Summit Public Schools
Summit, New Jersey
Grade Level: 7/ Content Area: Pre Algebra Enriched

Overview:

Pre-Algebra 7 Enriched is intended for mathematics students with excellent quantitative skills and demonstrated capacity for dealing with abstract concepts. Algebraic and geometric concepts are taught in an interrelated manner. Arithmetic procedures involving fractions, decimals, and signed numbers are solidified. Units involving statistics and geometry are also presented. It has been designed to offer a rigorous and comprehensive foundation that addresses the core content standards for 7th grade mathematics as well as select content from 8th grade. Major topics include:

Ratio and Proportional Relationships - Analyze proportional relationships and use them to solve real-world and mathematical problems.

The Number System - Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

Expressions and Equations - Use properties of operations to generate equivalent expressions, solve real-life and mathematical problems using numerical and algebraic expressions and equations, work with radicals and integer exponents, understand the connections between proportional relationships, lines, and linear equations, and analyze and solve linear equations.

Geometry - Understand congruence and similarity using physical models, transparencies, or geometry software and Understand and apply the Pythagorean Theorem.

Scope & Sequence for Pre-Algebra Enriched

- Skills Inventory Assessment - Week 2 (approx. 2 days)
- Q1, Q2, Q3 - approximately 1 week after the close of each marking period (approx. 3 days for each - review & assessment)
- Placement Test - Approx end of March

Section	**Unit 1 - Integers & Rational Numbers**	Days
	Review: order of operations and evaluating algebraic expressions (positive values only)	1
	Review: Prime Factorization and Basic Exponents	1
1.1	Rational Numbers (including convert, compare, order)	1
	Quiz	1
1.2	Adding Integers	1
1.3	Adding Rational Numbers	2
1.4	Subtracting Integers	1
1.5	Subtracting Rational Numbers	2
	Review & Quiz	2
2.1, 2.2	Multiply Integers, Divide Integers	1
2.3	Convert between Fractions & Decimals (review)	1
2.4 & 2.5	Multiply/Divide Rational Numbers	1
	Review & Test - Integers & Rational Numbers	2
	Total Number of Days:	*17*
	Unit 2 - Expressions	
3.1	Algebraic Expressions (parts of expression, combining like terms, basic distributive property)	1
	Algebraic Fractions (add & subtract fractions with variables)	2
3.2	Add and Subtract Expressions	2
	Quiz	1
3.3	Distributive Property, Multiply/Divide Expressions	1
	GCF of Monomials	1
3.4	Factoring Expressions	1
	Review & Test - Expressions	2
14.1 - 14.4	Exponent Rules (zero power rule, negative exponents, etc.)	6-7
14.6	Scientific Notation	1
	Review & Quest - Exponent Rules & Scientific Notation	2
	Total Number of Days:	*21*
	Unit 3 - Equations	
4.1	Add and Subtract Equations	1

4.2	Multiply & Divide Equations	1
4.3	2 Step Equations	1
	Multi-Step Equations	1
	Review & Quiz	2
7.3 Alg1 Interactions	Algebraic Applications	3
	Quiz	1
7.4 Alg1 Interactions	Literal Equations	2
	Review & Test- Equations CALCULATOR ALLOWED (multi, literal & applications)	3
4.4	Write & Graph Inequalities	1
5.7 Alg1 Interactions	Solving Related Inequalities 5.7 - includes basic compound inequalities (graphing, writing from a graph) (use additional outside resources)	1
4.5	One Step Add & Subtract Inequalities	1
4.6	One Step Multiply & Divide Inequalities	1
4.6	Two Step & Multi Step Inequalities	2
	Review & Quiz (NO Calculator)	2
Alg1 Interactions	Absolute Value Equations	1
	Absolute Inequalities	2
	Review and Test CALCULATOR ALLOWED	2
	Total Number of Days:	*28*
	Unit 4 - Ratios & Proportions	
5.1	Ratios & Ratio Tables	1
5.2	Ratios & Unit Rates	1
5.3 & 5.4	Proportions (write, solve & equivalent)	1
5.5	Graph Proportional Relationships & COP	2
5.6	Scale Drawings	1
	Review & Quiz	2
6.1	Convert fractions, decimals, percents	1
6.2-6.3	Percent Proportions	1
6.4-6.6	Percent Applications - tax, tip, markup, discount	4
	Review & Quiz	2
6.4-6.6	Commission, Interest, Percent Change/Error	3
	Review/Test Ratio, Percent Application and Proportional Relationships	2
	Total Number of Days:	*21*
	Unit 5 - Probability & Statistics	

