Flemington-Raritan Regional School District
Flemington, New Jersey

Mathematics Curriculum
Grades 7-8

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Council of Instruction Review	Date: June 12, 2013
BOE Curriculum Committee Review	Date: June 13, 2013
Board of Education Approval	Date: October 21, 2013

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District Mission Statement

The Flemington-Raritan Regional School District provides our students with an exceptional education, empowering them to become problem solvers, collaborators and critical thinkers. The district creates a culture in which students act responsibly and communicate effectively in preparing to become productive citizens in a changing, global society.

It is the expectation of the Flemington-Raritan School District that all pupils achieve the New Jersey Core Curriculum Content Standards at all grade levels.

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Philosophy

The Grades 7-8 Mathematics Curriculum is based on the belief that all students can learn mathematics. The mathematics program develops each child's mathematical reasoning in understanding the big ideas (concepts) of mathematics. The program sets high benchmarks and expectations for students to effectively express mathematical content, process, and skills through verbal and written communication.

The use of technological tools is a vital component of the program, not only to enhance the understanding of concepts, but an important tool used in the adult world to access and analyze real world data.

In accordance with the above beliefs, the program includes a comprehensive range of content in a variety of contexts. The program integrates skills, concepts, and applications based on the 2004 New Jersey Core Curriculum Content Standards for Mathematics, providing each student the opportunity to become an active participant in his/her mathematical education. Students explore the beauty of mathematics with confidence, with the aim to become a generation of mathematically literate adults.

The grades 7-8 mathematics program is built on developmentally appropriate practice for middle school students:

- All students can learn and understand mathematics;
- Students construct their own meaning based on prior experience;
- Learning occurs in social situations;
- Learning is tied to contextual, real-world situations;
- Learning involves numerous strategies involving higher order thinking skills. Students continually reflect on the following question: "Does this make sense?"

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The 21st Century Learning and Thinking Skills are an integral part of the 7-8 mathematics program including:

- Critical Thinking and Problem Solving Skills
- Communication Skills
- Creativity and Innovation Skills
- Collaboration Skills
- Information and Media Literacy Skills
- Contextual Learning Skills

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2012 Common Core Standards

The new Common Core Standards contain mathematical practices in which educators should seek to develop in their learners.

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Curriculum for grades 7 and 8 reflects the relevant standards, clusters and domains for grades 7, 8 and, where appropriate, grades 9-12. These standards and their associated clusters, are enumerated below:

Grade 7 Overview

1. **Ratios and Proportional Relationships**
    a. Analyze proportional relationships and use them to solve real-world and mathematical problems
2. **The Number System**
    a. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
3. **Expressions and Equations**
    a. Use properties of operations to generate equivalent expressions.
    b. Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
4. **Geometry**
    a. Draw, construct and describe geometrical figures and describe the relationship between them.
    b. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

5. **Statistics and Probability**
    a. Use random sampling to draw inferences about a population.
    b. Draw informal comparative inferences about two populations.
    c. Investigate chance processes and develop, use, and evaluate probability models.

Grade 8 Overview

1. **The Number System**
    a. Know that there are numbers that are not rational, and approximate them by rational numbers.
2. **Expressions and Equations**
    a. Work with radicals and integer exponents.
    b. Understand the connections between proportional relationships, lines, and linear equations.
    c. Analyze and solve linear equations and pairs of simultaneous linear equations.
3. **Functions**
    a. Define, Evaluate, and compare functions.
    b. Use functions to model relationships between quantities.
4. **Geometry**
    a. Understand congruence and similarity using physical models, transparencies, or geometry software.
    b. Understand and apply the Pythagorean Theorem.
    c. Solve real-world mathematical problems involving volume of cylinders, cones and spheres.
5. **Statistics and Probability**
    a. Investigate patterns of association in bivariate data.

Grades 9-12 Overview

1. **Number and Quantity**
2. **Algebra**
3. **Functions**
4. **Modeling**
5. **Geometry**
6. **Statistics and Probability**

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Program Description

The curriculum emphasizes a balance between hands-on, inquiry-based problem solving, and traditional mathematical computation and arithmetic. Teachers focus on making connections between facts and fostering new understanding in students, and tailor their teaching strategies to student responses, encouraging students to analyze, interpret, and predict information. Teachers also rely heavily on open-ended questions and promote extensive dialogue among students through cooperative learning strategies.

Assessments consist of teacher-created quizzes, tests, teacher observations, student responses, student projects, student daily work, district wide and state wide testing as well as the Hunterdon Central High School placement exams. In practice, assessment is ongoing and serves to provide feedback to students and to inform instruction. Teachers use a variety of assessment techniques, both quantitative and qualitative, to assess student development in the areas of mathematical conceptual understanding, mathematical procedures, and mathematical process. Multiple choice, short answer, and open-ended responses requiring written explanations are all components of the ongoing assessments in the classroom.

In grades 7 and 8, all students are grouped homogeneously by ability and achievement in mathematics. Various district wide tests, teacher recommendation, and student performance are considered when placing students for mathematics. Mathematics textbooks, support materials, and teacher instruction are modified according to the different needs of students in order for students to meet the New Jersey Core Curriculum Standards for each grade level. Continual assessment and reflection upon student work and achievement drives instruction. All student data, performance and achievement are constantly monitored in order to move students forward to their fullest mathematical potential. Placements procedures include not only student ability and achievement in concepts and computation, but also the ability to work independently at an accelerated pace.

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The following textbooks are used in grades 7 and 8 mathematics classes at J.P. Case Middle School:

Level	Textbook
Grade 7	
7th Grade Math	McDougal Littell Course 2
	Holt Course 2 (Special Education)
Algebra IA	Larson Algebra 1 (first half)
Algebra IB	Larson Algebra 1 (second half)
Grade 8	
Pre-Algebra	McDougal Littell Course 3
	Holt Course 3 (Special Education)
Algebra IB	Larson Algebra 1 (second half)
Advanced Algebra	Larson Algebra 2
Algebra II	Larson Algebra 2

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Calculator Philosophy

The J.P. Case Middle School mathematics program believes that calculators are a vital component of the mathematics program.

The following rationale from Texas Instruments covers many of the advantages of using calculators, as outlined by the NCTM and the 2004 New Jersey Core Curriculum Standards.

Calculators are valuable educational tools that allow students to reach a higher level of mathematical power and understanding. By reducing the time that, in the past, was spent on performing tedious paper-and-pencil arithmetic and algebraic algorithms, calculator use today allows students and teachers to spend more time developing mathematical understanding, reasoning, number sense, and applications. They afford students learning tools that complement, but do not replace, mental and paper-and-pencil skills, and they expand students' ability to solve problems by providing multiple solution techniques.

Calculator technology allows students who would ordinarily be frustrated or bored by tedious manipulations to have access to the real mathematics itself, thus gaining a higher level of mathematical understanding, rather than giving up. The fact is, calculators are better tools to do some of the computations and manipulations that were once done with paper and pencil. In the past, paper and pencil were the only tools available. Appropriate use of technology and associated pedagogy will get more students thinking and reasoning mathematically. Thus more students will develop useful mathematical understanding and mathematical power.

Despite all of their benefits and capabilities, calculators will never be able to replace the human mind when it comes to knowing how to read and understand a problem situation, writing an appropriate equation for the problem, choosing which operations to use to solve the problem, correctly interpreting the solution displayed on the calculator, and determining the appropriateness of the answer. Calculators are only as effective as the information students enter into them. Calculators, in conjunction with mental, paper-and-pencil, and estimation skills when appropriate, comprise the tools to

help students work through the computations and manipulations necessary for solving problems. Calculators are like computer word processors to English students. Computer word processors do not "create" essays but they do facilitate the creation of an essay. Calculators do not "understand" mathematics but they do facilitate the understanding of mathematics. Despite all of their capabilities, however, they will never replace the important, complex thought processes of which only humans are capable.

7th Grade Math Curriculum

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7th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.1.A.2. Demonstrate a sense of the relative magnitudes of numbers.	Science Social Studies	Parts per Billion Lab Population of the Middle Ages
4.1.A.3. Understand and use ratios, rates, proportions, and percents (including percents greater than 100 and less than 1) in a variety of situations.	Social Studies	Junior Scholastic Magazines
4.1.B. 1. Use and explain procedures for performing calculations with integers and all number types named above with: Pencil-and-paper; Mental math; Calculator.	Science	Labs throughout the year
4.1.C.1. Use equivalent representations of numbers such as fractions, decimals, and percents to facilitate estimation.	All Disciplines	Discussions, labs all year long
4.2.A.2. Understand and apply the concept of similarity: Using proportions to find missing measures; Scale drawings; Models of 3D objects.	Art Social Studies	Scale Drawings, Polygon Project Reading a map, identifying landmarks on a map

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7th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.2.B.1. Understand and apply transformations: Finding the image, given the pre-image, and vice-versa; Finding the image, given the pre-image, and vice-versa; Sequence of transformations needed to map one figure onto another; Reflections, rotations, and translations result in images congruent to the pre-image; Dilations (stretching/shrinking) result in images similar to the pre-image.	Art	Tessellations, Transformations
4.2.C.1. Use coordinates in four quadrants to represent geometric concepts.	Social Studies	Map Reading
4.2.D.1. Solve problems requiring calculations that involve different units of measurement within a measurement system (e.g., 4'3" plus 7'10" equals 12'1").	Science Social Studies Art	Labs, Metric system use Reading a scale on a map Making a scale drawing
4.2.E.1. Develop and apply strategies for finding perimeter and area: Geometric figures made by combining triangles, rectangles and circles or parts of circles; Estimation of area using grids of various sizes.	Social Studies	iSearch, population density

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7th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.3.A.1. Recognize, describe, extend, and create patterns involving whole numbers, rational numbers, and integers: Descriptions using tables, verbal and symbolic rules, graphs, simple equations or expressions; Finite and infinite sequences; Arithmetic sequences (i.e., sequences generated by repeated addition of a fixed number, positive or negative); Geometric sequences (i.e., sequences generated by repeated multiplication by a fixed positive ratio, greater than 1 or less than 1).	Social Studies	iSearch data gathering
4.3.C.1. Analyze functional relationships to explain how a change in one quantity can result in a change in another, using pictures, graphs, charts, and equations.	Science	Volume and Density labs Motion and Sound labs
4.3.C.2. Use patterns, relations, symbolic algebra, and linear functions to model situations: Using manipulatives, tables, graphs, verbal rules, algebraic expressions/equations/inequalities; Growth situations, such as population growth and compound interest, using recursive (e.g., NOW- NEXT) formulas (cf. science standards and social studies standards).	Science	Volume and Density labs Motion and Sound labs

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7th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.3.D.2. Solve simple linear equations informally and graphically: Multi-step, integer coefficients only (although answers may not be integers); Using paper-and-pencil, calculators, graphing calculators, spreadsheets, and other technology.	Science	Motion and Sound unit Volume and Density unit
4.4.A.1. Select and use appropriate representations for sets of data, and measures of central tendency (mean, median, and mode): Type of display most appropriate for given data; Box-and-whisker plot, upper quartile, lower quartile; Scatter plot; Calculators and computer used to record and process information.	Social Studies Discovering Algebra	iSearch Paper Use of Statistics to compare gender equality, life expectancy, zoology, election results, deomgraphics, penny data
4.4.A.2. Make inferences and formulate and evaluate arguments based on displays and analysis of data.	Science	Lab write-ups Daily Discussions in Social Studies and Science
4.4.B.1. Interpret probabilities as ratios, percents, and decimals.	Science	Probability of weather occurring
4.4.B.3. Estimate probabilities and make predictions based on experimental and theoretical probabilities.	Economics	Insurance Industry

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7th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.4.C.1. Apply the multiplication principle of counting: Permutations: ordered situations with replacement (e.g., number of possible license plates) vs. ordered situations without replacement (e.g., number of possible slates of 3 class officers from a 23 student class).	Social Studies	Population increases and license plate number, area codes, phone numbers (availability)
4.4.C.2. Explore counting problems involving Venn diagrams with three attributes.	Language Arts	Venn Diagrams - compare and contrast
4.5.A.2. Solve problems that arise in mathematics and in other contexts: Open-ended problems; Non-routine problems; Problems with multiple solutions; Problems that can be solved in several ways.	Language Arts	Reading Skills
4.5.A.6. Distinguish relevant from irrelevant information, and identify missing information.	Language Arts	Reading Skills
4.5.B.1. Use communication to organize and clarify mathematical thinking: Reading and writing; Discussion, listening, and questioning.	Language Arts	Grammar Usage, Paragraph Construction Skills
4.5.B.2. Communicate mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing.	Language Arts	Grammar Usage, Paragraph Construction Skills

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7th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.5.B.3. Analyze and evaluate the mathematical thinking and strategies of others.	Language Arts	Peer editing
4.5.C.3. Recognize that mathematics is used in a variety of contexts outside of mathematics.	Science Social Studies Art Computer Applications Cooking and Sewing	Physics Formulas, graphs, tables Statistics Transformations, perspectives, scale drawing, computer aided design Marble maze Measuring Ingredients, Measuring material
4.5.C.4. Apply mathematics in practical situations and in other disciplines.	Science Social Studies Art Computer Applications Cooking and Sewing	Physics Formulas, graphs, tables Statistics Transformations, perspectives, scale drawing, computer aided design Marble maze Measuring Ingredients, Measuring material
4.5.D.2. Use reasoning to support their mathematical conclusions and problem solutions.	Language Arts	Persuasive writing, supporting their ideas
4.5.D.5. Make and investigate mathematical conjectures: Counterexamples as a means of disproving conjectures; Verifying conjectures using informal reasoning or proofs.	Science	Scientific Method

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7th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.5.D.6. Evaluate examples of mathematical reasoning and determine whether they are valid.	Science	Scientific Method
4.5.E.1. Create and use representations to organize, record, and communicate mathematical ideas: Concrete representations (e.g., base-ten blocks or algebra tiles); Pictorial representations (e.g., diagrams, charts, or tables); Symbolic representations (e.g., a formula); Graphical representations (e.g., a line graph).	Science Social Studies	Gathering Data from Labs Graph Population over time
4.5.E.3. Use representations to model and interpret physical, social, and mathematical phenomena.	See 4.4 Standards	
4.5.F.1. Use technology to gather, analyze, and communicate mathematical information.	Science Social Studies	Labs, temperature probes, sound waves, light refraction iSearch
4.5.F.2. Use computer spreadsheets, software, and graphing utilities to organize and display quantitative information.	Computers	

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7th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.5.F.6. Use computer-based laboratory technology for mathematical applications in the sciences.	Science	Long run value

7th Grade Math Curriculum

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Ratios and Proportional Relationships

7.RP.1

Analyze proportional relationships and use them to solve real-world and mathematical problems

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1. Compute unit rate associated with ratios of fractions, including ratios of length, areas, and other quantities measured in like or different units.	McDougal Littell Chapter 8,9 Pre-Algebra With Pizzazz! Math With Pizzazz! Books C-E Holt Chapter 5,6* Kuta Software	Dilations, Reductions Similarity Lab Sales Tax Newspaper Coupons Grades Real World Problems	Teacher Observation Test/Quiz Do Now

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Ratios and Proportional Relationships

7.RP.2

Analyze proportional relationships and use them to solve real-world and mathematical problems

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1.Recognize and represent proportional relationships between quantities	McDougal Littell Chapter 8,9 Pre-Algebra With Pizzazz! Math With Pizzazz! Books C-E Holt Chapter 5,6* Kuta Software	Dilations, Reductions Similarity Lab Sales Tax Newspaper Coupons Grades Real World Problems	Teacher Observation Test/Quiz Do Now
a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	McDougal Littell Chapter 6, 7 Math with Pizzazz! Books C-E Pre-Algebra with Pizzazz! Holt Chapter 1, 4, 8* Kuta Software	White Boards – Graphing Points Geometer's Sketchpad Communicators* Coordinate plane white boards Geoboards	Teacher Observation Test/Quiz Do Now Daily Warm-ups
b. Identify the constant of proportionality (unit rate) in tables graphs, equations, diagrams, and verbal descriptions of proportional relationships.	McDougal Littell Chapter 1,7 Holt Chapter 1,2*	Geometer's Sketchpad-to graph patterns Use of Graphing Calculators Teacher-Created Problems Dot patterns that involve a recursive routine. Use a line-up to explore patterns*	Teacher Observation Quiz/Test Do Now Daily Warm-up

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Ratios and Proportional Relationships

7.RP.2

Analyze proportional relationships and use them to solve real-world and mathematical problems

