distributions and Shapes <u>Week 2:</u> Estimating Centers and Determining the Mean <u>Week 3:</u> Standard Deviation	<b>Part 2: Polynomial and Quadratic Expressions, Equations, and Functions</b> <u>Week 1:</u> Solving Quadratic Equations <u>Week 2:</u> Graphing Quadratic Equations <u>Week 3:</u> Graphing Cubic Square and Cubic Root Functions	<b>Credit &amp; Debt</b> <u>Week 1:</u> Credit & Why Credit Matters <u>Week 2:</u> Credit Cards & Using Credit Wisely <u>Week 3:</u> Avoiding Financial Pitfalls	<b>Connecting Algebra and Geometry through Coordinates</b> <u>Week 1:</u> Rectangular and Triangular Regions Defined by Inequalities <u>Week 2:</u> Perpendicular and Parallel Lines in the Cartesian Plane <u>Week 3:</u> Perimeters and Areas of Polygonal Regions in the Cartesian Plane
	<b>CCLS</b> Shapes and Centers of Distributions (S-ID.A.1, S-ID.A.2, S-ID.A.3) Describing Variability and Comparing Distributions (S-ID.A.1, S-ID.A.2, S-ID.A.3)	Using Different Forms for Quadratic Functions (N-RN.B.3, A-SSE.A.1, A-SSE.A.2, A-SSE.B.3a, A-SSE.B.3b, A-APR.B.3, A-CED.A.1, A-CED.A.2, A-REI.B.4, F-IF.B.4, F-IF.B.6, F-IF.C.7a, F-IF.C.8a) Function Transformations and Modeling (A.CED.A.2, F-IF.B.6, F-IF.C.7b, F-IF.C.8a, F-IF.C.9, F-BF.B.3).	F.LE.1c, A.REI.2, A.CED.3	Use coordinates to prove simple geometric theorems algebraically (G.GPE.4- G.GPE.7)

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<b>Instructional Shift</b>	Mathematical Practice #7: Make Use of Structures: Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community			
<b>Essential Questions</b>	(1) How can collecting and analyzing data help you make decisions or predictions?	(1) How does the graph of a quadratic function relate to its algebraic equation?	(1) What does it mean to be “creditworthy?” (2) How can I use credit wisely? (3) How can I stay out of debt?	(1) How do you prove that two lines are parallel or perpendicular? (2) How do you write an equation of a line in the coordinate plane?
<b>Assessment</b>	EngageNY Algebra Module 2 Mid-Module Assessment	EngageNY Algebra Module 4 End-of-Module Assessment	<ul style="list-style-type: none"> <li>Present in class (or on video) several positive and negative actions that would affect a person’s credit history</li> <li>Evaluate credit recovery methods and explain their reasoning</li> </ul>	EngageNY Geometry Module 4 Mid-Module Assessment
<b>Unit 6</b>	<b>Part 2: Descriptive Statistics</b>  <u>Week 1:</u> Summarizing Bivariate Categorical Data <u>Week 2:</u> Modeling Relationships & Interpreting Residuals with a Line <u>Week 3:</u> Interpreting Correlation	<b>A Synthesis of Modeling with Equations and Functions</b>  <u>Week 1:</u> Analyzing a Graph and Data Set <u>Week 2:</u> Modeling a Context from a Graph and Sequence <u>Week 3:</u> Modeling a Context from Data and Verbal Description	<b>Consumer Privacy &amp; Investing</b>  <u>Week 1:</u> Consumer Privacy & Protecting Your Identity <u>Week 2:</u> Insurance and Estate Planning & Understanding Interests and Investments <u>Week 3:</u> Overview of Investing & Charitable Giving	<b>Circles with and Without Coordinates</b>  <u>Week 1:</u> Central and Inscribed Angles <u>Week 2:</u> Arcs, Sectors, Secants, and Tangents <u>Week 3:</u> Equations for Circles and Their Tangents
<b>CCLS</b>	Categorical Data on Two Variables (S-ID.B.5, S-ID.C.9) Numerical Data on Two Variables (S-ID.B.6, S-ID.C.7, S-ID.C.8, S-ID.C.9)	Elements of Modeling (N-Q.A.2, A-CED.A.2, F-IF.B.4, F-IF.B.5, F-BF.A.1a, F-LE.A.1b, F-LE.A.1c, F-LE.A.2) Completing the Modeling Cycle (N-Q.A.2, N-Q.A.3, A-CED.A.1, A-CED.A.2, F-IF.B.4, F-IF.B.5, F-IF.B.6, F-BF.A.1a, F-LE.A.1b, F-LE.A.1c, F-LE.A.2)	F.LE.1c, F.LE.3, F.LE.1a, .F.LE.3 O, A.REI.1	Understand and apply theorems about circles (G.C.1- G.C.3) Find arc lengths and areas of sectors of circles (G.C.5) Translate between the geometric description and the equation for a conic section (G.GPE.1) Use coordinates to prove simple geometric theorems algebraically (G.GPE.4) Apply geometric concepts in modeling situations (G.MG.1)
<b>Instructional Shift</b>	Mathematical Practice #6: Attend to Precision: Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently and express numerical answers with a degree of precision appropriate for the problem context. Mathematical Practice #5: Use Appropriate Tools Strategically: Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations.			
<b>Essential Questions</b>	(1) How is probability related to real-world events? (2) How can you make and interpret different representations of data?	(1) How can you use functions to model real-world situations?	(1) How can I protect my identity? (2) How does interest and investing affect my money? (3) How do investing and the stock market work?	(1) How do you find the equation of a circle in the coordinate plane? (2) How can you prove relationships between angles and arcs in a circle?

		<b>Algebra Semester I</b>	<b>Algebra Semester II</b>	<b>Consumer Math</b>	<b>Geometry</b>
	<b>Assessment</b>	EngageNY Algebra Module 2 End-of-Module Assessment	EngageNY Algebra Module 5 End-of-Module Assessment	Calculate how earnings vary based on investment strategies, interest types and interest rates	EngageNY Geometry Module 5 Mid-Module Assessment
<b>By the End of Year</b>		The fundamental purpose of this course is to formalize and extend the mathematics that students learned in the middle grades. Because it is built on the middle grades standards, this is a more ambitious version of Algebra I than has generally been offered. The modules deepen and extend understanding of linear and exponential relationships by contrasting them with each other and by applying linear models to data that exhibit a linear trend, and students engage in methods for analyzing, solving, and using quadratic functions. The Mathematical Practice Standards apply throughout each course and, together with the content standards, prescribe that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations. © EngageNY		In Consumer Math, students study and review arithmetic skills they can apply in their personal lives and in their future careers. The course begins with a focus on occupational topics; it includes details on jobs, wages, deductions, taxes, insurance, recreation and spending, and housing expenses. Later in the course, students learn about creditworthiness, the stock market, insurance, and estate planning. This course prepares students to apply algebraic and function skills in the real world as it relates to the personal finance skills they need to succeed in life after high school	The fundamental purpose of the course in Geometry is to formalize and extend students' geometric experiences from the middle grades. Students explore more complex geometric situations and deepen their explanations of geometric relationships, moving towards formal mathematical arguments. Important differences exist between this Geometry course and the historical approach taken in Geometry classes. For example, transformations are emphasized early in this course. Close attention should be paid to the introductory content for the Geometry conceptual category found in the high school CCSS. © EngageNY