7.1	Probability -Outcomes & Events	1
7.2	Theoretical & Experimental Probability	1
7.3	Compound Events - Sample Spaces & Tree Diagrams	1
7.3	Compound Events - odds, independent/dependent	2
	Review & Quiz	2
8.1	Statistics - Samples & Populations	1
8.2	Use Random Samples to Describe Populations	1
8.3	Compare Populations (using box plots & dot plots)- IQR & Box Plots	2
8.4	Using Random Samples to Compare Populations	1
	Review MMM, MAD	2
	Review and Quiz	2
Alg8 11.5	Scatter Plots and Correlation	1
Alg8.11.6 & Blue 9.2	Finding Lines of Best Fit	1
	Review & Test	3
	Total Number of Days:	*21*
	Unit 6 - Geometric Shapes & Angles	
9.1	Circles & Circumference	1
9.2	Area of Circles	1
9.3	Area and Perimeter of Compound Shapes	2
	Review & Quiz	2
9.4, 12.2	Construct Triangles - using protractors, classifying triangles, include conditions that form one triangle, no triangles, infinitely many triangles, angles of triangles (interior/exterior)	4
9.5	Angle Relationship - Complementary, Supplementary. Vertical, Adjacent	1
12.1	Parallel Lines & Transversals	2
12.3	Angles of Polygons	1
	Review and Quiz: 9.4,9.5, 12.1,12.2,12.3	2
15.1	Finding Square Roots & Perfect Squares	1
15.2	Pythagorean Theorem	1
15.6	Converse of Pythagorean Theorem	1
	Review & Quiz	2
11.1	translations	1
11.2	reflections	1
11.3	rotations	1
11.4	dilations	1
	review and test- 2D geometry	3
	Total Number of Days:	*28*

	Unit 7 - Surface Area & Volume	
10.1, 10.2	Surface Area of Cylinders and Polygonal Prisms	2
10.3	Surface Area of Cones, Pyramids, Spheres	2
	Review/Quiz Surface Area	2
10.4	Volume of Prisms (triangular/rectangular)	1
16.1	Volume of Cylinders	1
10.5, 16.2	Volume of Cones and Pyramids	1
16.3	Volume of Spheres	1
10.6	Cross sections	1
	Review/Test Surface Area and Volume	3
	Total Number of Days:	*14*

Supplemental Unit
(If Time Permits)

Graphing & Writing Linear Equations

13.1	Graphing Linear Equations	1
13.2	Slope of a Line	1
13.3	Graphing Proportional Relationships	1
13.4	Graphing Linear Equations in Slope-Intercept Form	2
13.5	Graphing Linear Equations in Standard Form	1
13.6	Writing Equations in Slope-Intercept Form	1

Unit 1: Number Systems & Rational Numbers	
Big Ideas: *Course Objectives/Content Statement(s)* ● Understand absolute values and ordering of rational numbers. ● Finding the sums & differences of integers and rational numbers. ● Finding the products & quotients of integers and rational numbers.	
Essential Questions *What provocative questions will foster inquiry, understanding, and transfer of learning?*	**Enduring Understandings** *What will students understand about the big ideas?*
● How do you solve problems involving fractions and decimals? ● How do you evaluate the effectiveness of different representations to communicate ideas? ● How do you add/subtract, multiple and divide integers and rational expressions? ● How do you identify and apply mathematics to everyday experiences, to activities in and outside school, with other disciplines and with other mathematical topics?	**Students will understand that:** ● They can represent rational numbers on a number line and describe absolute values & opposites. ● They can explain the rules for adding, subtracting, multiplying & dividing integers. ● They can solve problems involving addition subtraction, multiplication & division of rational numbers.
Areas of Focus: Proficiencies **(New Jersey Student Learning Standards)**	**Lessons**
Students will: 7.NS.A.1a Describe situations in which opposite quantities combine to make 0. 7.NS.A.1b Understand p + q as the number located a distance |q| 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. 7.NS.A.1c 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. 7.NS.A.1d Apply properties of operations as strategies to add and subtract rational numbers. 7.NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers. **Career-Ready Practices**	**Lessons: (chapters 1 & 2 - Big Ideas MRL 7 Accel CC)** 1. Review: order of operations and evaluate expressions with positive integers. (1 day) 2. Review: Exponents & Prime Factorization (1 day) 3. 1.1: (include rational numbers) - definitions of integers & rational numbers, absolute value, comparing rational numbers (1 day) 4. 1.2: Adding Integers & Decimals (positive & negative) (1 day) 5. 1.3: Adding Rational Numbers - Decimals Fractions, Mixed Numbers (2 days) 6. 1.4 Subtracting Integers (1 day) 7. 1.5 Subtracting Rational Numbers (2 days) 8. Review & Quiz - Chapter 1 (2 days) 9. 2.1 & 2.2: Multiplying Integers (include exponents) (1day) 10. 2.3: Converting between Fractions & Decimals (1 day) 11. Review & Test (2 days)

CRP1: Act as a responsible and contributing citizen and employee.
CRP2: Apply appropriate academic and technical skills.
CRP3: Attend to personal health and financial well-being.
CRP4: Communicate clearly and effectively and with reason.
CRP5: Consider the environmental, social and economic impacts of decisions.
CRP6: Demonstrate creativity and innovation.
CRP7: Employ valid and reliable research strategies.
CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9: Model integrity, ethical leadership and effective management.
CRP10: Plan education and career paths aligned to personal goals.
CRP11: Use technology to enhance productivity.
CRP12: Work productively in teams while using cultural global competence.