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
c. Represent proportional relationships by equations.	McDougal Littell Chapter 7 Discovering Algebra - 1.6 Holt Chapter 4* Kuta Software	Input/Output Tables Geometer's Sketchpad –Lesson Links Population Growth Activity Lesson Investigation 1.6	Teacher Observation Quiz/Test Do Now Daily Warm-up
d. Explain what a point *(x, y)* on the graph of a proportional relationship means in terms of the situation with special attention to the points (0, 0) and (1, *r*) where *r* is the unit rate.	McDougal Littell Chapter 7 Discovering Algebra - 1.6 Holt Chapter 4* Kuta Software		Teacher Observation Quiz/Test Do Now Daily Warm-up

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Ratios and Proportional Relationships

7.RP.3

Analyze proportional relationships and use them to solve real-world and mathematical problems

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1. Use proportional relationships to solve multistep ratio and percent problems.	McDougal Littell Chapter 8,9 Pre-Algebra With Pizzazz! Math With Pizzazz! Books C-E Holt Chapter 5,6* Kuta Software	Dilations, Reductions Similarity Lab Sales Tax Newspaper Coupons Grades Real World Problems	Teacher Observation Test/Quiz Do Now

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The Number System

7.NS.1

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
7.NS.1.Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	McDougal Littell Chapter 2,4,6,9 Pre-Algebra With Pizzazz!! Math With Pizzazz! Books C-E Developing Skills in Algebra One, Book A Holt Chapter 1,2,3* Kuta Software	Interactive Student Line-Up Games Geometer's Sketchpad- Lesson Links Newspaper Coupons	Teacher Observation Test/Quiz Do Now iPod/iPad
a. Describe situations in which opposite quantities combine to make 0.	McDougal Littell Chapter 2,5,6 Geometer's Sketchpad- Lesson Links Mad Minute Holt Chapter 2,3* Kuta Software	Minute Math* Geometer's Sketchpad-Lesson Links Use of Graphing Calculator Teacher-Created Worksheets	Teacher Observation Do Now Test/Quiz iPod/iPad

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The Number System

7.NS.1

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
b. Understand p+q as the number located a distance IqI from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.	McDougal Littell Chapter 2,5,6 Geometer's Sketchpad Lesson Links Mad Minute Holt Chapter 2,3* Kuta Software	Minute Math* Geometer's Sketchpad-Lesson Links Use of Graphing Calculator Teacher-Created Worksheets	Teacher Observation Do Now Test/Quiz iPod/iPad
c. Understand subtraction of rational numbers as adding the additive inverse, p-q=p+(-q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	McDougal Littell Chapter 1,6,7 Geometer's Sketchpad Holt Chapter 2* Kuta Software	Geometer's Sketchpad-Lesson Links	Teacher Observation Quiz/Test Do Now Daily Warm-up iPod/iPad
d. Apply properties of operations as strategies to add and subtract rational numbers.	McDougal Littell Chapter 6 Discovering Algebra 4.2/4.3 Holt Chapter 1*	Lesson Investigation 4.2/4.3 Hands on Equations Balance	Teacher Observation Quiz/Test Do Now Daily Warm-up

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The Number System

7.NS.2

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
7.NS.2. Apply and extend previous understandings of multiplication and division of fractions to multiply and divide rational numbers.	McDougal Littell Chapter 2,5,6 Geometer's Sketchpad Lesson Links Mad Minute Holt Chapter 2,3* Kuta Software	Minute Math* Geometer's Sketchpad-Lesson Links Use of Graphing Calculator Teacher-Created Worksheets	Teacher Observation Do Now Test/Quiz iPod/iPad
a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (-1)(-1)=1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	McDougal Littell Chapter 2,5,6 Geometer's Sketchpad Lesson Links Mad Minute Holt Chapter 2,3* Kuta Software	Minute Math* Geometer's Sketchpad-Lesson Links Use of Graphing Calculator Teacher-Created Worksheets	Teacher Observation Do Now Test/Quiz iPod/iPad

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The Number System

7.NS.2

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then -(p/q) = (-p)/q = p/(-q). Interpret quotients of rational numbers by describing real-world contexts.	McDougal Littell Chapter 2,5,6 Geometer's Sketchpad Lesson Links Mad Minute Holt Chapter 2,3* Kuta Software	Minute Math* Geometer's Sketchpad-Lesson Links Use of Graphing Calculator Teacher-Created Worksheets	Teacher Observation Do Now Test/Quiz iPod/iPad
c. Apply properties of operations as strategies to multiply and divide rational numbers.	McDougal Littell Chapter 6 Discovering Algebra 4.2/4.3 Holt Chapter 1*	Lesson Investigation 4.2/4.3 Hands on Equations Balance	Teacher Observation Quiz/Test Do Now Daily Warm-up

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The Number System

7.NS.2

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	McDougal Littell Chapter 1,2,4,5,6,7,9 Pre-Algebra With Pizzazz! Math With Pizzazz! Books C-E Holt Chapter 1,2,3* Kuta Software	Number Line Graphing Comparing Bar Graphs Spend $1000/sec, How long to spend a trillion dollars? Calculator Use Interactive Student Line-Up Graphing Ordered Pairs Measures of Center I Have-Who Has Game White Board Activities Teacher-Generated Questions Daily Use of Common Fractions, Decimal and Percents Coupons	Teacher Observation Test/Quiz Do Now Teacher will emphasize the difference through class discussion and practice problems

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The Number System

7.NS.3

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
7.NS.3. Solve real-world and mathematical problems involving the four operations with rational numbers.	McDougal Littell Chapters 1-13 Menu Problems (Middle School Math Teacher) NCTM Navigations Series Van De Walle Connected Mathematics Holt Chapters 1-12*	Direct Instruction Investigations Collaborative/Cooperative Learning Written Explanations Student Directed Discussions	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation

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Expressions and Equations
7.EE.1

Use properties of operations to generate equivalent expressions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1.Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	McDougal Littell Chapter 6 Discovering Algebra 4.2/4.3 Holt Chapter 1* Kuta Software	Lesson Investigation 4.2/4.3 Hands on Equations Balance	Teacher Observation Quiz/Test Do Now Daily Warm-up

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Expressions and Equations
7.EE.2

Use properties of operations to generate equivalent expressions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1. Understand that rewriting an expression is different in different forms in a problem context can shed light on the problem and how the quantities are related.	McDougal Littell Chapter 2,5,6 Geometer's Sketchpad Lesson Links Mad Minute Holt Chapter 2,3* Kuta Software	Minute Math* Geometer's Sketchpad-Lesson Links Use of Graphing Calculator Teacher-Created Worksheets	Teacher Observation Quiz/Test Do Now Daily Warm-up

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Expressions and Equations

7.EE.3

Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1. 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.	McDougal Littell Chapter 1,2,4,6 Pre-Algebra With Pizzazz! Math With Pizzazz! Books C-E Holt Chapter 1,2,3* Kuta Software	Number Line Graphing Comparing Bar Graphs Spend $1000/sec, How long to spend a trillion dollars? Calculator Use	Teacher Observation Quiz/Test Do Now Daily Warm-up

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Expressions and Equations

7.EE.4

Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solv eproblems by reasoning about the quantities. **A. Solve word problems leading to equtaions of the form px +q=r and p(x+q)=r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.**	McDougal Littell Chapter 1,2,5,7 Discovering Algebra Chapter 4 Pre-Algebra with Pizzazz! Holt Chapter 12* Kuta Software	Working Backwards Tables Hands on Equations Balance Graphing Calculator Use	Teacher Observation Quiz/Test Do Now Daily Warm-up
B. Solve word problems leading to inequalities of the form $px+q>r$ or $px+q<r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	McDougal Littell Chapter 6, 7 Discovering Algebra - 4.2/4.3 Holt Chapter 1* Kuta Software	Lesson Investigation 4.2/4.3 Hands on Equations Balance	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry

7.G.1

Draw, construct, and describe geometrical figures and describe the relationship between them.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	McDougal Littell Chapters 8,10,12 Math with Pizzazz! Books C-E Pre-Algebra with Pizzazz! Holt Chapter 5,6,10* Kuta Software	Similarity Lab Graphing Calculators Flagpole Measurement by using shadow of pole and student Math Cartoons Geometer's Sketchpad-Lesson Links	Teacher Observation Quiz/Test Do Now Daily Warm-up iPod/iPad

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry

7.G.2

Draw, construct, and describe geometrical figures and describe the relationship between them.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1. 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.	McDougal Littell Chapter 10 Math with Pizzazz! Books C-E Pre-Algebra with Pizzazz! Holt Chapter 8,9*	Teacher-Generated Questions Question of Same Perimeter, What is the Maximum Area? Give closed properties, have class draw shape. If class has different shapes, ask for more properties. Discuss necessary properties and subsets.	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry

7.G.3

Draw, construct, and describe geometrical figures and describe the relationship between them.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1.Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	McDougal Littell Chapter 10-12 Math with Pizzazz! Books C-E Pre-Algebra with Pizzazz! Holt Chapter 5,9*	Various Investigations On-Going Class Discussions Geometer's Sketchpad – Lesson Link	Teacher Observation Quiz/Test Do Now Daily Warm-up iPod/iPad

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry

7.G.4

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1. 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.	McDougal Littell Chapter 11 Math with Pizzazz! Books C-E Pre-Algebra with Pizzazz! Holt Chapter 8,9*	Teacher-Generated Questions Question of Same Perimeter, What is the Maximum Area? Give closed properties, have class draw shape. If class has different shapes, ask for more properties. Discuss necessary properties and subsets.	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry

7.G.5

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1.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.	McDougal Littell Chapter 10 Math with Pizzazz! Books C-E Pre-Algebra with Pizzazz! Holt Chapter 8,9*	Teacher-Generated Questions Question of Same Perimeter, What is the Maximum Area? Give closed properties, have class draw shape. If class has different shapes, ask for more properties. Discuss necessary properties and subsets.	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry

7.G.6

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1. Solve real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects-composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	McDougal Littell Chapters 10-12 Math with Pizzazz! Books C-E Pre-Algebra with Pizzazz! Holt Chapter 8,9*	Teacher-Generated Questions Question of Same Perimeter, What is the Maximum Area? Give closed properties, have class draw shape. If class has different shapes, ask for more properties. Discuss necessary properties and subsets.	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
7.SP.1

Use random sampling to draw inferences about a population.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1. Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of the population. Understand that random sampling tends to produce representative samples and support valid inferences.	McDougal Littell Chapter 3 Student Pages 756-757 TE A22 Discovering Algebra Chapter 1 Holt Chapter 7*	Tinkerplots Prepared Data Geometer's Sketchpad - Lesson Links Penny Data Investigation Class Line-up to find the five number summary Graphing Calculator Use	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
7.SP.2

Use random sampling to draw inferences about a population.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1. Use the data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.	McDougal Littell Chapter 3 Student Pages 758-7579 TE A24 Discovering Algebra Chapter 1 Holt Chapter 7*	Penny Data Investigation Layer Various graphs on the same number line TinkerPlots Prepared Data	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
7.SP.3

Draw informal comparative inferences about two populations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.	McDougal Littell Chapter 3 Student Pages 756-757 TE A22 Discovering Algebra Chapter 1 Holt Chapter 7*	Tinkerplots Prepared Data Geometer's Sketchpad - Lesson Links Penny Data Investigation Class Line-up to find the five number summary Graphing Calculator Use	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
7.SP.4

Draw informal comparative inferences about two populations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.	McDougal Littell Chapter 3 Student Pages 756-757 TE A22 Discovering Algebra Chapter 1 Holt Chapter 7*	Tinkerplots Prepared Data Geometer's Sketchpad - Lesson Links Penny Data Investigation Class Line-up to find the five number summary Graphing Calculator Use	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
7.SP.5

Draw informal comparative inferences about two populations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1. Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	McDougal Littell Chapter 13 Connected Mathematics "What Do You Expect?" Holt Chapter 11*	Graphing Calculator Use Hands on Simulation -Rolling Die, M & M's, Spinners	Teacher Observation Quiz/Test Do Now Daily Warm-up iPod/iPad

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
7.SP.6

Draw informal comparative inferences about two populations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1.Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.	McDougal Littell Chapter 13 Connected Mathematics "What Do You Expect?" Holt Chapter 11*	"What Do You Expect?" Investigations Graphing Calculator Use	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
7.SP.7

Investigate chance processes and develop, use, and evaluate probability models.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1. Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.	McDougal Littell Chapter 13 NJ ASK Coach Holt Chapter 11*	"What Do You Expect?" Investigations Graph Class results as well as group results, have students compare/contrast results. Winning the Lottery License Plate Combinations	Teacher Observation Quiz/Test Do Now Daily Warm-up
a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.		"What Do You Expect?" Investigations Graph Class results as well as group results, have students compare/contrast results. Card Probabilities	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
7.SP.7

Investigate chance processes and develop, use, and evaluate probability models.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.	McDougal Littell Chapter 13 Connected Mathematics "What Do You Expect?" NJ ASK Coach Holt Chapter 11*	"What Do You Expect?" Investigations Game Discussions Candy land vs. Chutes and Ladders Design own "Zark" Game	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
7.SP.8

Use random sampling to draw inferences about a population.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
1. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	McDougal Littell Chapter 13 NJ ASK Coach Holt Chapter 11*	Winning the Lottery License Plate Combinations	Teacher Observation Quiz/Test Do Now Daily Warm-up
a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	McDougal Littell Chapter 13 NJ ASK Coach Holt Chapter 11*	Card Probabilities Mutually Exclusive Events Discussion of Overlap of Events	Teacher Observation Quiz/Test Do Now Daily Warm-up
b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language, identify the outcomes in the sample space which compose the event.	McDougal Littell Chapter 13 Connected Mathematics "What Do You Expect?" NJ ASK Coach Holt Chapter 11*	"What Do You Expect?" Investigations	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
7.SP.8

Use random sampling to draw inferences about a population.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
c. Design and use simulation to generate frequencies for compound events.	McDougal Littell Chapter 13 Connected Mathematics "What Do You Expect?" NJ ASK Coach Holt Chapter 11*	"What Do You Expect?" Investigations	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

7th Grade Math
Pacing Guide

Unit	McDougall Littell Mathematics Course 2 Chapters	Number of Blocks	Holt Mathematics Course 2 Chapters	Number of Blocks
Data Analysis and Statistics	3	15	7	13
Number Sense, Patterns and Algebraic Thinking	1	6	3	9
Integers	6	12	2	12
Percents	9	11	6	11
Mid-Year Benchmark Assessment		1		1
Equations, Inequalities and Functions	7	8	12	10
Ratios and Proportions	8	14	5	11
Geometric Figures	10	6	8	6
Measurement and Area	11	5	9	6

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

7th Grade Math
Pacing Guide

Unit	McDougall Littell Mathematics Course 2 Chapters	Number of Blocks	Holt Mathematics Course 2 Chapters	Number of Blocks
Surface Area and Volume	12	1	10	2
Probability	13 *"What Do You Expect?"*	7	11 *"What Do You Expect?"*	5
End-of-the-Year Benchmark Assessment		1		1

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

7th Grade Math
Resources

Title of Resource	Author(s)	Publisher	Copyright
McDougall Littell Course 2 and all related resources (differentiation including ELL)	Larson, Boswell, Kanold & Stiff	McDougal Littell	2008
Holt Mathematics Course 2 and all related resources (differentiation including ELL)	Bennett, Burger, Chard, Jackson, Kennedy, Renfro, Scheer & Waits	Holt, Rinehart and Winston	2007
Developing Skills in Algebra One - Books A and B	Harold and Loretta Taylor	Dale Seymour Publications	1984
Algebra with Pizzazz!	Steve & Janis Marcy	McGraw Hill	2002
Pre-Algebra with Pizzazz!	Steve & Janis Marcy	McGraw Hill	2002
Middle School Math with Pizzazz- Books A-E	Steve & Janis Marcy	McGraw Hill	2002
New Jersey ASK Coach	Jerome Kaplan Ed.D	Triumph Learning	2005
Question Quest Level C	Paul Lawrence	LL Teach, Inc.	2002
Algebra Out Loud	Pat Mower, PhD	Jossey Bass	2003
Kuta Software: Infinite Pre-Algebra, Infinite Algebra		Kuta Software LLC	2010, 2011
UCSMP Transitions Lesson Masters A and B	Zal Usiskin	Scott, Foresman	1995

Flemington Raritan School District
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7th Grade Math Resources