Differentiation

Interdisciplinary Connections

- STEAM activities referenced in Big Ideas textbook. The tasks reference boiling and freezing temperatures of various objects as well as precise measurements.

Technology Integration

- Desmos, Quizizz, EdPuzzle instructional videos

Global Perspectives

Supports for English Language Learners		
Sensory Supports	**Graphic Supports**	**Interactive Supports**
Real-life objects	Charts	In pairs or partners
Manipulatives	Graphic Organizers	In triands or small groups

Assessments

Formative Assessments:

- Quizizz assignments
- Homework assignments
- EdPuzzle results
- Quiz - Comparing & ordering, Absolute Value, Adding & Subtracting Rational Numbers

Summative Assessments, Projects, and Celebrations:

- Integers/Rational Numbers Test

Pictures	Tables	In a whole group
Illustrations, diagrams & drawings	Graphs	Using cooperative group
Magazines & Newspapers	Timelines	Structures
Physical activities	Number lines	Internet / Software support
Videos & Film		In the home language
Broadcasts		With mentors
Models & Figures		

Intervention Strategies		
Accommodations	**Interventions**	**Modifications**
Allow for verbal responses	Multi-sensory techniques	Modified tasks/expectations
Repeat/confirm directions	Increase task structure (e.g. directions, checks for understanding, feedback	Differentiated materials
Permit response provided via computer or electronic device	Increase opportunities to engage in active academic responding	Individualized assessment tools based on student need
Audio Books	Utilize pre-reading strategies and activities previews, anticipatory guides, and semantic mapping	Modified assessment grading

Unit 2: Expressions

Big Ideas: *Course Objectives/Content Statement(s)*

- Understanding parts of an algebraic expression
- Recognizing & writing equivalent algebraic expressions
- Simplifying expressions (including exponential expressions)

Essential Questions *What provocative questions will foster inquiry, understanding, and transfer of learning?*	**Enduring Understandings** *What will students understand about the big ideas?*
• Why do we simplify expressions? • What properties do I have to follow to simplify expressions? • How does writing expressions interpret real-life problems?	**Students will understand that:** • Identify parts of an algebraic expression. • Write algebraic expressions. • Solve problems using algebraic expressions. • Interpret algebraic expressions in real-life problems.
Areas of Focus: Proficiencies (New Jersey Student Learning Standards)	**Lessons**
Students will: 7.EE.A Use properties of operations to generate equivalent expressions. 1. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. 2. Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05." 7.EE.B. Solve real-life and mathematical problems using numerical and algebraic expressions and equations. 3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.	**Lessons: (chapter 3) - Big Ideas MRL 7 Accel CC) & Outside Resources** 1. 3.1: Algebraic Expressions - Combining Like Terms (helpful: rewrite as addition) (1 day) 2. Algebraic Fractions - Common Denominators/ With Variables (2 days) 3. 3.2: Adding & Subtracting Linear Expressions (2 days) 4. Quiz (1 day) 5. 3.3: Distributive Property - Include Combining Like Terms as 2nd Step (1 day) 6. Dividing Algebraic Expressions & GCF of Monomials (1 day) 7. 3.4: Factoring Expressions (2 days) 8. Review & Expressions Test (2 days) 9. Exponents: Product, Quotient, Power & Zero Rules (6 days) 10. Scientific Notation (1 day) 11. Review & Exponent Quest (2 days)

4. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. 8.EE.A. Work with radicals and integer exponents. 1. Know and apply the properties of integer exponents to generate equivalent numerical expressions. 3. Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. **Career-Ready Practices** **CRP1**: Act as a responsible and contributing citizen and employee. **CRP2**: Apply appropriate academic and technical skills. **CRP3**: Attend to personal health and financial well-being. **CRP4**: Communicate clearly and effectively and with reason. **CRP5**: Consider the environmental, social and economic impacts of decisions. **CRP6**: Demonstrate creativity and innovation. **CRP7**: Employ valid and reliable research strategies. **CRP8**: Utilize critical thinking to make sense of problems and persevere in solving them. **CRP9**: Model integrity, ethical leadership and effective management. **CRP10**: Plan education and career paths aligned to personal goals. **CRP11**: Use technology to enhance productivity. **CRP12**: Work productively in teams while using cultural global competence.	
Differentiation	**Assessments**
Interdisciplinary Connections **Technology Integration** ● Calculators, Quizizz, EdPuzzle instructional videos **Global Perspectives**	**Formative Assessments:** ● Quizizz assignments ● Homework assignments ● EdPuzzle results ● Quiz - Adding & Subtracting Polynomials **Summative Assessments, Projects, and Celebrations:** ● Simplifying Expressions Test ● Exponent Rule "Quest"