Title of Resource	Author(s)	Publisher	Copyright
UCSMP Algebra Lesson Masters A and B	Zal Usiskin	Scott, Foresman	1995
Tinker Plots	Clifford Konold & Craig D. Miller	Key Curriculum Press	2005
Geometer's Sketchpad 4	Nicholas Jackiw	Key Curriculum Press	2006
Algebra Puzzles & Problems	Greenes/Findell	Creative Publications	1998
Algebra Teacher's Activities Kit	Judith & Robert Muschla	Jossey Bass	2003
Explain It	Lepore, Fleetwood & Hall	Creative Publications	2001
ASK Workout	Jerome Kaplan Ed.D	Triumph Learning	2008
Differentiated Middle School Math		Exemplars	
Teaching Student-Centered Mathematics Grades 5-8	John A. Van de Walle & LouAnn H. Lovin	Pearson Education	2006
Hands -On Algebra !	Frances M. Thompson	The Center for Applied Research Education	1998
Daily Word Problems Grade 6	Amy Beth Tuttle, Wes Tuttle	Evan-Moor Publishers	2001
Middle School Collection: Geometry: Basic Concepts, Geometry: Solids, Geometry: Polygons, Pre-Algebra	D.W. Skrabanek	Steck-Vaugh Company	2000
Middle Grade Math Minutes	Doug Stoffel	Creative Teaching Press	2000

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

7th Grade Math Resources

Title of Resource	Author(s)	Publisher	Copyright
Mathematical Reasoning Through Verbal Analysis Book 2	Warren Hill & Ronald Edwards	Critical Thinking Books & Software	1991
Measuring Up to the NJ Core Curriculum Content Standards	Kenneth Owens	Peoples Publishing Group	2003
NCTM Navigation Series: Probability, Data Analysis, Geometry	Bright, Frierson Jr., Tarr, Thomas, Brewer, McClain, Mooney, Pugalee, Frykholm, Johnson, Slovin, Malloy, Preston	The National Council of Teachers of Mathematics	2003
8-Step Model Drawing	Bob Hogan & Char Forsten	Crystal Spring Books	2007
Geometry Activities for Middle School Students	Wyatt, Lawrence, Foletta	Key Curriculum Press	2004
Shape Makers: Developing Geometric Reasoning in Middle School	Michael T. Battista	Key Curriculum Press	2003
What Do You Expect?	Lappan, Fey, Fitzgerald, Friel and Phillips	Dale Seymour Publications	1998
Strategies for Success in Mathematics: Level G	Weisenfeld, Coultas, Swalm	Steck-Vaugh Company	1999
Curriculum and Evaluation Standards for School Mathematics Addenda Series Grades 5-8	Geddes, Zawojewski, Reys, Phillips, Curcio, Bezuk	The National Council of Teachers of Mathematics	1992

Algebra 1A Math Curriculum

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Number and Quantity
Quantities
9-12.N.Q.1-2

Reason quantitatively and use units to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.Q.1.Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	Larson Algebra 1- 1.1-1.3, 1.7, 2.1, 2.7, 3.8, 4.2 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation
9-12.N.Q.2.Define appropriate quantities for the purpose of descriptive modeling.	Larson Algebra 1-2.7 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Seeing Structure in Expressions
9-12.A.SSE.1

Interpret the structure of expressions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.SSE.1. Interpret expressions that represent a quantity in terms of its context. **A. Interpret parts of an expression, such as terms, factors, and coefficients.** **B. Interpret complicated expressions by viewing one or more of their parts as a single entity.**	Larson Algebra 1- 1.2, 1.3 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Creating Equations
9-12.A.CED.1-2

Create equations that describe numbers or relationships

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.CED.1.Create equations and inequalities in one variable and use them to solve problems.	Larson Algebra 1 - 1.1-1.4, 3.1-3.6 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator Discovering Algebra Investigation - Capture/Recapture	Teacher Observation Quiz/Test Do Now Daily Warm-up
9-12.A.CED.2.Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales	Larson Algebra 1- 1.6, 4.2-4.7, 5.1-5.7 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Creating Equations
9-12.A.CED.3

Create equations that describe numbers or relationships.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.CED.3.Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.	Larson Algebra 1- 1.6, 4.2-4.6, 5.1-5.4 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Creating Equations
9-12.A.CED.4

Create equations that describe numbers or relationships.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.CED.4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.	Larson Algebra 1- 3.8, Chapter 4 and 5 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.1

Understand solving equations as a process of reasoning and explain the reasoning.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.1.Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	Larson Algebra 1- 3.1 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.3

Solve equations and inequalities in one variable.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.3.Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Larson Algebra 1- 1.1, 1.2, 3.1-3.6, 3.8 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

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Grades 7-8

Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.10

Represent and solve equations and inequalities graphically.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line.)	Larson Algebra 1- 4.2 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Interpreting Functions
9-12.F.IF.1-2

Understand the concept of a function and use function notation.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If *f* is a function and *x* is an element of its domain, then *f(x)* denotes the output of *f* corresponding to the input *x*. The graph of *f* is the graph of the equation *y=f(x)*.	Larson Algebra 1- 1.6, 4.7 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation
9-12.F.IF.2.Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Larson Algebra 1- 4.7, 5.6 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation

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Mathematics Curriculum
Grades 7-8

Functions
Interpreting Functions
9-12.F.IF.4-6

Interpret functions that arise in applications in terms of the context.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.	Larson Algebra 1 - 1.7, 4.3, 4.4, 5.1-5.4, 5.7 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation
9-12.F.IF.5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.	Larson Algebra 1 - 1.7, 4.1, 4.3, 4.5, 4.7, 5.4 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation

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Mathematics Curriculum
Grades 7-8

Functions
Interpreting Functions
9-12.F.IF.4-6

Interpret functions that arise in applications in terms of the context.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	Larson Algebra 1 -4.4, 4.6, 5.2, 5.3 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation

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Mathematics Curriculum
Grades 7-8

Functions
Interpreting Functions
9-12.F.IF.7

Analyze functions using different representations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **A. Graph linear and quadratic functions and show intercepts.**	Larson Algebra 1 - 1.7, 4.1-4.3, 4.5-4.7, 5.3 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Building Functions
9-12.F.BF.1

Build a function that models a relationship between two quantities.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.BF.1. Write a function that describes a relationship between two quantities. **A. Determine an explicit expression, a recursive process, or steps for calculation from a context.** **B. Combine standard function types using arithmetic operations.** **C (+). Compose functions.**	Larson Algebra 1 - 5.1 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Building Functions
9-12.F.BF.3

Build new functions from existing functions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.BF.3. Identify the effect on the graph of replacing *f(x)* by *f(x)+k, kf(x), f(kx)* , and *f(x+k)* for specific values of *k* (both positive and negative); find the value of *k* give the graphs. Experiment with cases and illustrate an explanation of the effect on the graph using technology.	Larson Algebra 1 - 4.7 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Linear, Quadratic, and Exponential Models
9-12.F.LE.2

Construct and compare linear, quadratic, and exponential models and solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.LE.2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (including reading these from a table).	Larson Algebra 1 - 1.7, 5.1-5.5 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Linear, Quadratic, and Exponential Models
9-12.F.LE.5

Interpret expressions for functions in terms of the situation they model.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.LE.5. Interpret the parameters in a linear or exponential function in terms of a context.	Larson Algebra 1 - 5.1 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
Interpreting Categorical and Quantitative Data
9-12.S.ID.1-3

Summarize, represent, and interpret data on a single count or measure variable.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.ID.1. Represent data with plots on the real number line (dot plots, histograms, and box plots).	Larson Algebra 1- 13.7, 13.8 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation
9-12.S.ID.2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	Larson Algebra 1-13.6-13.8 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation
9-12.S.ID.3. Interpret the differences in shape, center and spread in the context of the data set, accounting for possible effects of extreme data points (outliers).	Larson Algebra 1-13.6-13.8 Larson Algebra 1 Teacher Resources	Class Discussion Textbook Problems Teacher generated worksheets	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
Interpreting Categorical and Quantitative Data
9-12.S.ID.5-6

Summarize, represent, and interpret data on a two categorical and quantitative variables.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.ID.5. Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.	Larson Algebra 1 - 13.1 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator Discovering Algebra Investigation - Capture/Recapture	Teacher Observation Quiz/Test Do Now Daily Warm-up
9-12.S.ID.6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. **A. Fit a function to the data; use functions fitted to data to solve problems in the context of the data.** **B. Informally assess the fit of a function by plotting and analyzing residuals.** **C. Fit a linear function for a scatter plot that suggest a linear association.**	Larson Algebra 1 - 4.1, 5.6, 5.7 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

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Mathematics Curriculum
Grades 7-8

Statistics and Probability
Interpreting Categorical and Quantitative Data
9-12.S.ID.7

Interpret linear models.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.ID.7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	Larson Algebra 1- 4.4, 5.1-5.3, 5.6, 5.7 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics
Conditional Probability and the Rules of Probability
9-12.S.CP.1-2

Understand independence and conditional probability and use them to interpret data.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.CP.1. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or,""and,""not").	Larson Algebra 1 - 13.1-13.3 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up
9-12.S.CP.2. Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.	Larson Algebra 1- 13.4 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

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Mathematics Curriculum
Grades 7-8

Statistics

Conditional Probability and the Rules of Probability

9-12.S.CP.5

Understand independence and conditional probability and use them to interpret data.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.CP.5. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.	Larson Algebra 1 - 13.4 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics

Conditional Probability and the Rules of Probability

9-12.S.CP.6-8

Use the rules of probability to compute the probabilities of compound events in a uniform probability model.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.CP.6. Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of that model.	Larson Algebra 1- 13.4 Larson Algebra 1 Teacher Resources	Class Discussion Textbook Problems Teacher generated worksheets	Teacher Observation Quiz/Test Do Now Daily Warm-up
9-12.S.CP.7. Apply the Addition Rule, P(A or B) = P(A) + P(B) - P(A and B), and interpret the answers in terms of the model.	Larson Algebra 1- 13.4 Larson Algebra 1 Teacher Resources	Class Discussion Textbook Problems Teacher generated worksheets	Teacher Observation Quiz/Test Do Now Daily Warm-up
9-12.S.CP.8 (+). Apply the general Multiplication Rule in a uniform probability model, P(A and B) = P(A)P(B/A) = P(B)P(A/B), and interpret the answer in terms of the model.	Larson Algebra 1- 13.3 Larson Algebra 1 Teacher Resources	Class Discussion Textbook Problems Teacher generated worksheets	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics

Conditional Probability and the Rules of Probability

9-12.S.CP.9

Use the rules of probability to compute the probabilities of compound events in a uniform probability model.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.CP.9 (+) . Use permutations and combinations to compute probabilities of compound events and solve problems.	Larson Algebra 1- 13.2, 13.3 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
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Grades 7-8

Statistics
Using Probability to Make Decisions
9-12.S.MD.6

Use probability to evaluate outcomes of decisions

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.MD.6 (+). Use probabilities to make fair decisions (e.g., drawing lots, using a random number generator).	Larson Algebra 1- 13.2, 13.3 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry
Congruence
9-12.G.CO.2, 4, 5

Experiment with transformations in the plane.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.G.CO.2. Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angles to those that do not (e.g., translations versus horizontal stretch).	Discovering Algebra - Chapter 9 Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1 Teacher generated worksheets	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up
9-12.G.CO.4. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	Discovering Algebra - Chapter 9 Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1 Teacher generated worksheets	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry
Congruence
9-12.G.CO.2, 4, 5

Experiment with transformations in the plane.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.G.CO.5. Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	Discovering Algebra - Chapter 9 Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1 Teacher generated worksheets	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry
Congruence
9-12.G.CO.6-7

Understand congruence in terms of rigid motions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.G.CO.6. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	Discovering Algebra - Chapter 9 Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1 Teacher generated worksheets	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up
9-12.G.CO.7. Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.	Discovering Algebra - Chapter 9 Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1 Teacher generated worksheets	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry
Expressing Geometric Properties with Equations
9-12.G.GPE.5

Use coordinates to prove simple geometric theorems algebraically.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.G.GPE.5. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).	Larson Algebra 1- 5.5 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics

Conditional Probability and the Rules of Probability

9-12.G.SRT.2

Use the rules of probability to compute the probabilities of compound events in a uniform probability model.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.G.SRT.2. Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.	Larson Algebra 1- Page 175 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
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7th Grade Algebra 1A
Pacing Guide

Unit	Larson Algebra 1 Chapter	Number of Blocks
Data Exploration	13	5
Proportional Reasoning	2	14
Variations and Graphs	3	14
Linear Equations	2	15
Slope and Fitting a Line to Data	5	14
Probability And Data	13	10
Geometry	Math with Pizzazz Pre-Algebra with Pizzazz Kuta Software	5

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

7th Grade Algebra 1A Resources

Title of Resource	Author(s)	Publisher	Copyright
Larson Algebra 1	Ron Larson, Laurie Boswell, Timothy D. Kanold, Lee Stiff	Houghton Mifflin Harcourt Publishing Company	2012
Developing Skills in Algebra One - Books A and B	Harold and Loretta Taylor	Dale Seymour Pulbications	1984
Algebra with Pizzazz!	Steve & Janis Marcy	McGraw Hill	2002
Pre-Algebra with Pizzazz!	Steve & Janis Marcy	McGraw Hill	2002
Middle School Math with Pizzazz- Books A-E	Steve & Janis Marcy	McGraw Hill	2002
New Jersey ASK Coach	Jerome Kaplan Ed.D	Triumph Learning	2005
Question Quest Level C	Paul Lawrence	LL Teach, Inc.	2002
Algebra Out Loud	Pat Mower, Phd	Jossey Bass	2003
UCSMP Transitions Lesson Masters A and B	Zal Usiskin	Scott, Foresman	1995
UCSMP Algebra Lesson Masters A and B	Zal Usiskin	Scott, Foresman	1995
Tinker Plots	Clifford Konold & Craig D. Miller	Key Curriculum Press	2005

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Mathematics Curriculum
Grades 7-8

7th Grade Algebra 1A
Resources

Title of Resource	Author(s)	Publisher	Copyright
Geometer's Sketchpad 4	Nicholas Jackiw	Key Curriculum Press	2006
Algebra Puzzles & Problems	Greenes/Findell	Creative Publications	1998
Algebra Teacher's Activities Kit	Judith & Robert Muschla	Jossey Bass	2003
Explain It	Lepore, Fleetwood & Hall	Creative Publications	2001
ASK Workout	Jerome Kaplan Ed.D	Triumph Learning	2008
Teaching Student-Centered Mathematics Grades 5-8	John A. Van de Walle & LouAnn H. Lovin	Pearson Education	2006
Hands -On Algebra !	Frances M. Thompson	The Center for Applied Research Education	1998
NCTM Navigation Series: Probability, Data Analysis, Geometry	Bright, Frierson Jr., Tarr, Thomas, Brewer, McClain, Mooney, Pugalee, Frykholm, Johnson, Sloving, Malloy, Preston	The National Council of Teachers of Mathematics	2003
Geometry Activities for Middle School Students	Wyatt, Lawrence, Foletta	Key Curriculum Press	2004
Shape Makers: Developing Geometric Reasoning in Middle School	Michael T. Battista	Key Curriculum Press	2003
Strategies for Success in Mathematics: Level G	Weisenfeld, Coultas, Swalm	Steck-Vaugh Company	1999

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

7th Grade Algebra 1A
Resources

Title of Resource	Author(s)	Publisher	Copyright
Curriculum and Evaluation Standards for School Mathematics Addenda Series Grades 5-8	Geddes, Zawojewski, Reys, Phillips, Curcio, Bezuk	The National Council of Teachers of Mathematics	1992
Kuta Software - Infinite Pre-Algebra, Infinite Algebra, Infinite Geometry		Kuta Software LLC	2010, 2011

Algebra 1B Math Curriculum

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Mathematics Curriculum
Grades 7-8

Number and Quantity
The Real Number System
9-12.N.RN.1

Extend the properties of exponents to rational exponents.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.RN.1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.	Larson Algebra 1 - 8.3 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation

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Mathematics Curriculum
Grades 7-8

Number and Quantity
The Real Number System
9-12.N.RN.2

Extend the properties of exponents to rational exponents.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.RN.2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.	Larson Algebra 1 - 11.2 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation

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Mathematics Curriculum
Grades 7-8

Algebra
Seeing Structure in Expressions
9-12.A.SSE.1

Interpret the structure of expressions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.SSE.1. Interpret expressions that represent a quantity in terms of its context. **A. Interpret parts of an expression, such as terms, factors, and coefficients.** **B. Interpret complicated expressions by viewing one or more of their parts as a single entity.**	Larson Algebra 1 - 9.1 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1 Developing Skills in Algebra 1 - Book A-D	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation

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Mathematics Curriculum
Grades 7-8

Algebra
Seeing Structure in Expressions
9-12.A.SSE.2

Interpret the structure of expressions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.SSE.2. Use the structure of an expression to identify ways to rewrite it.	Larson Algebra 1 - 8.3, 9.3, 9.7 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation

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Mathematics Curriculum
Grades 7-8

Algebra
Seeing Structure in Expressions
9-12.A.SSE.3

Write expressions in equivalent forms to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.SSE.3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. **A. Factor a quadratic expression to reveal the zeros of the function it defines.**	Larson Algebra 1 - 8.1-8.3, 9.5-9.8, 10.5 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1 Developing Skills in Algebra 1 - Book A-D	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation
b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.		Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Seeing Structure in Expressions
9-12.A.SSE.3

Write expressions in equivalent forms to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
c. Use the properties of exponents to transform expressions for exponential functions.	Larson Algebra 1 - 8.1-8.3, 9.5-9.8, 10.5 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation

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Grades 7-8

Algebra
Arithmetic with Polynomials and Rational Expressions
9-12.A.APR.1

Perform arithmetic operations on polynomials.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.APR.1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	Larson Algebra 1 - 9.1-9.3 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

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Mathematics Curriculum
Grades 7-8

Algebra

Arithmetic with Polynomials and Rational Expressions

9-12.A.APR.3-4

Understand the relationship between zeros and factors and factors of polynomials.
Use polynomial identities to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.APR.3. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	Larson Algebra 1 - 9.4, 9.6-9.8 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up
9-12.A.APR.4. Prove polynomial identities and use them to describe numerical relationships.	Larson Algebra 1 - 9.3, 9.7 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Creating Equations
9-12.A.CED.1-2

Create equations that describe numbers or relationships

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.CED.1.Create equations and inequalities in one variable and use them to solve problems.	Larson Algebra 1 - 5.1, 6.1-6.5, 9.4-9.8, 10.4, 10.5 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up
9-12.A.CED.2.Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales	Larson Algebra 1 - 5.1-5.7, 7.1-7.6, 8.5, 8.6, 10.1-10.4, 10.8 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

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Mathematics Curriculum
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Algebra
Creating Equations
9-12.A.CED.3

Create equations that describe numbers or relationships.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.CED.3.Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.	Larson Algebra 1 - 5.1, 5.4, 6.1-6.5, 6.7, 7.1-7.6, 10.1-10.3 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Creating Equations
9-12.A.CED.4

Create equations that describe numbers or relationships.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.CED.4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.	Larson Algebra 1 - Chapter 5 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

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Mathematics Curriculum
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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.3

Solve equations and inequalities in one variable.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.3.Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Larson Algebra 1 - 6.1-6.5 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.4

Solve equations and inequalities in one variable.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.4. Solve quadratic equations in one variable. **A. Use the method of completing the square to transform any quadratic equation in *x* into an equation of the form *(x-p)^2=q* that has the same solutions. Derive the quadratic formula from this form.** **b. Solve quadratic equations by inspection, taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula give complex solutions and write them as *a+/-b* i for real numbers *a* and *b* .**	Larson Algebra 1 - 9.4-9.8, 10.4-10.6 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.5-6

Solve systems of equations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.5. Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	Larson Algebra 1 - 7.2, 7.4, 7.5 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up
9-12.A.REI.6. Solve systems of linear equations exactly and approximately, focusing on pairs of linear equations in two variables.	Larson Algebra 1 -7.1-7.5 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.11-12

Represent and solve equations and inequalities graphically.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.11. Explain why the x-coordinate of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x)=g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational absolute value, exponential, and logarithmic functions.	Larson Algebra 1 - 10.3, 10.4 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up
9-12.A.REI.12. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	Larson Algebra 1 - 6.7, 7.6 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Interpreting Functions
9-12.F.IF.1-3

Understand the concept of a function and use function notation.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If *f* is a function and *x* is an element of its domain, then *f(x)* denotes the output of *f* corresponding to the input *x*. The graph of *f* is the graph of the equation *y=f(x)*.	Discovering Algebra - Chapter 8 Algebra Teacher's Activities Kit	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation
9-12.F.IF.2.Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Larson Algebra 1 - 5.6 Discovering Algebra - Chapter 8 Algebra Teacher's Activities Kit	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Interpreting Functions
9-12.F.IF.4-6

Interpret functions that arise in applications in terms of the context.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.	Larson Algebra 1 - 5.1-5.4, 5.6, 5.7, 10.1, 10.3, 10.8 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1 Discovering Algebra - Chapter 8	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation
9-12.F.IF.5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.	Larson Algebra 1 - 5.4, 10.1 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1 Discovering Algebra - Chapter 8	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation
9-12.F.IF.6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	Larson Algebra 1 -5.2, 5.3 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Written Test/Quiz Written Explanation Open-ended Questions Teacher Observation

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Interpreting Functions
9-12.F.IF.7

Analyze functions using different representations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **A. Graph linear and quadratic functions and show intercepts.** **C. Graph polynomial functions, indentifying zeros when suitable factorizations are available, showing end behavior.** **E. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, show period, midline, and amplitude.**	Larson Algebra 1 - 5.3, 8.5, 8.6, 9.1, 10.1-10.3, 10.8 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Interpreting Functions
9-12.F.IF.8

Analyze functions using different representations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. **A. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.** **B. Use the properties of exponents to interpret expressions for exponential functions.**	Larson Algebra 1 - 9.4-9.6 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Building Functions
9-12.F.BF.1

Build a function that models a relationship between two quantities.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.BF.1. Write a function that describes a relationship between two quantities. **A. Determine an explicit expression, a recursive process, or steps for calculation from a context.** **B. Combine standard function types using arithmetic operations.**	Larson Algebra 1 - 5.1 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Building Functions
9-12.F.BF.3

Build new functions from existing functions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.BF.3. Identify the effect on the graph of replacing *f(x)* by *f(x)+k, kf(x), f(kx)* , and *f(x+k)* for specific values of *k* (both positive and negative); find the value of *k* give the graphs. Experiment with cases and illustrate an explanation of the effect on the graph using technology.	Larson Algebra 1 - 8.5, 8.6, 10.1, 10.2 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Linear, Quadratic, and Exponential Models
9-12.F.LE.1

Construct and compare linear, quadratic, and exponential models and solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.LE.1. Distinguish between situations that can be modeled with linear functions and with exponential functions. **A. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.** **B. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.** **C. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.**	Larson Algebra 1 - 8.5, 10.8 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Linear, Quadratic, and Exponential Models
9-12.F.LE.2

Construct and compare linear, quadratic, and exponential models and solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.LE.2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (including reading these from a table).	Larson Algebra 1 - 5.1-5.5, 8.5, 8.6 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Linear, Quadratic, and Exponential Models
9-12.F.LE.5

Interpret expressions for functions in terms of the situation they model.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.LE.5. Interpret the parameters in a linear or exponential function in terms of a context.	Larson Algebra 1 - 5.1, 8.5, 8.6, 10.8 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
Interpreting Categorical and Quantitative Data
9-12.S.ID.6

Summarize, represent, and interpret data on a two categorical and quantitative variables.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.ID.6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. **A. Fit a function to the data; use functions fitted to data to solve problems in the context of the data.** **B. Informally assess the fit of a function by plotting and analyzing residuals.** **C. Fit a linear function for a scatter plot that suggest a linear association.**	Larson Algebra 1 - 5.6, 5.7, 10.8 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
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Statistics and Probability
Interpreting Categorical and Quantitative Data
9-12.S.ID.7

Interpret linear models.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.ID.7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	Larson Algebra 1- 5.1-5.3, 5.6, 5.7 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry
Expressing Geometric Properties with Equations
9-12.G.GPE.5

Use coordinates to prove simple geometric theorems algebraically.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.G.GPE.5. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).	Larson Algebra 1- 5.5 Larson Algebra 1 Teacher Resources Kuta Software - Infinite Pre-Algebra and Infinite Algebra 1	Class Discussion Textbook Problems Teacher generated worksheets Kuta Software worksheets Graphing Calculator	Teacher Observation Quiz/Test Do Now Daily Warm-up

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

7th Grade Algebra 1B
Pacing Guide

Unit	Larson Algebra 1 Chapter	Number of Blocks
Linear Equations	5	8
Graphing, Slope, and Writing the Equation of a Line	5	8
Systems of Equations and Inequalities	6	10
Exponents and Exponential Models	7	12
Functions	8 Discovering Algebra	8
Transformations	Teacher Created Materials Kuta Software	4
Polynomials	9	15
Quadratics	10	15
Rational Expressions	Developing Skills in Algebra One Books A-D	4
Radicals	Developing Skills in Algebra One Books A-D	6

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

7th Grade Algebra 1B Resources

Title of Resource	Author(s)	Publisher	Copyright
Larson Algebra 1	Ron Larson, Laurie Boswell, Timothy D. Kanold, Lee Stiff	Houghton Mifflin Harcourt Publishing Company	2012
Discovering Algebra An Investigative Approach	Jerald Murdock, Ellen Kamischke, Eric Kamischke	Key Curriculum Press	2002
Developing Skills in Algebra One - Books A and B	Harold and Loretta Taylor	Dale Seymour Publications	1984
Algebra with Pizzazz!	Steve & Janis Marcy	McGraw Hill	2002
Pre-Algebra with Pizzazz!	Steve & Janis Marcy	McGraw Hill	2002
New Jersey ASK Coach	Jerome Kaplan Ed.D	Triumph Learning	2005
Question Quest Level C	Paul Lawrence	LL Teach, Inc.	2002
Algebra Out Loud	Pat Mower, PhD	Jossey Bass	2003
UCSMP Transitions Lesson Masters A and B	Zal Usiskin	Scott, Foresman	1995
UCSMP Algebra Lesson Masters A and B	Zal Usiskin	Scott, Foresman	1995
Tinker Plots	Clifford Konold & Craig D. Miller	Key Curriculum Press	2005
Geometer's Sketchpad 4	Nicholas Jackiw	Key Curriculum Press	2006
Algebra Puzzles & Problems	Greenes/Findell	Creative Publications	1998
Algebra Teacher's Activities Kit	Judith & Robert Muschla	Jossey Bass	2003

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

7th Grade Algebra 1B
Resources

Title of Resource	Author(s)	Publisher	Copyright
Explain It	Lepore, Fleetwood & Hall	Creative Publications	2001
ASK Workout	Jerome Kaplan Ed.D	Triumph Learning	2008
Teaching Student-Centered Mathematics Grades 5-8	John A. Van de Walle & LouAnn H. Lovin	Pearson Education	2006
Hands -On Algebra !	Frances M. Thompson	The Center for Applied Research Education	1998
NCTM Navigation Series: Algebra	Burke, Erickson, Lott, Obert	The National Council of Teachers of Mathematics	2001
Geometry Activities for Middle School Students	Wyatt, Lawrence, Foletta	Key Curriculum Press	2004
Shape Makers: Developing Geometric Reasoning in Middle School	Michael T. Battista	Key Curriculum Press	2003
Strategies for Success in Mathematics: Level G	Weisenfeld, Coultas, Swalm	Steck-Vaugh Company	1999
Curriculum and Evaluation Standards for School Mathematics Addenda Series Grades 9-12	Burrill	The National Council of Teachers of Mathematics	1992
Kuta Software - Infinite Algebra 1, Infinite Geometry		Kuta Software LLC	2010, 2011

8th Grade Math Curriculum

8th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.1.A.1. Extend understanding of the number system by constructing meanings for the following (unless otherwise noted, all indicators for grade 8 pertain to these sets of numbers as well): Rational numbers; Percents; Exponents; Roots; Absolute Values; Numbers represented in scientific notation.	Science	Astonomy Unit
4.1.A.2. Demonstrate a sense of the relative magnitudes of numbers.	Science Social Studies	Astonomy Unit Holocaust Unit - visual representation of numbers
4.1.A.3. Understand and use ratios, rates, proportions, and percents (including percents greater than 100 and less than 1) in a variety of situations.	Science Music Art Cooking	Genetics - Punnet Squares Chemistry Notes (1/4,1/16) Scale Drawing Recipes
4.1.A.5. Use computer software to make and verify conjectures about geometric objects.	Technology	Creating models

8th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.1.B.1. Use and explain procedures for performing calculations involving addition, subtraction, multiplication, division, and exponentiation with integers and all number types named above with: Pencil-and-paper; Mental math; Calculator.	Science	Wave activity
4.1.B.4. Solve problems involving proportions and percents.	Science	Labs throughout the year
4.1.C.2. Use equivalent representations of numbers such as fractions, decimals, and percents to facilitate estimation.	Science	Labs throughout the year
4.1.C.3. Recognize the limitations of estimation and assess the amount of error resulting from estimation.	Science	Labs throughout the year
4.2.A.1. Understand and apply concepts involving lines, angles, and planes: Complementary and supplementary angles; Vertical angles; Bisectors and perpendicular bisectors; Parallel, perpendicular, and intersecting planes; Intersection of plane with cube, cylinder, cone, and sphere.	Sewing	Creating quilts

Flemington Raritan School District
Mathematics Curriculum
Grades 6-8

8th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.2.A.3. Understand and apply properties of polygons: Quadrilaterals, including squares, rectangles, parallelograms, trapezoids, rhombi; Regular polygons; Sum of measures of interior angles of a polygon; Which polygons can be used alone to generate a tessellation and why.	Art	Polygon project and tessellations
4.2.A.4. Understand and apply the concept of similarity: Using proportions to find missing measures; Scale drawings; Models of 3D objects.	Technology Art	Creating Models Scale drawings, creating lables for cans
4.2.B.1. Understand and apply transformations: Finding the image, given the pre-image, and vice-versa; Sequence of transformations needed to map one figure onto another; Reflections, rotations, and translations result in images congruent to the pre-image; Dilations (stretching/shrinking) result in images similar to the pre-image.	Art	Reflections and rotations
4.2.C.1. Use coordinates in four quadrants to represent geometric concepts.	Social Studies	Reading a map
4.2.D.1. Solve problems requiring calculations that involve different units of measurement within a measurement system (e.g., 4’3” plus 7’10” equals 12’1”).	Science	On-going through science labs, metric system

8th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.2.D.2. Use approximate equivalents between standard and metric systems to estimate measurements (e.g., kilometers is about 3 miles).	Science	Ongoing through science labs, metric system
4.2.E.1. Develop and apply strategies for finding perimeter and area: Geometric figures made by combining triangles, rectangles and circles or parts of circles; Estimation of area using grids of various sizes; Impact of a dilation on the perimeter and area of a 2-dimensional figure; Impact of a dilation on the perimeter and area of a 2-dimensional figure.	Sewing Art	Creating a quilt Polygon project
4.3.B.1. Graph functions, and understand and describe their general behavior: Equations involving two variables; Rates of change (informal notion of slope).	Social Studies	Population growth, immigration information
4.3.B.2. Recognize and describe the difference between linear and exponential growth, using tables, graphs, and equations.	Science	Half-life lab
4.3.C.1. Analyze functional relationships to explain how a change in one quantity can result in a change in another, using pictures, graphs, charts, and equations.	Science	Labs throughout the year

8th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.3.C.2. Use patterns, relations, symbolic algebra, and linear functions to model situations: Using concrete materials (manipulatives), tables, graphs, verbal rules, algebraic expressions/ equations/ inequalities; Growth situations, such as population growth and compound interest, using recursive formulas.	Social Studies	Population growth
4.3.D.2. Solve simple linear equations informally, graphically, and using formal algebraic methods: Multi-step, integer coefficients only (although answers may not be integers) Simple literal equations (e.g., A = lw) Using paper-and-pencil, calculators, graphing calculators, spreadsheets, and other technology.	Science	Equation balancing in chemistry
4.4.A.1. Select and use appropriate representations for sets of data, and measures of central tendency (mean, median, and mode): Type of display most appropriate for given data; Box-and-whisker plot, upper quartile, lower quartile; Scatter plot; Calculators and computer used to record and process information; Finding the median and mean (weighted average) using frequency data; Effect of additional data on measures of central tendency.	Social Studies	Current events

Flemington Raritan School District
Mathematics Curriculum
Grades 6-8

8th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.4.A.2. Make inferences and formulate and evaluate arguments based on displays and analysis of data sets.	Social Studies	Data analysis from graphs
4.4.A.3. Estimate lines of best fit and use them to interpolate within the range of the data.	Science	Half-life graphs
4.4.A.4. Use surveys and sampling techniques to generate data and draw conclusions about large groups.	Social Studies Science	Current events Environmental unit
4.4.B.6. Play and analyze probability-based games and discuss the concepts of fairness and expected value.	Physical Education	Fairness of games
4.4.C.3. Apply techniques of systematic listing, counting, and reasoning in a variety of different contexts.	All disciplines	Discussions throughout
4.4.D.1. Use vertex-edge graphs and algorithmic thinking to represent and find solutions to practical problems: Finding the shortest network connecting specified sites; Finding a minimal route that includes every street; Finding the shortest route on a map from one site to another; Finding the shortest circuit on a map that makes a tour of specified sites; Limitations of computers.	Science Social Studies	Circuit labs Shortest route on a map