Supports for English Language Learners		
Sensory Supports	**Graphic Supports**	**Interactive Supports**
Real-life objects	Charts	In pairs or partners
Manipulatives	Graphic Organizers	In triands or small groups
Pictures	Tables	In a whole group
Illustrations, diagrams & drawings	Graphs	Using cooperative group
Magazines & Newspapers	Timelines	Structures
Physical activities	Number lines	Internet / Software support
Videos & Film		In the home language
Broadcasts		With mentors
Models & Figures		

Intervention Strategies		
Accommodations	**Interventions**	**Modifications**
Allow for verbal responses	Multi-sensory techniques	Modified tasks/expectations
Repeat/confirm directions	Increase task structure (e.g. directions, checks for understanding, feedback	Differentiated materials
Permit response provided via computer or electronic device	Increase opportunities to engage in active academic responding	Individualized assessment tools based on student need
Audio Books	Utilize pre-reading strategies and	Modified assessment grading

	activities previews, anticipatory guides, and semantic mapping		

Unit 3: Equations & Inequalities	
Big Ideas: *Course Objectives/Content Statement(s)* ● Write and solve equations using addition, subtraction, multiplication and or division. ● Write and solve inequalities and represent solutions of inequalities on number lines. ● Solve multi-step equations and inequalities ● Write multi-step equations related to profit, break-even, cost ● Solving literal equations	
Essential Questions *What provocative questions will foster inquiry, understanding, and transfer of learning?*	**Enduring Understandings** *What will students understand about the big ideas?*
● In what scenarios can algebra be utilized to solve problems in your life? ● How do I write and solve algebraic equations that represent real-world problems ?	**Students will understand that:** ● Identify key words and phrases to write equations and inequalities. ● Write word sentences as equations and inequalities. ● Solve equations and inequalities using properties. ● Use equations and inequalities to model and solve real-life problems.
Areas of Focus: Proficiencies (New Jersey Student Learning Standards)	**Lessons**
Students will: 7.EE.B. 3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. 4. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. 8.EEC. Analyze and solve linear equations and pairs of simultaneous linear equations. 7. Solve linear equations in one variable. a. Give examples of linear equations in one variable with one solution,	**Lessons: (chapter 4) - Big Ideas MRL 7 Accel CC) & Outside Resources** 1. 4.1: Solving Equations Using Addition & Subtraction (all rational numbers) *Enrichment - include combining like terms first* (1 day) 2. 4.2: Solving Equations Using Multiplication and Division (all rational numbers) (1 day) 3. 4.3 & Other Resources: Solving Two & Multi Step Equations (1 day) 4. Other Resources: Removing Denominators & Variables on Both Sides (1 day) 5. Review & Quiz (3 days) 6. Other Resources: Word Problems (profit, break-even, cost) (2-3 days) ***Calculators Allowed*** 7. Review & Quiz (2 days) ***Calculators Allowed*** 8. Other Resources: Literal Equations (2 days) ***Calculators Allowed*** 9. Review (2 days) & Test (1.5 days) ***Calculators Allowed***

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). b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. **Career-Ready Practices** **CRP1**: Act as a responsible and contributing citizen and employee. **CRP2**: Apply appropriate academic and technical skills. **CRP3**: Attend to personal health and financial well-being. **CRP4**: Communicate clearly and effectively and with reason. **CRP5**: Consider the environmental, social and economic impacts of decisions. **CRP6**: Demonstrate creativity and innovation. **CRP7**: Employ valid and reliable research strategies. **CRP8**: Utilize critical thinking to make sense of problems and persevere in solving them. **CRP9**: Model integrity, ethical leadership and effective management. **CRP10**: Plan education and career paths aligned to personal goals. **CRP11**: Use technology to enhance productivity. **CRP12**: Work productively in teams while using cultural global competence.	10. 4.4: Writing & Graphing Inequalities (1 day) 11. Other Resources: Graphing Compound Inequalities (include with above) 12. 4.5 & 4.6: One Step Inequalities Using Addition & Subtraction and Multiplication & Division (all rational numbers) Include Word Problems (2 days) 13. 4.7 & Other Resources: Two & Multi Step Inequalities - Include Word Problems (1 day) 14. Review & Quiz - Equations & Inequalities 15. Other Resources: Absolute Value Equations (2 days) ***Calculators Allowed*** 16. Other Resources: Absolute Value Inequalities - Include Special Cases (2 days) ***Calculators Allowed*** 17. Review & Unit Test (3 days) ***Calculators Allowed***
Differentiation	**Assessments**
Interdisciplinary Connections ● Many businesses, such as repair companies and rental companies, charge a base rate and a unit charge. A table, a bar chart, or an equation can easily model these charges. Ask students to look through magazines and newspapers to find companies that use this pricing structure. Have students create two separate tables of pricing for two different companies that use this pricing structure.	**Formative Assessments:** ● Quizizz assignments ● Homework assignments ● EdPuzzle results ● Quiz - Equations & Inequalities ● Quiz - Word Problems **Summative Assessments, Projects, and Celebrations:** ● Equations Test - 1.5/2 Days Split ● Inequalities & Absolute Value Test ***Calculators***

- Solve various literal equations that are used by scientists. i.e.