8th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.5.A.2. Solve problems that arise in mathematics and in other contexts: Open-ended problems; Non-routine problems; Problems with multiple solutions; Problems that can be solved in several ways.	Language Arts	Reading skills
4.5.A.4. Pose problems of various types and levels of difficulty.	All disciplines	Discussions throughout
4.5.A.5. Monitor their progress and reflect on the process of their problem solving activity.	All disciplines	Discussions throughout
4.5.B.1. Use communication to organize and clarify mathematical thinking: Reading and writing; Discussion, listening, and questioning.	Language Arts	Ongoing throughout
4.5.B.2. Communicate mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing.	Science	Ongoing throughout
4.5.C.3. Recognize that mathematics is used in a variety of contexts outside of mathematics.	All disciplines	Discussions throughout
4.5.C.4. Apply mathematics in practical situations and in other disciplines.	All disciplines	Discussions throughout
4.5.C.5. Trace the development of mathematical concepts over time and across cultures.	Social Studies World Languages	Discussions throughout Discussions throughout

8th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.5.D.3. Select and use various types of reasoning and methods of proof.	Language Arts	Discussions and persuasive essays
4.5.D.4. Rely on reasoning, rather than answer keys, teachers, or peers, to check the correctness of their problem solutions.	All disciplines	Discussions throughout
4.5.D.5. Make and investigate mathematical conjectures: Counterexamples as a means of disproving conjectures; Verifying conjectures using informal reasoning or proofs.	Science	Scientific method
4.5.D.6. Evaluate examples of mathematical reasoning and determine whether they are valid.	Science	Scientific method
4.5.E.1. Create and use representations to organize, record, and communicate mathematical ideas: Concrete representations (e.g., base-ten blocks or algebra tiles); Pictorial representations (e.g., diagrams, charts, or tables); Symbolic representations (e.g., a formula); Graphical representations (e.g., a line graph).	Science	Data collection from labs
4.5.F.2. Use computer spreadsheets, software, and graphing utilities to organize and display quantitative information.	Software Applications	Creating excel spreadsheets

8th Grade Interdisciplinary Connections

Standard	Subject	Learning Experience
4.5.F.5. Use computer software to make and verify conjectures about geometric objects.	Technology	Creating models

Pre-Algebra Curriculum

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

The Number System

8.NS.1

Know that there are numbers that are not rational, and approximate them by rational numbers.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
8.NS.1. Understand informally that every number has a decimal expansion; the rational numbers are those with decimal expansions that terminate in 0s or eventually repeat. Know that other numbers are called irrational.	McDougal Littell 7.3 - 7.7 (Rational Numbers) 1.4, 4.6, 4.7 (Exponents) 9.1, 9.2 (Roots) 2.1 (Absolute Value) 4.8 (Scientific Notation) 5.5 Holt Ch. 6 (Rational Numbers) 4.1 - 4.3 (Exponents) 4.5 - 4.6 (Roots) 1.3 (Absolute Value) 4.4 (Scientific Notation) 2.1 - 2.6	•Students calculate relative change in quantity •Number line in classroom •Students use calculators to work with numbers with more than 10 digits •Students explore irrational numbers through Pythagorean's Theorem •Calculator Exploration	Teacher Observation Test/Quiz Do Now Students discuss why numbers are easier to compare when written in scientific notation Classwork Activity/Accuracy of Student work

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

The Number System

8.NS.2

Know that there are numbers that are not rational, and approximate them by rational numbers.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
8.NS.2. Use Rational approximations of irrational numbers to compare the size of irrational nuumbers, locate them approximately on a number line diagram and estimate the value of expressions.	McDougal Littell 2.1 4.3, 4.5 5.1 - 5.7 7.1 - 7.7, 8.8 Holt 2.2 5.1 - 5.5 6.1 - 6.6	•Students use real world data to discover relationships of numbers •Ongoing in all investigations •Students use the multiplication function to perform successive approximations to find acceptable values for several square roots (the square roots of 2, 3, 7, 19 and the cube roots of 10 and 100) •Students make estimates of the number of times things happen in a lifetime and compare estimations to referenced materials	Teacher Observation Test/Quiz Do Now

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Expressions and Equations
8.EE.1

Work with radicals and integer exponents.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
8.EE.1. Know and apply the properties of integer exponents to generate equivalent numerical expressions.	McDougal Littell 2.2 - 2.5 4.6 - 4.8 Holt 1.4 - 1.6 4.1 - 4.4	•Technology exploration •Ongoing in all investigations	Do Now Written assessments Teacher Observation

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Expressions and Equations
8.EE.2

Work with radicals and integer exponents.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
8.EE.2. Use square root and cube root symbols to represent solutions to equations of the form x sqaured = p and x cubed =p, whre p is a postive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that the square root of 2 is irrational.	McDougal Littell 7.3 - 7.7 (Rational Numbers) 1.4, 4.6, 4.7 (Exponents) 9.1, 9.2 (Roots) 2.1 (Absolute Value) 4.8 (Scientific Notation) Holt Ch. 6 (Rational Numbers) 4.1 - 4.3 (Exponents) 4.5 - 4.6 (Roots) 1.3 (Absolute Value) 4.4 (Scientific Notation)	•Students calculate relative change in quantity •Number line in classroom •Students use calculators to work with numbers with more than 10 digits •Technology exploration	Do Now Written assessments Teacher Observation Classwork Activity/Accuracy of Student work

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Expressions and Equations
8.EE.3

Work with radicals and integer exponents.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
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 quantites, and to express how many times as much one is than the other.	McDougal Littell 2.1 - 2.5 Holt 2.3 - 2.5	•Geometer's Sketchpad Activity to show integers on a number line	Do Now Written assessments Teacher Observation

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Expressions and Equations
8.EE.4

Work with radicals and integer exponents.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
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 scientifc notation that has been generated by technology.	McDougal Littell 1.2-1.3 2.1, 2.6, 2.7 3.1 - 3.4 4.8 7.2 - 7.7 Holt 1.1, 1.3, 1.7 - 1.8 4.4 5.1, 5.4 6.2 - 6.6 11.1	•Number Line in classroom •Solving real world problems •Ongoing in all investigations •Direct Instruction	Do Now Written assessments Teacher Observation

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Expressions and Equations

8.EE.5

Understand the connections between proportional realationships, lines, and linear equations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
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.	McDougal Littell 11.3 - 11.7 Holt 13.4 - 13.7	•Technology Exploration	Do Now Written assessments Teacher Observation

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Expressions and Equations

8.EE.6

Understand the connections between proportional realationships, lines, and linear equations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
8.EE.6. Used 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* .	McDougal Littell 11.3 - 11.7 Holt 13.4 - 13.7	•Technology Exploration •Cooperative Learning Activities	Do Now Written assessments Teacher Observation

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Expressions and Equations
8.EE.7

Analyze and solve linear equations and pairs of simultaneous linear equations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
8.EE.7. Solve linear equations in one variable. **A. Give examples of linear equations in one varialbe with one solution, infinitely many solutions or no solutions. Show which of these possibilities is the case by successively transforming the given equation 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).**	McDougal Littell 3.1 - 3.4 6.1 - 6.4 Holt 11.2	•Direct Instruction •Real world problem solving	Teacher Observation Test/Quiz Do Now
B. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	McDougal Littell 3.1 - 3.4, 3.6 - 3.7 6.1 - 6.5 Holt 1.7 - 1.8 11.2, 11.4	•Direct Instruction •Real world problem solving	Teacher Observation Test/Quiz Do Now

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Expressions and Equations
8.EE.8

Analyze and solve linear equations and pairs of simultaneous linear equations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
8.EE.8. Analyze and solve pairs of simultaneous linear equations. **A. 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.**	Teacher created material	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Teacher Observation Do Now Test/Quiz iPod/iPad
B. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations.	Teacher created material	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Teacher Observation Do Now Test/Quiz iPod/iPad

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Expressions and Equations
8.EE.8

Analyze and solve linear equations and pairs of simultaneous linear equations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
C. Solve real-world and mathematical problems leading to two linear equations in two variables.	Teacher created material	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Teacher Observation Do Now Test/Quiz iPod/iPad

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
8.F.1

Define, evaluate, and compare functions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
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.	McDougal Littell 11.3 - 11.7 Holt 13.4 - 13.7	•Technology Exploration	Teacher Observation Test/Quiz Do Now

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
8.F.2

Define, evaluate, and compare functions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
8.F.2. Compare the properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	McDougal Littell 11.3 - 11.7 Holt 13.4 - 13.7	•Technology Exploration	Teacher Observation Test/Quiz Do Now

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
8.F.3

Define, evaluate, and compare functions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
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.	McDougal Littell 11.3 - 11.7 Holt 13.4 - 13.7	•Technology Exploration	Teacher Observation Test/Quiz Do Now

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
8.F.4

Use functions to model relationships between quantities.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
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 its graph or a table of values.**	McDougal Littell 11.6 _____ Holt 12.2 Teacher created materials Various workbooks	•Ongoing through all investigations	Teacher Observation Test/Quiz Do Now

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
8.F.5

Use functions to model relationships between quantities.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
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 qualitiative features of a function that has been described verbally.**	McDougal Littell 11.6 Holt 12.2	•Technology Exploration	Teacher Observation Test/Quiz Do Now

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry

8.G.1

Understand congruence and similarity using physical models, transparencies, or geometry software.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
8.G.1. Verify experimentally the properties of rotations, reflections, and translations. **A. Lines are taken to lines, and line segments to line segments of the same length.** **B. Angles are taken to angles of the same measure.** **C. Parallel lines are taken to parallel lines.**	McDougal Littell 8.6 - 8.8 Holt 7.7	•Technology Exploration •Exploring through Geometer's Sketchpad •Rotation art activity	Teacher Observation Test/Quiz Do Now Students describe sizes, positions, orientation of shapes such as flips, slides, turns, and scaling

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry

8.G.2

Understand congruence and similarity using physical models, transparencies, or geometry software.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
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.	McDougal Littell 2.8 8.6 - 8.8 _____ Holt 7.5, 7.7	•Technology Exploration •Exploring through Geometer's Sketchpad •Students explore shapes with tangrams •Students build a Sierpinski's Triangle •Students explore properties of shapes in a coordinate system	Teacher Observation Test/Quiz Do Now Students describe sizes, positions, orientation of shapes such as flips, slides, turns, and scaling

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry

8.G.3

Understand congruence and similarity using physical models, transparencies, or geometry software.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
8.G.3. Describe the effect of dialations, translations, rotations, and reflections on two-dimensional figures using coordinates.	McDougal Littell 1.6, 2.8 8.6 - 8.8 10.1 - 10.2 Holt 7.5, 7.7 8.1 - 8.3	• Students investigate the relationship between perimeter and area • Students will perform transformations on a coordinate grid	Teacher Observation Test/Quiz Do Now

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry

8.G.4

Understand congruence and similarity using physical models, transparencies, or geometry software.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
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.	McDougal Littell 8.6 - 8.8 Holt 7.7	•Technology Exploration •Exploring through Geometer's Sketchpad • Rotation art activity	Teacher Observation Test/Quiz Do Now Students describe sizes, positions, orientation of shapes such as flips, slides, turns, and scaling

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry

8.G.5

Understand congruence and similarity using physical models, transparencies, or geometry software.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
8.G.5. Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.	McDougal Littell Chapter 8 Holt Chapter 7	•Technology Exploration •Exploring through Geometer's Sketchpad •Direct instruction •Using manipulatives	Teacher Observation Test/Quiz Do Now

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry
8.G.6-8

Understand and apply the Pythagorean Theorem.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
8.G.6. Explain a proof of the Pythagorean Theorem and its converse.	McDougal Littell 9.3 - 9.4 _____ Holt 4.8	•Using manipulatives •Exploring through Geometer's Sketchpad	Teacher Observation Test/Quiz Do Now
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.	McDougal Littell 9.3 - 9.4 _____ Holt 4.8	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Teacher Observation Test/Quiz Do Now

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Mathematics Curriculum
Grades 7-8

Geometry
8.G.6-8

Understand and apply the Pythagorean Theorem.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
8.G.8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	McDougal Littell 9.3 - 9.4 _____ Holt 4.8	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Teacher Observation Test/Quiz Do Now

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry

8.G.9

Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
8.G.9. Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	McDougal Littell 10.4 - 10.7 Holt 8.5 - 8.9	•Students investigate the nets of three dimensional figures •Exploring through Geometer's Sketchpad •Direct instruction •Teacher demonstration with manipulatives •Students will evaluate problems	Teacher Observation Test/Quiz Do Now Students build models and explain how changes in surface area and volume are impacted as lengths are changed

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
8.SP.1

Investigate patterns of association in bivariate data.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
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, postive or negative association, linear association and nonlinear association.	McDougal Littell 5.8, 12.1 - 12.3 Holt 9.3 -9.4, 9.8	•Real world problem solving	Teacher Observation Test/Quiz Do Now Graphing Project

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
8.SP.2

Investigate patterns of association in bivariate data.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
8.SP.2. Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	McDougal Littell 11.2 Holt 12.7	•Solve real-world problems	Teacher Observation Test/Quiz Do Now Students produce a scatterplot to determine line of best fit

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
8.SP.3

Investigate patterns of association in bivariate data.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
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.	Teacher created materials Various workbooks	•Students will evaluate problems	Teacher Observation Test/Quiz Do Now

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics and Probability
8.SP.4

Investigate patterns of association in bivariate data.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
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 two variables.**	McDougal Littell 5.8, 12.1 - 12.3 Holt 9.3 -9.4, 9.8 Teacher created material Various worbooks	•Real-world problem solving	Teacher Observation Test/Quiz Do Now Student project

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

8th Grade Pre-Algebra
Resources

Title of Resource	Author(s)	Publisher	Copyright
McDougall Littell Course 3 and all related resources (differentiation including ELL)	Ron Larson, Laurie Boswell, Timothy D. Kanold, and Lee Stiff	McDougal Littell	2008
Holt Course 3: Pre-Algebra and all related resources (differentiation including ELL)	Jeanine M. Bennett, Edward B. Burger, David J. Chard, Audrey L. Jackson, Paul A. Kennedy, Freddie L. Renfro, Janet K. Scheer, and Bert K. Waits	Holt, Reinhart and Winston	2007
Middle School Math with Pizzazz!	Steve and Janis Marcy	McGraw Hill	1989
Pre-Algebra with Pizzazz!	Steve and Janis Marcy	McGraw Hill	2002
Algebra with Pizzazz!	Steve and Janis Marcy	McGraw Hill	2002
Algebra Joke Worksheets	Christine A. Koers	Nasco	2003
Pre-Algebra Joke Worksheets	Christine A. Koers	Nasco	2003
Geo Joke Worksheets	Christine A. Koers	Nasco	2002

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

8th Grade Pre-Algebra
Resources

Title of Resource	Author(s)	Publisher	Copyright
Fractions, Decimals, and Percents Joke Worksheets	Christine A. Koers	Nasco	2006
Algebra Teacher's Activities Kit	Judith and Gary Robert Muschla	Jossey-Bass	2003
The 100+ Series - Algebra Grades 5-8	Mary Lee Vivian and Margaret Thomas	Frank Schaffer Publications	2003
The 100+ Series - Pre-Algebra Grades 5-8	Mary Lee Vivian and Margaret Thomas	Frank Schaffer Publications	2003
The 100+ Series - Math Grades 7-8	Mary Lee Vivian and Margaret Thomas	Frank Schaffer Publications	2003
The 100+ Series - Intro to Geometry	Mary Lee Vivian and Margaret Thomas	Frank Schaffer Publications	2003
The 100+ Series - Standard Based Math Grades 7-8	Mary Lee Vivian and Margaret Thomas	Frank Schaffer Publications	2002
Skills for Success - Algebra	Theresa Kane McKell	Carson-Dellosa Publishing Company, Inc.	2003
Pre-Algebra Brain Teasers	Lorin Olschanski	Teacher Created Resources Inc.	1999
Algebra Puzzlers	Theresa Kane McKell	Frank Schaffer Publications	1998
Pre-Algebra	Dawn Talluto Jacobi	Kelley Wingate Publications	1996