  $E = mc^2, \frac{9}{5}C + 32 = F, D = RT$

Technology Integration

- Calculators, Quizizz, EdPuzzle instructional videos

Global Perspectives

Supports for English Language Learners		
Sensory Supports	**Graphic Supports**	**Interactive Supports**
Real-life objects	Charts	In pairs or partners
Manipulatives	Graphic Organizers	In triands or small groups
Pictures	Tables	In a whole group
Illustrations, diagrams & drawings	Graphs	Using cooperative group
Magazines & Newspapers	Timelines	Structures
Physical activities	Number lines	Internet / Software support
Videos & Film		In the home language
Broadcasts		With mentors
Models & Figures		

Intervention Strategies		
Accommodations	**Interventions**	**Modifications**
Allow for verbal responses	Multi-sensory techniques	Modified tasks/expectations

Allowed

Repeat/confirm directions	Increase task structure (e.g. directions, checks for understanding, feedback	Differentiated materials
Permit response provided via computer or electronic device	Increase opportunities to engage in active academic responding	Individualized assessment tools based on student need
Audio Books	Utilize pre-reading strategies and activities previews, anticipatory guides, and semantic mapping	Modified assessment grading

Unit 4: Ratios, Proportional Relationships & Percents	
Big Ideas: *Course Objectives/Content Statement(s)* ● Students will calculate unit rates associated with ratios of fractions. ● Students will represent unit rate (constant of proportionality) in tables, graphs (the point (1, r), and equations (y = kx) ● Students will 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 ● Students will write and solve proportions in relation to problems involving similar figures, scale models, and maps. ● Students will solve problems involving real-world applications of percent.	
Essential Questions *What provocative questions will foster inquiry, understanding, and transfer of learning?*	**Enduring Understandings** *What will students understand about the big ideas?*
● How can ratios and proportions allow you to determine the unit rate (travel time on a road trip, cost per item, etc)? ● How can you identify a proportional relationship from a table? Graph? Equation? ● How can understanding unit rate, markup, and discount make you an intelligent consumer?	**Students will understand that:** ● The graph of a proportional relationship is a straight line through the origin. ● The unit rate, or constant of proportionality, is k in the equation y =kx, and *r* in the point (1, r) ● A unit rate can be used to determine which products constitute the better buy. ● Proportions and similar figures are used to find heights of tall trees and other objects that are not easy to measure directly. ● A proportion can be used to find actual distances from a map or sizes of actual objects from a scale model. ● Proportions are used to solve basic percent problems and applications of percent. ● Knowing applications of percent such as discount, sales tax, markup, percent change, commission, and simple interest can help one to be an informed consumer and make good purchasing decisions.
Areas of Focus: Proficiencies (New Jersey Student Learning Standards)	**Lessons**
Students will: 7.RP A. Analyze proportional relationships and use them	**Lessons: (chapters 5 & 6) - Big Ideas MRL 7 Accel CC**

to solve real-world and mathematical problems. 1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour. 2. Recognize and represent proportional relationships between quantities. 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. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn. 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. 3. Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. 7.G A. Draw, construct, and describe geometrical figures and describe the relationships between them. 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. **Career-Ready Practices** **CRP1**: Act as a responsible and contributing citizen and employee. **CRP2**: Apply appropriate academic and technical skills. **CRP3**: Attend to personal health and financial well-being. **CRP4**: Communicate clearly and effectively and with reason. **CRP5**: Consider the environmental, social and economic impacts of decisions. **CRP6**: Demonstrate creativity and innovation.	1. 5.1 Ratios & Ratio Tables (1 day) 2. 5.2 Rates & Unit Rate (1 day) 3. Complex Ratios with Fractions & Variable Expressions (Outside Resource) (1 day) 4. 5.3 & 5.4 Identifying Proportional Relationships & Writing & Solving- Equivalent Fractions Method, Using Cross Product (equations) (2-3 days) 5. 5.5 5.5 Graphs of Proportional Relationships (2-3 days) 6. Similar Figures & Indirect Measures (Outside Resources) (1 day) 7. Review & Quiz (2 days) 8. 6.1 Fractions, Decimals & Percents (1 day) 9. 6.2 Percent Proportions - is/of & part/whole (1 day) 10. 6.3 Percent Equations (1 day) 11. 6.5 Percent Markups & Discounts (4 days) 12. Review & Quiz (2 days) 13. 6.4 Percent Change (1 day) 14. 6.6 Simple Interest (1 day) 15. Review & Test (3 days)

CRP7: Employ valid and reliable research strategies.
CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9: Model integrity, ethical leadership and effective management.
CRP10: Plan education and career paths aligned to personal goals.
CRP11: Use technology to enhance productivity.
CRP12: Work productively in teams while using cultural global competence.

Differentiation

Interdisciplinary Connections

- Connections to current events and real world events where percents are incorporated.
- Maps used in social studies use scales to help readers estimate the actual distance between cities.

Technology Integration

- Calculators, Quizizz, EdPuzzle instructional videos

Global Perspectives

Supports for English Language Learners

Sensory Supports	Graphic Supports	Interactive Supports
Real-life objects	Charts	In pairs or partners
Manipulatives	Graphic Organizers	In triands or small groups
Pictures	Tables	In a whole group
Illustrations, diagrams & drawings	Graphs	Using cooperative group
Magazines & Newspapers	Timelines	Structures
Physical activities	Number lines	Internet / Software support

Assessments

Formative Assessments:

- Quizizz assignments
- Homework assignments
- EdPuzzle results
- Ratios & Proportions Quiz
- Percent Quiz

Summative Assessments, Projects, and Celebrations:

- Ratios & Percents Test

Videos & Film		In the home language
Broadcasts		With mentors
Models & Figures		

Intervention Strategies		
Accommodations	**Interventions**	**Modifications**
Allow for verbal responses	Multi-sensory techniques	Modified tasks/expectations
Repeat/confirm directions	Increase task structure (e.g. directions, checks for understanding, feedback	Differentiated materials
Permit response provided via computer or electronic device	Increase opportunities to engage in active academic responding	Individualized assessment tools based on student need
Audio Books	Utilize pre-reading strategies and activities previews, anticipatory guides, and semantic mapping	Modified assessment grading

Unit 5: Probability & Statistics

Big Ideas: *Course Objectives/Content Statement(s)*

- Find the experimental and theoretical probability of an event
- Using measures of central tendency to determine which measure best describes the data
- Using measures of variability to make conclusions about a data set.
- Draw informal comparative inferences about two populations.
- Use the line of best fit and patterns to draw conclusions about data not given.

Essential Questions *What provocative questions will foster inquiry, understanding, and transfer of learning?*	**Enduring Understandings** *What will students understand about the big ideas?*
• How can experimental and theoretical probabilities be used to make predictions or draw conclusions? • How can measures of center and measures of variability be used to represent data? • How do scatter plots relate to linear models?	**Students will understand that:** • Identify the possible outcomes of a situation. • Explain the meaning of experimental and theoretical probability. • Make predictions using probabilities. • Solve real-life problems using probability • Determine the validity of a conclusion. • Explain variability in samples of a population. • Solve a problem using statistics. • Compare populations.
Areas of Focus: Proficiencies **(New Jersey Student Learning Standards)**	**Lessons**
Students will: **Career-Ready Practices** **CRP1**: Act as a responsible and contributing citizen and employee. **CRP2**: Apply appropriate academic and technical skills. **CRP3**: Attend to personal health and financial well-being. **CRP4**: Communicate clearly and effectively and with reason. **CRP5**: Consider the environmental, social and economic impacts of decisions. **CRP6**: Demonstrate creativity and innovation. **CRP7**: Employ valid and reliable research strategies. **CRP8**: Utilize critical thinking to make sense of problems and persevere in solving them.	**Lessons: (chapters 7 & 8) - Big Ideas MRL 7 Accel CC** 1. 7.1 Probability - Intro to Probability (1 day) 2. 7.2 Experimental & Theoretical Probability (1 day) 3. Sample Spaces & Tree Diagrams (1 day) 4. 7.3 Compound Events - Independent & Dependent Events (2 days) 5. Quiz (1 day) 6. 8.1 Samples & Populations (1 day) 7. 8.2 Using Samples to Describe Populations (1 day) 8. 8.3 Comparing Populations - creating & analyzing Box & Whisker Plots and InterQuartile Range analysis (2 days) 9. Review & Quiz (2 days) 10. Scatter Plots and Lines of Best Fit (1 day)

CRP9: Model integrity, ethical leadership and effective management.
CRP10: Plan education and career paths aligned to personal goals.
CRP11: Use technology to enhance productivity.
CRP12: Work productively in teams while using cultural global competence.

11. Review & Probability & Statistics Quest (2-3 days)

Differentiation

Interdisciplinary Connections

- Polls are taken in different elections to determine the popular vote for different subgroups of voters. Predictions are made based on these polls and statistics. Research the past election of the recent president. Determine if the polls taken to determine the popular vote of three different subgroups were correct. Please discuss if the survey was biased or unbiased and reasons why or why not the prediction was correct?