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

8th Grade Pre-Algebra
Resources

Title of Resource	Author(s)	Publisher	Copyright
Masterminds Riddle Math Series - Pre-Algebra	Brenda Opie and Douglas McAvinn	Incentive Publications Inc.	1996
NJ Frameworks	http://www.state.nj.us/education/frameworks/math/index.html	New Jersey Department of Education and Rutgers	-------
Tinkerplots	Clifford Konold, Craig D. Miller	Key Curriculum Press	2005
Geometer's Sketchpad	Nicholas Jackiw	Key Curriculum Press	2006
Punchline Problem Solving	Steve and Janis Marcy	Marcy Mathworks	2006
Punchline Algebra Book A and Book B	Steve and Janis Marcy	Marcy Mathworks	2006
GEPA Success in Mathematics - Level H	Richard Crowe	Steck-Vaughn/Berrent Company	2000
Question Quest - Level D Mathematics	Paul Lawrence	LL Teach, Inc.	2002
Preparing for the New Jersey GEPA - Grade 8	David J. Glatzer and Joyce Glatzer	Amsco School Publications, Inc.	2005
New Jersey ASK 8 Coach	Jerome D. Kaplan	Triumph Learning	2008
Adventures with Area	Evelyn B. Christensen	Nasco	2007

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

8th Grade Pre-Algebra
Resources

Title of Resource	Author(s)	Publisher	Copyright
Quadrant Quandries	Julie K. Cohen	Nasco	2007
The Complete Book of Graphing	Douglas C. McBroom	J. Weston Walch Publisher	2001
Scratch Your Brain Algebra	Doug Brumbaugh and David Rock	The Critical Thinking Co.	2008
Algebra Practice Exercises	Thomas E. Campbell	J. Weston Walch Publisher	1996
Power Practice Pre-Algebra	Wendy Osterman	Creative Teaching Press	2004
Power Practice Geometry	Pamela Jennett	Creative Teaching Press	2007
Algebra Puzzles	Hank Garcia	Creative Teaching Press	2006
Plotting Pictures	Paula Rozell	Dale Seymour Publications	1995
Skills for Success - Geometry	Tiffany Moore and Jenae Hawkins	Carson-Dellosa Publishing Company, Inc.	2007
Measuring Up - Grade 8	Michael Goodman	People's Publishing Group	2003
Kuta Software- Infinite Pre-Algebra		Kuta Software LLC	2010

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

8th Grade Pre-Algebra
Pacing Guide

Unit	McDougall Littell Mathematics Course 3 Chapter	Number of Blocks
Benchmark Assessment - Pre-Test	-----	-----
Variables and Expressions	1	6
Integer Operations	2	7
Equations and Inequalities	3	11
Factors, Fractions, Exponents, Rational Number Operations	4,5	5
Ratio, Proportion, Percent	7	10
Benchmark Assessment - Midtem	-----	-----

Flemington Raritan School District
Mathematics Curriculum
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8th Grade Pre-Algebra
Pacing Guide

Unit	McDougall Littell Mathematics Course 3 Chapter	Number of Blocks
Polygons and Transformations	8	10
Real Numbers and Right Triangles	9	4
Measurement, Area, Volume	10	6
Data Analysis and Probability	11	6
Multi-Step Equations and Inequalities	5	7
Linear Equations and Graphs	12	5
Benchmark Assessment - Post-Test	-----	-----

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

8th Grade Pre-Algebra
Pacing Guide

Unit	Holt Course 3 Chapter	Number of Blocks
Benchmark Assessment - Pre-Test	-----	-----
Fractions, Decimals, and Percents	2	10
Variables, Expressions, Integers	1	10
Graphs, Functions, and Sequences	3	9
Exponents, Square roots, Pythagorean Theorem, and Scientific Notation	4	8
Ratios, Proportion, Similarity	5	11
Percents	6	5

Flemington Raritan School District
Mathematics Curriculum
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8th Grade Pre-Algebra
Pacing Guide

Unit	Holt Course 3 Chapter	Number of Blocks
Benchmark Assessment - Midterm	-----	-----
Two Dimensional Geometry	7	5
Measurement, Area, and Volume	8	12
Probability	10	7
Data and Statistics	9	4
Benchmark Assessment - Post-Test	-----	-----

Algebra 1B Curriculum

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Number and Quantity
The Real Number System
9-12.N.RN.2

Extend the properties of exponents to rational exponents.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.RN.2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.	Larson Algebra 1 - 8.1, 8.2, 8.3	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Number and Quantity
The Real Number System
9-12.N.RN.3

Use properties of rational and irriational numbers.

Knowledge/Skills/Understanding	Resources	investigations, activities and	Assessments
9-12.N.RN.3. Explain why the sum or product of two rational numbers is rational;that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.	Larson Algebra 1 - 2.1 - 2.4, 2.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Number and Quantity
Quantities
9-12.N.Q.1-2

Reason quantitatively and use units to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.Q.1.Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	Throughout various sections	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.N.Q.2.Define appropriate quantities for the purpose of descriptive modeling.	Larson Algebra 1 - 4.6, 5.1, 5.6, 5.7	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Seeing Structure in Expressions
9-12.A.SSE.1-2

Interpret the structure of expressions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.SSE.1. Interpret expressions that represent a quantity in terms of its context. **A. Interpret parts of an expression, such as terms, factors, and coefficients.** **B. Interpret complicated expressions by viewing one or more of their parts as a single entity.**	Larson Algebra 1 - 4.2, 4.3, 4.5, 4.6, 4.7	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.SSE.2. Use the structure of an expression to identify ways to rewrite it.	Larson Algebra 1 - Chapter 9	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Seeing Structure in Expressions
9-12.A.SSE.3

Write expressions in equivalent forms to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.SSE.3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. **A. Factor a quadratic expression to reveal the zeros of the function it defines.**	Larson Algebra 1 - 9.4 - 9.8	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Arithmetic with Polynomials and Rational Expressions
9-12.A.APR.1

Perform arithmetic operations on polynomials.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.APR.1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	Larson Algebra 1 - 9.1 - 9.3	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Mathematics Curriculum
Grades 7-8

Algebra
Arithmetic with Polynomials and Rational Expressions
9-12.A.APR.3

Understand the relationship between zeros and factors and factors of polynomials.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.APR.3. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	Larson Algebra 1 - 10.1 - 10.3	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Arithmetic with Polynomials and Rational Expressions
9-12.A.APR.4-5

Use polynomial identities to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.APR.4. Prove polynomial identities and use the to describe numerical relationships.	Larson Algebra 1 - 9.3, 9.7	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Mathematics Curriculum
Grades 7-8

Algebra
Arithmetic with Polynomials and Rational Expressions
9-12.A.APR.7

Rewrite rational expressions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.APR.7. (+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, mulitply, and divide rational expressions.	Larson Algebra 1 - 12.4 - 12.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Mathematics Curriculum
Grades 7-8

Algebra
Creating Equations
9-12.A.CED.1-2

Create equations that describe numbers or relationships

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.CED.1.Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratric functions, and simple rational and exponential functions.	Larson Algebra 1 - 3.1 - 3.4, 6.1 - 6.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.CED.2.Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Larson Algebra 1 - 1.6, 1.7, 4.2 - 4.5, 4.7	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Creating Equations
9-12.A.CED.1-2

Create equations that describe numbers or relationships

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.CED.3.Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.	Larson Algebra 1 - 6.7, Chapter 7	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.CED.4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.	Larson Algebra 1 - 3.8	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.1

Understand solving equations as a process of reasoning and explain the reasoning.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.1.Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	Larson Algebra 1 - Chapter 3	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.3

Solve equations and inequalities in one variable.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.3.Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Larson Algebra 1 - Chapters 3, 4, 6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.3

Solve equations and inequalities in one variable.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.4. Solve quadratic equations in one variable. **B. Solve quadratic equations by inspection, taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the intial form of the equation. Recognize when the quadratic formula give complex solutions and write them as *a*+/-*b* i for real numbers *a* and *b* .**	Larson Algebra 1 - 10.3 - 10.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.5-6

Solve systems of equations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.5.Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	Larson Algebra 1 - 7.2 - 7.5	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.REI.6. Solve systems of linear equations exactly and approximately, focusing on pairs of linear equations in two variables.	Larson Algebra 1 - 7.1 - 7.5	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.10-12

Represent and solve equations and inequalities graphically.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line.)	Larson Algebra 1 - 4.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Mathematics Curriculum
Grades 7-8

Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.10-12

Represent and solve equations and inequalities graphically.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.11. Explain why the x-coordinate of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x)=g(x); find the solutions approxiametely, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational absolute value, exponential, and logarithmic functions.	4.5, 4.7, 10.3	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.10-12

Represent and solve equations and inequalities graphically.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.12. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	Larson Algebra 1 - 6.7, 7.5, 7.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Interpreting Functions
9-12.F.IF.2

Understand the concept of a function and use function notation.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.2.Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Larson Algebra 1 - 4.7	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Functions
Interpreting Functions
9-12.F.IF.4,6

Interpret functions that arise in applications in terms of the context.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.	Larson Algebra 1 - 4.3, 4.7, 10.3	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.F.IF.6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	Larson Algebra 1 - 4.4, 5.2, 5.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Functions
Interpreting Functions
9-12.F.IF.7,9

Analyze functions using different representations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **A. Graph linear and quadratic functions and show intercepts.**	Larson Algebra 1 - 4.2, 4.3, 4.7, 10.1	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.F.IF.9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	Larson Algebra 1 - 10.1	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Building Functions
9-12.F.BF.3

Build new functions from existing functions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.BF.3. Identify the effect on the graph of replacing *f(x)* by *f(x)+k, kf(x), f(kx)* , and *f(x+k)* for specific values of *k* (both positive and negative); find the value of *k* give the graphs. Experiment with cases and illustrate an explanation of the effect on the graph using technology.	Larson Algebra 1 - 4.7, 5.1	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
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Functions
Linear, Quadratic, and Exponential Models
9-12.F.LE.2

Construct and compare linear, quadratic, and exponential models and solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.LE.2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (including reading these from a table).	Larson Algebra 1 - Chapter 4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
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Functions
Linear, Quadratic, and Exponential Models
9-12.F.LE.5

Interpret expressions for functions in terms of the situation they model.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.LE.5. Interpret the parameters in a linear or exponential function in terms of a context.	Larson Algebra 1 - 5.1, 5.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Geometry
Congruence
9-12.G.CO.1,5

Experiment with transformations in the plane.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.G.CO.1. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	Larson Algebra 1 - 5.5 Teacher Created Materials	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.G.CO.5. Given a geometric figure and a rotation, reflection or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	Teacher Created Materials	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
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Geometry
Geometric Measurement and Dimension
9-12.G.GMD.3

Explain volume formulas and use them to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.G.GMB.3 Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.	Teacher Created Materials	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
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Geometry
Modeling with Geometry
9-12.G.MG.1

Apply geometric concepts in modeling situations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.G.MG.1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).	Teacher Created Materials	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics
Interpreting Categorical and Quantitative Data
9-12.S.ID.1-2

Summarize, represent, and interpret data on a single count or measurement variable.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.ID.1. Represent data with plots on the real number line (dot plots, histograms, and box plots).	Larson Algebra 1 - 13.7, 13.8	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.S.ID.2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile rangle, standard deviation) of two or more different data sets.	Larson Algebra 1 - 13.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics
Interpreting Categorical and Quantitative Data
9-12.S.ID.7

Interpret linear models.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.ID.7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	Larson Algebra 1 - 4.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics

Conditional Probability and the Rules of Probability

9-12.S.CP.2-3

Understand independence and conditional probability and use them to interpret data.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.CP.2. Understanf that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.	Larson Algebra 1 - 13.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.S.CP.3. Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same probability of A, and the conditional probability of B given A is the same as the probability of B.	Larson Algebra 1 - 13.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Statistics

Conditional Probability and the Rules of Probability

9-12.S.CP.9

Use the rules of probability to compute the probabilities of compound events in a uniform probability model.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.CP.9. Use permutations and combinations to compute probabilities of compound events and solve problems.	Larson Algebra 1 - 13.2, 13.3	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

8th Grade Algebra 1B

Resources

Title of Resource	Author(s)	Publisher	Copyright
Larson Algebra 1	Ron Larson, Laurie Boswell,	Holt McDougal	2011
Middle School Math with Pizzazz!	Steve and Janis Marcy	McGraw Hill	1989
Pre-Algebra with Pizzazz!	Steve and Janis Marcy	Ongoing through all	2002
Algebra with Pizzazz!	Steve and Janis Marcy	McGraw Hill	2002
Algebra Joke Worksheets	Christine A. Koers	Nasco	2003
Pre-Algebra Joke Worksheets	Christine A. Koers	Nasco	2003
Geo Joke Worksheets	Christine A. Koers	Nasco	2002
Fractions, Decimals, and Percents Joke Worksheets	Christine A. Koers	Nasco	2006
Algebra Teacher's Activities Kit	Judith and Gary Robert Muschla	Jossey-Bass	2003
The 100+ Series - Algebra	Mary Lee Vivian and Margaret	McGraw Hill	2003
The 100+ Series - Pre-Algebra	Mary Lee Vivian and Margaret	McGraw Hill	2003
Skills for Success - Algebra	Theresa Kane McKell	Carson-Dellosa Publishing	2003
Pre-Algebra Brain Teasers	Lorin Olschanski	Teacher Created Resources Inc.	1999
Algebra Puzzlers	Theresa Kane McKell	Frank Schaffer Publications	1998
Pre-Algebra	Dawn Talluto Jacobi	Kelley Wingate Publications	1996
Masterminds Riddle Math Series - Pre-Algebra	Brenda Opie and Douglas McAvinn	Incentive Publications Inc.	1996
NJ Frameworks	http://www.state.nj.us/education/fra	New Jersey Department of	-------
Tinkerplots	Clifford Konold, Craig D. Miller	Key Curriculum Press	2005
Geometer's Sketchpad	Nicholas Jackiw	Key Curriculum Press	2006
Punchline Problem Solving	Steve and Janis Marcy	Marcy Mathworks	2006
Punchline Algebra Book A and Book B	Steve and Janis Marcy	Marcy Mathworks	2006
GEPA Success in Mathematics - Level H	Richard Crowe	Steck-Vaughn/Berrent Company	2000

Flemington Raritan School District
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8th Grade Algebra 1B

Resources

Title of Resource	Author(s)	Publisher	Copyright
Question Quest - Level D Mathematics	Paul Lawrence	LL Teach, Inc.	2002
Preparing for the New Jersey GEPA - Grade 8	David J. Glatzer and Joyce Glatzer	Amsco School Publications, Inc.	2005
New Jersey ASK 8 Coach	Jerome D. Kaplan	Triumph Learning	2008
Adventures with Area	Evelyn B. Christensen	Nasco	2007
Quadrant Quandries	Julie K. Cohen	Nasco	2007
The Complete Book of Graphing	Douglas C. McBroom	J. Weston Walch Publisher	2001
Scratch Your Brain Algebra	Doug Brumbaugh and David Rock	The Critical Thinking Co.	2008
Algebra Practice Exercises	Thomas E. Campbell	J. Weston Walch Publisher	1996
Developing Skills in Algebra 1: Book C	Harold and Loretta Taylor	Dale Seymour Publications	1984
The Univeristy of Chicago School Mathematics	Scott Foresman	Harper Collins Publishers	1996
Geometry Reproducibles	Sara Freeman	Milliken Publishing Company	2004
What's My Rule? (Using Problem Solving	Dave and Teddy Logothetti	Dale Seymour Publications	1983
Test Time Algebra	Maureen Steddin	J. Weston Walch Publisher	2003
Kuta Software - Infinite Pre-Algera, Algebra 1		Kuta Software LLC	2010, 2011

Flemington Raritan School District
Mathematics Curriculum
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Algebra 1B
Pacing Guide

Unit	Larson Algebra 1	Number of Blocks
Benchmark Assessment - Pretest	-----	-----
Linear Equations	3 and 6	10
Graphing, Slope, and Writing the Equation of a Line	4 and 5	Ongoing through all investigations, activities and
Systems of Equations and Inequalities	7	10
Exponents and Exponential Models	8	8
Benchmark Assessment - Midterm	-----	-----
Radicals	11	6
Polynomials	9	7
Quadratics	10	12
Rational Expressions and Functions	12	6
Benchmark Assessment - Final	-----	-----

Advanced Algebra Curriculum

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Number and Quantity
The Real Number System
9-12.N.RN.1-2

Extend the properties of exponents to rational exponents.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.RN.1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.	Larson Algebra 2 - 6.1	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.N.RN.2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.	Larson Algebra 2 - 6.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Number and Quantity
The Real Number System
9-12.N.RN.3

Use properties of rational and irriational numbers.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.RN.3. Explain why the sum or product of two rational numbers is rational;that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.	Larson Algebra 2 - 1.1	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Number and Quantity
Quantities
9-12.N.Q.1-3