Technology Integration

- Calculators, Quizizz, EdPuzzle instructional videos

Global Perspectives

Supports for English Language Learners		
Sensory Supports	**Graphic Supports**	**Interactive Supports**
Real-life objects	Charts	In pairs or partners
Manipulatives	Graphic Organizers	In triands or small groups
Pictures	Tables	In a whole group
Illustrations, diagrams & drawings	Graphs	Using cooperative group
Magazines & Newspapers	Timelines	Structures
Physical activities	Number lines	Internet / Software

Assessments

Formative Assessments:

- Quizizz assignments
- Homework assignments
- EdPuzzle results
- Probability Quiz
- Measures of Center & Variability Quiz

Summative Assessments, Projects, and Celebrations:

- Probability & Statistics Quest

		support
Videos & Film		In the home language
Broadcasts		With mentors
Models & Figures		

Intervention Strategies		
Accommodations	**Interventions**	**Modifications**
Allow for verbal responses	Multi-sensory techniques	Modified tasks/expectations
Repeat/confirm directions	Increase task structure (e.g. directions, checks for understanding, feedback	Differentiated materials
Permit response provided via computer or electronic device	Increase opportunities to engage in active academic responding	Individualized assessment tools based on student need
Audio Books	Utilize pre-reading strategies and activities previews, anticipatory guides, and semantic mapping	Modified assessment grading

Unit 6: Geometric Shapes & Angles	
Big Ideas: *Course Objectives/Content Statement(s)* ● Describe and identify relationships of angles formed by parallel lines cut by a transversal ● Find the area and perimeter of two dimensional objects ● Use the perimeter/area to find missing dimensions of 2-D figures ● Solving changing area, fixed perimeter and changing perimeter, fixed area problems	
Essential Questions *What provocative questions will foster inquiry, understanding, and transfer of learning?*	**Enduring Understandings** *What will students understand about the big ideas?*
● How to find the circumference of a circle with various measurements? ● What formulas could be used to find the areas of circles and composite figures? ● How to solve problems involving angle measures. ● How to construct a polygon with set parameters?	**Students will understand that:** ● Explain how to find the circumference of a circle. ● Find the areas of circles and composite figures. ● Solve problems involving angle measures. ● Construct a polygon
Areas of Focus: Proficiencies (New Jersey Student Learning Standards)	**Lessons**
Students will: 7.G A. Draw, construct, and describe geometrical figures and describe the relationships between them. 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. 2. Draw (with technology, with ruler and protractor, as well as freehand) 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. 3. Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. 8.G A. Understand congruence and similarity using physical models, transparencies, or geometry software. 1. Verify experimentally the properties of rotations, reflections, and translations: a. Lines are transformed to lines, and line segments to line segments of the same length. b. Angles are transformed to angles of the same measure. c. Parallel lines are transformed to parallel lines. 2. Understand that a two-dimensional figure is congruent	**Lessons: (chapter 9, 11 (partial), 12 (partial) & 15 (partial) - Big Ideas MRL 7 Accel CC** 1. 9.1, 9.2 & outside resources - Circles - Parts of, circumference & area. Include Semi & Quarter Circles (2 days) 2. 9.3 Perimeters & Area of Composite Figures - include review of area formulas, perimeter of composite & area of composite & shaded figures (2-3 days) 3. Review & Area Quiz (2 days) 4. Outside Resources - Classifying Triangles by Sides & Angles (1 days) 5. Triangle Inequality Theorem (1 day) 6. 9.4 Constructing Polygons (1 day) 7. 9.5 & Outside Resources: Angle Relationships - Complementary, Supplementary, Vertical & Adjacent (with equations) 8. 12.1 - 3 - Parallel & Transversal Lines and Angles, Interior Angle & Exterior Angle Measurements (3 days) 9. 15.2 - Pythagorean Theorem & Square Roots (1 day) 10. Review & Angles Quiz (2 days)

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. 3. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. 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. 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 criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so. B. Understand and apply the Pythagorean Theorem. 6. Explain a proof of the Pythagorean Theorem and its converse. 7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in realworld and mathematical problems in two and three dimensions. 8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. **Career-Ready Practices** **CRP1**: Act as a responsible and contributing citizen and employee. **CRP2**: Apply appropriate academic and technical skills. **CRP3**: Attend to personal health and financial well-being. **CRP4**: Communicate clearly and effectively and with reason. **CRP5**: Consider the environmental, social and economic impacts of decisions. **CRP6**: Demonstrate creativity and innovation. **CRP7**: Employ valid and reliable research strategies. **CRP8**: Utilize critical thinking to make sense of problems and persevere in solving them. **CRP9**: Model integrity, ethical leadership and effective management.	11. 11.1 - 3 - Transformations - Translations, Rotations & Reflections (2-3 days) 12. Review & Geometric Shapes & Angles Test (3 days)

CRP10: Plan education and career paths aligned to personal goals.
CRP11: Use technology to enhance productivity.
CRP12: Work productively in teams while using cultural global competence.

Differentiation

Interdisciplinary Connections

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Technology Integration

- Calculators, Quizizz, EdPuzzle instructional videos, Desmos

Global Perspectives

Supports for English Language Learners

Sensory Supports	Graphic Supports	Interactive Supports
Real-life objects	Charts	In pairs or partners
Manipulatives	Graphic Organizers	In triands or small groups
Pictures	Tables	In a whole group
Illustrations, diagrams & drawings	Graphs	Using cooperative group
Magazines & Newspapers	Timelines	Structures
Physical activities	Number lines	Internet / Software support
Videos & Film		In the home language
Broadcasts		With mentors
Models & Figures		

Assessments

Formative Assessments:

- Quizizz assignments
- Homework assignments
- EdPuzzle results
- Desmos Activities
- Area & Perimeter Quiz
- Angles Quiz

Summative Assessments, Projects, and Celebrations:

- Geometric Shapes & Angles Test

Intervention Strategies		
Accommodations	**Interventions**	**Modifications**
Allow for verbal responses	Multi-sensory techniques	Modified tasks/expectations
Repeat/confirm directions	Increase task structure (e.g. directions, checks for understanding, feedback	Differentiated materials
Permit response provided via computer or electronic device	Increase opportunities to engage in active academic responding	Individualized assessment tools based on student need
Audio Books	Utilize pre-reading strategies and activities previews, anticipatory guides, and semantic mapping	Modified assessment grading

Unit 7: Surface Area & Volume	
Big Ideas: *Course Objectives/Content Statement(s)* ● Calculate the surface area and volume of prisms, pyramids, cylinders & cones. ● Solve real-life problems involving surface area and volume. ● Determine the shape of the cross sections of solids.	
Essential Questions *What provocative questions will foster inquiry, understanding, and transfer of learning?*	**Enduring Understandings** *What will students understand about the big ideas?*
● How can you determine the surface area and volume of three dimensional figures? ● How can you find and compare the areas and volumes of similar solids?	**Students will understand that:** ● Describe the surface area and volume of different shapes. ● Use formulas to find surface areas and volumes of solids. ● Solve real-life problems involving surface area and volume. ● Describe cross sections of solids
Areas of Focus: Proficiencies (New Jersey Student Learning Standards)	**Lessons**
Students will: 7.G.B Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. 4. Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. 5. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. 6. 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. **Career-Ready Practices** **CRP1**: Act as a responsible and contributing citizen and employee. **CRP2**: Apply appropriate academic and technical skills. **CRP3**: Attend to personal health and financial well-being.	**Lessons: (chapter 10) - Big Ideas MRL 7 Accel CC** 1. 10.1 & 10.2 Surface Area of Prisms & Cylinders (1 day) 2. 10.3 & Outside Resources: Surface Area of Pyramids and Surface Area of Spheres & Cones (1 day) 3. 10.4 & Outside Resources: Volume of Prisms & Volume of Cylinders (1 day) 4. 10.5 & Outside Resources - Volume of Pyramids and Volume of Cones (1 day) 5. 10.5 Cross Sections (1 day) 6. Outside Resources - Volume of Sphere 7. Review & Surface Area & Volume Test (3 days)

CRP4: Communicate clearly and effectively and with reason.
CRP5: Consider the environmental, social and economic impacts of decisions.
CRP6: Demonstrate creativity and innovation.
CRP7: Employ valid and reliable research strategies.
CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9: Model integrity, ethical leadership and effective management.
CRP10: Plan education and career paths aligned to personal goals.
CRP11: Use technology to enhance productivity.
CRP12: Work productively in teams while using cultural global competence.

Differentiation

Interdisciplinary Connections

- Art: Importance of the ability to visualize and draw 3-dimensional objects to show depth and perspective.
- Manufacturing: Knowing how to find surface area and volume will help manage packaging expenses

Technology Integration

- Calculators, Quizizz, EdPuzzle instructional videos, Desmos

Global Perspectives

Supports for English Language Learners		
Sensory Supports	**Graphic Supports**	**Interactive Supports**
Real-life objects	Charts	In pairs or partners
Manipulatives	Graphic Organizers	In triands or small groups
Pictures	Tables	In a whole group
Illustrations, diagrams &	Graphs	Using cooperative group

Assessments

Formative Assessments:

- Quizizz assignments
- Homework assignments
- EdPuzzle results
- Desmos Activities
- Optional - Surface Area Quiz

Summative Assessments, Projects, and Celebrations:

- Surface Area & Volume Test

drawings		
Magazines & Newspapers	Timelines	Structures
Physical activities	Number lines	Internet / Software support
Videos & Film		In the home language
Broadcasts		With mentors
Models & Figures		

Intervention Strategies		
Accommodations	**Interventions**	**Modifications**
Allow for verbal responses	Multi-sensory techniques	Modified tasks/expectations
Repeat/confirm directions	Increase task structure (e.g. directions, checks for understanding, feedback	Differentiated materials
Permit response provided via computer or electronic device	Increase opportunities to engage in active academic responding	Individualized assessment tools based on student need
Audio Books	Utilize pre-reading strategies and activities previews, anticipatory guides, and semantic mapping	Modified assessment grading

Recommended Texts to Support Unit:

- Big Ideas Math - Grade 7; Modeling Real Life CC