Reason quantitatively and use units to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.Q.1.Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	Throughout various sections	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.N.Q.2.Define appropriate quantities for the purpose of descriptive modeling.	Larson Algebra 2 - 4.3, 4.4, 4.5, 4.8	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Number and Quantity
The Complex Number System
9-12.N.CN.1-3

Perform arithmetic operations with complex numbers.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.CN.1. Know there is a complex number such as *i* such that *i* squared = -1, and every complex number has the form *a*+*bi* with *a* and *b* real.	Larson Algebra 2 - 4.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.N.CN.2. Use the revelation that *i* squared = -1 and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	Larson Algebra 2 - 4.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Number and Quantity
The Complex Number System
9-12.N.CN.1-3

Perform arithmetic operations with complex numbers.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.CN.3. (+) Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.	Larson Algebra 2 - 4.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Number and Quantity
The Complex Number System
9-12.N.CN.7

Use complex numbers in polynomial identities and equations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.CN.7. Solve quadratic equations with real coefficients that have complex solutions.	Larson Algebra 2 - 4.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Seeing Structure in Expressions
9-12.A.SSE.1-2

Interpret the structure of expressions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.SSE.1. Interpret expressions that represent a quantity in terms of its context. **A. Interpret parts of an expression, such as terms, factors, and coefficients.** **B. Interpret complicated expressions by viewing one or more of their parts as a single entity.**	Larson Algebra 2 - 4.1, 4.3, 4.4, 5.2, 5.3, 5.4, 5.6, 5.8, 6.3	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.SSE.2. Use the structure of an expression to identify ways to rewrite it.	Larson Algebra 2 - 4.3, 4.4, 5.3, 5.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Seeing Structure in Expressions
9-12.A.SSE.3

Write expressions in equivalent forms to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.SSE.3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. **A. Factor a quadratic expression to reveal the zeros of the functin it defines.**	Larson Algebra 2 - 4.3, 4.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
C. Use the properties of exponents to transform expressions for exponential functions.	Larson Algebra 2 - 7.1, 7.2, 5.1	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Arithmetic with Polynomials and Rational Expressions
9-12.A.APR.1

Perform arithmetic operations on polynomials.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.APR.1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	Larson Algebra 2 - 5.3	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Arithmetic with Polynomials and Rational Expressions
9-12.A.APR.3

Understand the relationship between zeros and factors and factors of polynomials.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.APR.3. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	Larson Algebra 2 - 5.2, 5.4, 5.6, 5.8	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Arithmetic with Polynomials and Rational Expressions
9-12.A.APR.4

Use polynomial identities to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.APR.4. Prove polynomial identities and use the to describe numerical relationships.	Larson Algebra 2 - 5.3, 5.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Arithmetic with Polynomials and Rational Expressions
9-12.A.APR.6-7

Rewrite rational expressions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.APR.6.Rewrite simple rational expressions in different forms; writes *a(x)/b(x)* in the form *q(x)+r(x)/b(x)* where *a(x), b(x), q(x)* and *r(x)* are polynomials with the degree *r(x)* less than the degree of *b(x*), using inspection, long division, or for the more complicated examples, a computer algebra system.	Larson Algebra 2 - 5.5	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.APR.7. (+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, mulitply, and divide rational expressions.	Larson Algebra 2 - 8.4, 8.5	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Creating Equations
9-12.A.CED.1-4

Create equations that describe numbers or relationships

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.CED.1.Create equations and inequalities in one variable and use them to solve problems.	Larson Algebra 2 - 1.6, 1.7, 4.5	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.CED.2.Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales	Larson Algebra 2 - 2.3, 2.4, 2.5, 2.8	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Creating Equations
9-12.A.CED.1-4

Create equations that describe numbers or relationships

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.CED.3.Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.	Larson Algebra 2 - 1.6, 1.7, 3.1 - 3.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.CED.4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.	Larson Algebra 2 - 2.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.1-2

Understand solving equations as a process of reasoning and explain the reasoning.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.1.Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	Larson Algebra 2 - Chapter 1	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.REI.2. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	Larson Algebra 2 - 6.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.3-4

Solve equations and inequalities in one variable.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.3.Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Larson Algebra 2 - Chapter 1	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.REI.4. Solve quadratic equations in one variable. **B. Solve quadratic equations by inspection, taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the intial form of the equation. Recognize when the quadratic formula give complex solutions and write them as a+/-bi for real numbers a and b.**	Larson Algebra 2 - 4.3, 4.4, 4.5, 4.6, 4.8, 4.9	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.5-9

Solve systems of equations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.5.Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	Larson Algebra 2 - 3.2, 3.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.REI.6. Solve systems of linear equations exactly and approximately, focusing on pairs of linear equations in two variables.	Larson Algebra 2 - 3.1, 3.2, 3.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.10-12

Represent and solve equations and inequalities graphically.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line.)	Larson Algebra 2 - 2.3, 4.1, 4.2, 5.2, 7.1, 7.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.10-12

Represent and solve equations and inequalities graphically.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.11. Explain why the x-coordinate of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x)=g(x); find the solutions approxiametely, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational absolute value, exponential, and logarithmic functions.	Larson Algebra 2 - 5.6, 5.7, 5.8	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.10-12

Represent and solve equations and inequalities graphically.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.12. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inqequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	Larson Algebra 2 - 4.9	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Grades 7-8

Functions
Interpreting Functions
9-12.F.IF.1-2

Understand the concept of a function and use function notation.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If *f* is a function and *x* is an element of its domain, then *f(x)* denotes the output of *f* corresponding to the input *x*. The graph of *f* is the graph of the equation *y=f(x)*.	Teacher created resources	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.F.IF.2.Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Teacher created resources Throughout entire book	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Functions
Interpreting Functions
9-12.F.IF.4-6

Interpret functions that arise in applications in terms of the context.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.	Larson Algebra 2 - 4.2, 5.8	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.F.IF.5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.	Larson Algebra 2 - 7.1, 7.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Functions
Interpreting Functions
9-12.F.IF.4-6

Interpret functions that arise in applications in terms of the context.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	Larson Algebra 2 - 2.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Functions
Interpreting Functions
9-12.F.IF.7-9

Analyze functions using different representations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **A. Graph linear and quadratic functions and show intercepts.**	Larson Algebra 2 - 2.3, 4.1, 4.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.F.IF.8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. **B. Use the properties of exponents to interpret expressions for exponential functions.**	Larson Algebra 2 - 5.1	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Functions
Interpreting Functions
9-12.F.IF.7-9

Analyze functions using different representations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	Throughout entire book	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Functions
Building Functions
9-12.F.BF.3

Build new functions from existing functions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.BF.3. Identify the effect on the graph of replacing *f(x)* by *f(x)+k, kf(x), f(kx)* , and *f(x+k)* for specific values of *k* (both positive and negative); find the value of *k* give the graphs. Experiment with cases and illustrate an explanation of the effect on the graph using technology.	Larson Algebra 2 - 2.7, 7.1, 7.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Functions
Linear, Quadratic, and Exponential Models
9-12.F.LE.1-3

Construct and compare linear, quadratic, and exponential models and solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.LE.1. Distinguish between situations that can be modeled with linear functions and with exponential functions. **A. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.** **B. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.** **C. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.**	A. Larson Algebra 2 - 2.1, 7.1, 7.2 B. Larson Algebra 2 - 2.2 C. Larson Algebra 2 - 7.1, 7.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Functions
Linear, Quadratic, and Exponential Models
9-12.F.LE.1-3

Construct and compare linear, quadratic, and exponential models and solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.LE.2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (including reading these from a table).	Larson Algebra 2 - 2.3, 7.1, 7.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.F.LE.3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	Larson Algebra 2 - 2.3, 4.1, 4.2, 7.1, 7.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Functions
Linear, Quadratic, and Exponential Models
9-12.F.LE.5

Interpret expressions for functions in terms of the situation they model.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.LE.5. Interpret the parameters in a linear or exponential function in terms of a context.	Larson Algebra 2 - 2.3, 2.4, 7.1, 7.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Geometry
Congruence
9-12.G.CO.1,5

Experiment with transformations in the plane.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.G.CO.1. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	Larson Algebra 2 - 2.4 Teacher created resources	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.G.CO.5. Given a geometric figure and a rotation, reflection or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	Teacher created resources	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Geometry
Geometric Measurement and Dimension
9-12.G.GMD.3

Explain volume formulas and use them to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.G.GMB.3 Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.	Teacher created resources	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Geometry
Modeling with Geometry
9-12.G.MG.1

Apply geometric concepts in modeling situations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.G.MG.1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).	Teacher created resources	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Statistics
Interpreting Categorical and Quantitative Data
9-12.S.ID.1-2

Summarize, represent, and interpret data on a single count or measurement variable.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.ID.1. Represent data with plots on the real number line (dot plots, histograms, and box plots).	Larson Algebra 2 - 10.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.S.ID.2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile rangle, standard deviation) of two or more different data sets.	Teacher created resources	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Statistics
Interpreting Categorical and Quantitative Data
9-12.S.ID.7

Interpret linear models.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.ID.7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	Larson Algebra 2 - 2.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Statistics

Conditional Probability and the Rules of Probability

9-12.S.CP.2-3

Understand independence and conditional probability and use them to interpret data.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.CP.2. Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.	Larson Algebra 2 - 10.5	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Statistics
Conditional Probability and the Rules of Probability
9-12.S.CP.2-3

Understand independence and conditional probability and use them to interpret data.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.CP.3. Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same probability of A, and the conditional probability of B given A is the same as the probability of B.	Larson Algebra 2 - 10.5	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Statistics

Conditional Probability and the Rules of Probability

9-12.S.CP.9

Use the rules of probability to compute the probabilities of compound events in a uniform probability model.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.CP.9. Use permutations and combinations to compute probabilities of compound events and solve problems.	Larson Algebra 2 - 10.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

8th Grade Advanced Algebra
Resources

Title of Resource	Author(s)	Publisher	Copyright
Algebra 2	Ron Larson, Laurie Boswell, Timothy D. Kanold, Lee Stiff	Houghton Mifflin Harcourt Publishing Company	2011
Clever Counting	Lappan, Fey, Fitzgerald, Friel, and Phillips	Prentice Hall	2002
Geometry	Mary Lee Vivian, Tammy Bohn-Voepel, and Margaret Thomas	McGraw Hill	2003
Algebra with Pizzazz!	Steve and Janis Marcy	McGraw Hill	2002
Algebra Joke Worksheets	Christine A. Koers	Nasco	2003
Applying Algebra from A to Z	Margaret Thomas	Instructional Fair	1999
Geo Joke Worksheets	Christine A. Koers	Nasco	2002
Algebra Warm-Ups	Scott McFadden	Dale Seymour	1987
Algebra Teacher's Activities Kit	Judith and Gary Robert Muschla	Jossey-Bass	2003
Geometry	Sara Freeman	Milliken	2004
Algebra	Dolciani, Brown, and Cole	Houghton Mifflin	1986

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8th Grade Advanced Algebra
Resources

Title of Resource	Author(s)	Publisher	Copyright
Skills for Success - Algebra	Theresa Kane McKell	Carson-Dellosa Publishing Company, Inc.	2003
Algebra and Trigonometry	Dolciani, Sorgenfrey, Brown, and Kane	Houghton Mifflin	1986
Algebra Puzzlers	Theresa Kane McKell	Frank Schaffer Publications	1998
Algebra	Mary Lee Vivian and Margaret Thomas	McGraw Hill	2003
Algebra II	Chad Helgeson and Margaret Thomas	McGraw Hill	2003
GEPA Success in Mathematics	Richard Crowe	Steck-Vaughn/Berrent	2000
Tinkerplots	Clifford Konold, Craig D. Miller	Key Curriculum Press	2005
Geometer's Sketchpad	Nicholas Jackiw	Key Curriculum Press	2006
80 Activities to Make Basic Algebra Easier	Robert S. Graflund	Walch Publishing	2001
Navigating through Probability	Shaughnessy, Barrett, Billstein, Kranendonk, and Peck	The National Council of Teachers of Mathematics, Inc.	2004
GEPA Success in Mathematics - Level H	Richard Crowe	Steck-Vaughn/Berrent Company	2000

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8th Grade Advanced Algebra
Resources

Title of Resource	Author(s)	Publisher	Copyright
Question Quest - Level D Mathematics	Paul Lawrence	LL Teach, Inc.	2002
Preparing for the New Jersey GEPA - Grade 8	David J. Glatzer and Joyce Glatzer	Amsco School Publications, Inc.	2005
New Jersey ASK 8 Coach	Jerome D. Kaplan	Triumph Learning	2008
Navigating through Geometry	Day, Kelley, Krussel, Lott, and Hirstein	The National Council of Teachers of Mathematics, Inc.	2001
Navigating through Data Analysis	Burrill, Franklin, Godbold, and Young	The National Council of Teachers of Mathematics, Inc.	2003
The Complete Book of Graphing	Douglas C. McBroom	J. Weston Walch Publisher	2001
Algebra Practice Exercises	Thomas E. Campbell	J. Weston Walch Publisher	1996
Kuta Software - Infinite Algebra 1, Infinite Algebra 2		Kuta Software LLC	2010, 2011

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8th Grade Advanced Algebra
Pacing Guide

Unit	Larson Algebra 2	Number of Blocks
Linear Equations	1	8
Graphing, Slope, and Writing the Equation of a Line	2	6
Systems of Equations and Inequalities	3	5
Exponents and Exponential Models	5, 6, 7	8
Polynomials	5	6
Quadratics	4	12
Benchmark Assessment - Midterm	-----	-----
Rational Expressions	8	11
Radical Expressions	6	8
Probability and Discrete Math	10, 11	7
Benchmark Assessment - Final	-----	-----

Algebra 2 Curriculum

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Grades 7-8

Number and Quantity
The Real Number System
9-12.N.RN.1-2

Extend the properties of exponents to rational exponents.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.RN.1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.	Larson Algebra 2 - 6.1	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.N.RN.2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.	Larson Algebra 2 - 6.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Number and Quantity
The Real Number System
9-12.N.RN.3

Use properties of rational and irriational numbers.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.RN.3. Explain why the sum or product of two rational numbers is rational;that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.	Larson Algebra 2 - 1.1	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Number and Quantity
Quantities
9-12.N.Q.1-3

Reason quantitatively and use units to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.Q.1.Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	Throughout various sections	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.N.Q.2.Define appropriate quantities for the purpose of descriptive modeling.	Larson Algebra 2 - 4.3, 4.4, 4.5, 4.7, 4.8	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Number and Quantity
The Complex Number System
9-12.N.CN.1-3

Perform arithmetic operations with complex numbers.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.CN.1. Know there is a complex number such as *i* such that *i* squared = -1, and every complex number has the form *a+bi* with *a* and *b* real.	Larson Algebra 2 - 4.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.N.CN.2. Use the revelation that *i* squared = -1 and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	Larson Algebra 2 - 4.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Mathematics Curriculum
Grades 7-8

Number and Quantity
The Complex Number System
9-12.N.CN.1-3

Perform arithmetic operations with complex numbers.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.CN.3. (+) Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.	Larson Algebra 2 - 4.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
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Grades 7-8

Number and Quantity
The Complex Number System
9-12.N.CN.4-5

Represent complex numbers and their operations on the complex plane.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.CN.4. (+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.	Larson Algebra 2 - 4.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Mathematics Curriculum
Grades 7-8

Number and Quantity
The Complex Number System
9-12.N.CN.4-5

Represent complex numbers and their operations on the complex plane.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.CN.5. (+) Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation.	Larson Algebra 2 - 4.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Mathematics Curriculum
Grades 7-8

Number and Quantity
The Complex Number System
9-12.N.CN.7-9

Use complex numbers in polynomial identities and equations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.CN.7. Solve quadratic equations with real coefficients that have complex solutions.	Larson Algebra 2 - 4.6, 4.7	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.N.CN.8. (+) Extend polynomial identities to the complex numbers.	Larson Algebra 2 - 5.7	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Grades 7-8

Number and Quantity
The Complex Number System
9-12.N.CN.7-9

Use complex numbers in polynomial identities and equations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.N.CN.9. (+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	Larson Algebra 2 - 5.7	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Seeing Structure in Expressions
9-12.A.SSE.1-2

Interpret the structure of expressions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.SSE.1. Interpret expressions that represent a quantity in terms of its context. **A. Interpret parts of an expression, such as terms, factors, and coefficients.** **B. Interpret complicated expressions by viewing one or more of their parts as a single entity.**	Larson Algebra 2 - 4.1, 4.3, 4.4, 5.2, 5.3, 5.4, 5.6, 5.8, 6.3	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.SSE.2. Use the structure of an expression to identify ways to rewrite it.	Larson Algebra 2 - 4.3, 4.4, 5.3, 5.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Seeing Structure in Expressions
9-12.A.SSE.3

Write expressions in equivalent forms to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.SSE.3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. **A. Factor a quadratic expression to reveal the zeros of the functin it defines.**	Larson Algebra 2 - 4.3, 4.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
B. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	Larson Algebra 2 - 4.7	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Seeing Structure in Expressions
9-12.A.SSE.3

Write expressions in equivalent forms to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
C. Use the properties of exponents to transform expressions for exponential functions.	Larson Algebra 2 - 5.1, 7.1, 7.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Arithmetic with Polynomials and Rational Expressions
9-12.A.APR.1

Perform arithmetic operations on polynomials.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.APR.1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	Larson Algebra 2 - 5.3	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Arithmetic with Polynomials and Rational Expressions
9-12.A.APR.2-3

Understand the relationship between zeros and factors and factors of polynomials.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.APR.2. Know and apply the Remainder Theorem; For a polynomial *p(x)* and a number *a* , the remainder on division *x-a* is *p(a)* , so *p(a) = 0* if and only if *(x-a)* is a factor of *p(x)* .	Larson Algebra 2 - 5.5	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.APR.3. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	Larson Algebra 2 - 5.2, 5.4, 5.6, 5.8	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Arithmetic with Polynomials and Rational Expressions
9-12.A.APR.4-5

Use polynomial identities to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.APR.4. Prove polynomial identities and use the to describe numerical relationships.	Larson Algebra 2 - 5.3, 5.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.APR.5. (+) Know and apply the Binomial Theorem for the expansion of *(x + y)^n* in powers of *x* and *y* for a positive integer *n*, where *x* and *y* are any numbers, with coefficients determined for example by Pascal's Triangle.	Larson Algebra 2 - 10.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Arithmetic with Polynomials and Rational Expressions
9-12.A.APR.6-7

Rewrite rational expressions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.APR.6.Rewrite simple rational expressions in different forms; writes *a(x)/b(x)* in the form *q(x)+r(x)/b(x)* where *a(x), b(x), q(x)* and *r(x)* are polynomials with the degree *r(x)* less than the degree of *b(x*), using inspection, long division, or for the more complicated examples, a computer algebra system.	Larson Algebra 2 - 5.5	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.APR.7. (+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, mulitply, and divide rational expressions.	Larson Algebra 2 - 8.4, 8.5	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Algebra
Creating Equations
9-12.A.CED.1-4

Create equations that describe numbers or relationships

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.CED.1.Create equations and inequalities in one variable and use them to solve problems.	Larson Algebra 2 - 1.6, 1.7, 4.5	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.CED.2.Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales	Larson Algebra 2 - 2.3, 2.4, 2.5, 2.8	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Grades 7-8

Algebra
Creating Equations
9-12.A.CED.1-4

Create equations that describe numbers or relationships

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.CED.3.Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.	Larson Algebra 2 - 1.6, 1.7, 3.1 - 3.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.CED.4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.	Larson Algebra 2 - 2.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.1-2

Understand solving equations as a process of reasoning and explain the reasoning.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.1.Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	Larson Algebra 2 - Chapter 1	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.REI.2. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	Larson Algebra 2 - 6.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.3-4

Solve equations and inequalities in one variable.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.3.Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Larson Algebra 2 - Chapter 1	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.REI.4. Solve quadratic equations in one variable. **A. Use the method of completing the square to transform any quadratic equation in *x* into an equation of the form *(x-p)^2=q* that has the same solutions. Derive the quadratic formula from this form.**	Larson Algebra 2 - 4.7	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.3-4

Solve equations and inequalities in one variable.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
B. Solve quadratic equations by inspection, taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the intial form of the equation. Recognize when the quadratic formula give complex solutions and write them as *a*+/-*b* i for real numbers *a* and *b* .	Larson Algebra 2 - 4.3 - 4.9	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.5-9

Solve systems of equations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.5.Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	Larson Algebra 2 - 3.2, 3.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.REI.6. Solve systems of linear equations exactly and approximately, focusing on pairs of linear equations in two variables.	Larson Algebra 2 - 3.1, 3.2, 3.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
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Grades 7-8

Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.5-9

Solve systems of equations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.7. Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.	Larson Algebra 2 - 9.7	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.A.REI.8.(+) Represent a system of linear equations as a single matrix equation in a vector variable.	Larson Algebra 2 - 3.7	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.5-9

Solve systems of equations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.9.(+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimensions 3x3 or greater).	Larson Algebra 2 - 3.7, 3.8	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.10-12

Represent and solve equations and inequalities graphically.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line.)	Larson Algebra 2 - 2.3, 4.1, 4.2, 5.2, 6.5, 7.1, 7.2, 8.2, 8.3, 9.2 - 9.5	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.10-12

Represent and solve equations and inequalities graphically.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.11. Explain why the x-coordinate of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x)=g(x); find the solutions approxiametely, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational absolute value, exponential, and logarithmic functions.	Larson Algebra 2 - 5.6, 5.7, 5.8, 7.7	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Algebra
Reasoning with Equations and Inequalities
9-12.A.REI.10-12

Represent and solve equations and inequalities graphically.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.A.REI.12. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inqequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	Larson Algebra 2 - 4.9	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Grades 7-8

Functions
Interpreting Functions
9-12.F.IF.1

Understand the concept of a function and use function notation.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If *f* is a function and *x* is an element of its domain, then *f(x)* denotes the output of *f* corresponding to the input *x*. The graph of *f* is the graph of the equation *y=f(x)*.	Teacher created resources	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Functions
Interpreting Functions
9-12.F.IF.4-6

Interpret functions that arise in applications in terms of the context.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.	Larson Algebra 2 - 4.2, 5.8	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.F.IF.5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.	Larson Algebra 2 - 6.5, 7.1, 7.2, 7.3, 8.2, 8.3	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
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Functions
Interpreting Functions
9-12.F.IF.4-6

Interpret functions that arise in applications in terms of the context.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	Larson Algebra 2 - 2.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Mathematics Curriculum
Grades 7-8

Functions
Interpreting Functions
9-12.F.IF.7-9

Analyze functions using different representations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.IF.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **A. Graph linear and quadratic functions and show intercepts.**	Larson Algebra 2 - 2.3, 4.1, 4.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
B. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	Larson Algebra 2 - 6.5	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Functions
Interpreting Functions
9-12.F.IF.7-9

Analyze functions using different representations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
C. Graph polynomial functions, indentifying zeros when suitable factorizations are available, and showing end behavior.	Larson Algebra 2 - 5.2, 5.8	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
D (+). Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.	Larson Algebra 2 - 8.2, 8.3	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Interpreting Functions
9-12.F.IF.7-9

Analyze functions using different representations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
E. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trignometric functions, showing period, midline, and amplitude.	Larson Algebra 2 - 7.1, 7.2, 7.4, 7.5	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.F.IF.8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. **A. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.**	Larson Algebra 2 - 4.7	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Mathematics Curriculum
Grades 7-8

Functions
Interpreting Functions
9-12.F.IF.7-9

Analyze functions using different representations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
B. Use the properties of exponents to interpret expressions for exponential functions.	Larson Algebra 2 - 5.1	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.F.IF.9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	Throughout various sections	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Grades 7-8

Functions
Building Functions
9-12.F.BF.3-5

Build new functions from existing functions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.BF.3. Identify the effect on the graph of replacing *f(x)* by *f(x)+k, kf(x), f(kx)* , and *f(x+k)* for specific values of *k* (both positive and negative); find the value of *k* give the graphs. Experiment with cases and illustrate an explanation of the effect on the graph using technology.	Larson Algebra 2 - 2.7, 7.1, 7.2, 7.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.F.BF.4. Find inverse functions. **A. Solve an equation of the form f(x)=c for a simple function f that has an inverse and write an expression for the inverse.** **B. (+) Verify by composition that one function is the inverse of another.**	Larson Algebra 2 - 6.3	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Functions
Building Functions
9-12.F.BF.3-5

Build new functions from existing functions.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.BF.5. (+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.	Larson Algebra 2 - 7.4	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

Functions
Linear, Quadratic, and Exponential Models
9-12.F.LE.1-4

Construct and compare linear, quadratic, and exponential models and solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.LE.1. Distinguish between situations that can be modeled with linear functions and with exponential functions. **A. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.** **B. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.** **C. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.**	A. Larson Algebra 2 - 2.1, 7.1, 7.2 B. Larson Algebra 2 - 2.2 C. Larson Algebra 2 - 7.1, 7.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Functions
Linear, Quadratic, and Exponential Models
9-12.F.LE.1-4

Construct and compare linear, quadratic, and exponential models and solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.LE.2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (including reading these from a table).	Larson Algebra 2 - 2.3, 7.1, 7.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.F.LE.3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	Larson Algebra 2 - 2.3, 4.1, 4.2, 7.1, 7.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Functions
Linear, Quadratic, and Exponential Models
9-12.F.LE.1-4

Construct and compare linear, quadratic, and exponential models and solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.LE.4. For exponential models, express as a logarithm the solution to *ab^ct=d* where *a, c* , and *d* are numbers and the base *b* is 2, 10, or *e* ; evaluate the logarithm using technology.	Larson Algebra 2 - 7.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Functions
Linear, Quadratic, and Exponential Models
9-12.F.LE.5

Interpret expressions for functions in terms of the situation they model.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.F.LE.5. Interpret the parameters in a linear or exponential function in terms of a context.	Larson Algebra 2 - 2.3, 2.4, 7.1, 7.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Geometry
Congruence
9-12.G.CO.1,5

Experiment with transformations in the plane.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.G.CO.1. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	Larson Algebra 2 - 2.4 Teacher created resources	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.G.CO.5. Given a geometric figure and a rotation, reflection or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	Teacher created resources	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Geometry
Geometric Measurement and Dimension
9-12.G.GMD.3

Explain volume formulas and use them to solve problems.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.G.GMB.3 Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.	Teacher created resources	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Geometry
Modeling with Geometry
9-12.G.MG.1

Apply geometric concepts in modeling situations.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.G.MG.1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).	Teacher created resources	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Statistics
Interpreting Categorical and Quantitative Data
9-12.S.ID.1-2

Summarize, represent, and interpret data on a single count or measurement variable.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.ID.1. Represent data with plots on the real number line (dot plots, histograms, and box plots).	Larson Algebra 2 - 10.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.S.ID.2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile rangle, standard deviation) of two or more different data sets.	Teacher created resources	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Statistics

Interpreting Categorical and Quantitative Data

9-12.S.ID.6

Summarize, represent, and interpret data on two categorical and quantitative variables.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.ID.6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. **A. Fit a function to the data; use funcitons fitted to data to solve problems in the context of the data.** **B. Informally assess the fit of a function by plotting and analyzing residuals.** **C. Fit a linear function for a scatter plot that suggest a linear association.**	Teacher created resources	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Statistics
Interpreting Categorical and Quantitative Data
9-12.S.ID.7-8

Interpret linear models.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.ID.7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	Larson Algebra 2 - 2.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.S.ID.8. Compute (using technology) and interpret the correlation coefficient of a linear fit.	Larson Algebra 2 - 2.6	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Statistics
Conditional Probability and the Rules of Probability
9-12.S.CP.2-3

Understand independence and conditional probability and use them to interpret data.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.CP.2. Understanf that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.	Larson Algebra 2 - 10.5	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration
9-12.S.CP.3. Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same probability of A, and the conditional probability of B given A is the same as the probability of B.	Larson Algebra 2 - 10.5	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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Statistics

Conditional Probability and the Rules of Probability

9-12.S.CP.9

Use the rules of probability to compute the probabilities of compound events in a uniform probability model.

Knowledge/Skills/Understanding	Resources	Learning Experiences	Assessments
9-12.S.CP.9. Use permutations and combinations to compute probabilities of compound events and solve problems.	Larson Algebra 2 - 10.2	Ongoing through all investigations, activities and class discussions Cooperative learning activities Direct Instruction Solving real world problems Ipad activities Manipulatives Calculator implementation	Written Test/Quiz Written/Verbal Explanation Open-ended Questions Teacher Observation Do Nows/Classwork Homework success Class participation Classmate coloboration

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8th Grade Algebra 2

Resources

Title of Resource	Author(s)	Publisher	Copyright
Larson Algebra 2	Ron Larson, Laurie Boswell, Timothy D. Kanold, Lee Stiff	Houghton Mifflin Harcourt Publishing Company	2011
Clever Counting	Lappan, Fey, Fitzgerald, Friel, and Phillips	Prentice Hall	2002
Geometry	Mary Lee Vivian, Tammy Bohn-Voepel, and Margaret Thomas	McGraw Hill	2003
Algebra with Pizzazz!	Steve and Janis Marcy	McGraw Hill	2002
Algebra Joke Worksheets	Christine A. Koers	Nasco	2003
Applying Algebra from A to Z	Margaret Thomas	Instructional Fair	1999
Geo Joke Worksheets	Christine A. Koers	Nasco	2002
Algebra Warm-Ups	Scott McFadden	Dale Seymour	1987
Algebra Teacher's Activities Kit	Judith and Gary Robert Muschla	Jossey-Bass	2003
Geometry	Sara Freeman	Milliken	2004

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8th Grade Algebra 2

Resources

Title of Resource	Author(s)	Publisher	Copyright
Algebra	Dolciani, Brown, and Cole	Houghton Mifflin	1986
Skills for Success - Algebra	Theresa Kane McKell	Carson-Dellosa Publishing Company, Inc.	2003
Algebra and Trigonometry	Dolciani, Sorgenfrey, Brown, and Kane	Houghton Mifflin	1986
Algebra Puzzlers	Theresa Kane McKell	Frank Schaffer Publications	1998
Algebra	Mary Lee Vivian and Margaret Thomas	McGraw Hill	2003
Algebra II	Chad Helgeson and Margaret Thomas	McGraw Hill	2003
GEPA Success in Mathematics	Richard Crowe	Steck-Vaughn/Berrent	2000
Tinkerplots	Clifford Konold, Craig D. Miller	Key Curriculum Press	2005
Geometer's Sketchpad	Nicholas Jackiw	Key Curriculum Press	2006
Navigating through Probability	Shaughnessy, Barrett, Billstein, Kranendonk, and Peck	The National Council of Teachers of Mathematics, Inc.	2004

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8th Grade Algebra 2

Resources

Title of Resource	Author(s)	Publisher	Copyright
GEPA Success in Mathematics - Level H	Richard Crowe	Steck-Vaughn/Berrent Company	2000
Question Quest - Level D Mathematics	Paul Lawrence	LL Teach, Inc.	2002
Preparing for the New Jersey GEPA - Grade 8	David J. Glatzer and Joyce Glatzer	Amsco School Publications, Inc.	2005
New Jersey ASK 8 Coach	Jerome D. Kaplan	Triumph Learning	2008
Navigating through Geometry	Day, Kelley, Krussel, Lott, and Hirstein	The National Council of Teachers of Mathematics, Inc.	2001
Navigating through Data Analysis	Burrill, Franklin, Godbold, and Young	The National Council of Teachers of Mathematics, Inc.	2003
The Complete Book of Graphing	Douglas C. McBroom	J. Weston Walch Publisher	2001
Algebra Practice Exercises	Thomas E. Campbell	J. Weston Walch Publisher	1996
Algebra 2 Word Problems	Anita Harnadek	The Critical Thinking Company	2001
Joke Worksheets for Algebra 2 and Precalculus	Christine A. Koers	NASCO	2002

Flemington Raritan School District
Mathematics Curriculum
Grades 7-8

8th Grade Algebra 2

Resources

Title of Resource	Author(s)	Publisher	Copyright
Algebra 2	Sara Freeman	Milliken	2002
Algebra 2	Barbara Sandall and Melfried Olson	Mark Twain Media	2005
Kuta Software - Infinte Algebra 1, Infinite Algebra 2		Kuta Software LLC	2010, 2011

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Grades 7-8

8th Grade Algebra 2
Pacing Guide

Unit	Larson Algebra 2	Number of Blocks
Equations and Inequalities	1	6
Linear Equations and Functions	2	6
Systems of Equations and Inequalities	3	4
Matrices	4	5
Quadratic Functions	5	10
Polynomials and Polynomial Function	6	10
Benchmark Assessment - Midterm	-----	-----
Powers, Roots, and Radicals	7	9
Exponential and Logarithmic Functions	8	9
Rational Equations and Functions	9	7
Quadratic Relations and Conic Sections	10	8
Benchmark Assessment - Final	-----	-----