Summit Public Schools

Summit, New Jersey

Grade Level 8/ Content Area: Mathematics

Length of Course: Full Academic Year

Curriculum: Pre-Algebra

Developed by:
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Course Description: This one-year course has been designed to offer a rigorous and comprehensive scope and sequence that addresses New Jersey Student Learning Standards for Mathematics adopted in 2014. It will also provide students the opportunity to truly master middle school mathematics and basic algebraic skills.

Students will create and use numerical, algebraic, graphical, and verbal representations and analyze sophisticated patterns, relations, and functions. They will represent linear functions numerically, algebraically, graphically and verbally and work with and interpret these representations.

Students will develop insight and understanding of the algebraic properties that govern the manipulation of symbols in expressions, equations, and inequalities.

They will develop an understanding of relations and functions and build a repertoire of approaches in working with them.

They will explore transformational geometry and gain an understanding of how the four basic types of transformations may be used individually as well as in conjunction with one another.

Students will also learn the appropriate use of technology, such as graphing calculators and software models that will assist them examine a wide range of mathematical relationships.

Texts and Resources:
Pre-Algebra (Prentice-Hall © 2009)
Algebra: tools for a Changing World (Prentice-Hall © 2001)

Standards:
New Jersey Student Learning Standards for Mathematics (2014)
http://www.state.nj.us/education/cccs/2016/math/

Scope & Sequence for Pre-Algebra

Unit 1

Topic	Time Frame
The Distributive Property 2.2	2
Simplifying Variable Expressions 2.3	2
Solving Equations by Adding or Subtracting Integers 2.5	1
Solving Equations by Multiplying or Dividing Integers 2.6	1
Review / Quiz 1	2
Inequalities and their Graphs 2.8	1
Solving One-Step Inequalities by Adding and Subtracting 2.9	1
Solving One-Step Inequalities by Multiplying and Dividing 2.10	2
Review / Test – Solving One-Step Equations and Inequalities	3
Total	15 days

Unit 2

Topic	Time Frame
Mean, Median, Mode 3.3	1
Using Formulas 3.4	1
Solving Equations by Adding or Subtracting Decimals 3.5	1
Solving Equations by Multiplying or Dividing Decimals 3. 6	2
Review / Quiz	2
Solving Equations by Adding or Subtracting Fractions 5.7	2
Solving Equations by Multiplying or Dividing Fractions 5.8	2
Review / Quiz	2
Total	13 Days

Unit 3

Solving Two-Step Equations 7.1	2
Solving Multi-Step Equations 7.2	2
Multi-Step Equations with Fractions and Decimals 7.3	2
Review / Quiz 7.1-7.3	2
Solving Equations with Variables on Both Sides 7.5	2
Equations that are Identities or have no solutions 4.2 (PH Algebra)	2
Solving Two-Step Inequalities 7.6	1
Transforming Formulas (Literal Equations) 7.7	3
Review / Test	3
Performance Task	2
Total	21 Days

Unit 4

Relations and Functions 8.1	2
Equations with Two Variables 8.2	2
Slope and y-intercept 8.3	3
Review / Quiz 8.1–8.3	2
Writing Rules for Linear Functions 8.4	3
Interpreting Functions and their Graphs (supp. material used)	2
Scatter Plots 8.5	2
Solve by Graphing (Scatter Plots) 8.6	3
Random Samples and Surveys 12.8	1
Review / Quiz 8.4-8.6	2
Review / Test	3
Total	26 Days

Sub-Unit 4b

8.7 systems by graphing	3
8.7 systems by substitution	3
8.7 systems word problems	2
Review / Quiz (systems)	2
Performance Task	2
Total	12 Days

Unit 5

Translations 9.8	2
Line Symmetry & Reflections 9.9	2
Rotational Symmetry 9.10	3
Dilations (Activity Lab p. 308)	2
Review / Quiz 9.8 – 9.10 & Dilations	2
Performance Task	2
Proportions 6.2	1
Similar Figures and Scale Drawings 6.3	2
Angle Relationships & Parallel Lines 9.2	2
Congruent Polygons 9.5	2
Review / Quiz 9.2 & 9.5	2
Volume: Prisms & Cylinders 10.7	1
Volume: Pyramids, Cones & Spheres 10.9	2
Review / Test	3
Total	28 days

Unit 6

Exponents 4.2	2
Exponents and Multiplication 4.7	2
Exponents and Division 4.8	2
Scientific Notation 4.9	3
Review / Quiz 4.2, 4.7-4.9	2
Rational Numbers 4.6	2
Square Roots, Cube Roots, and Irrational Numbers 11.1	3
Review / Quiz 4.6/11.1	2
Powers of Products and Quotients 5.9	2
The Pythagorean Theorem 11.2	3
Review /Quiz	2
Performance Task	2
Total	21 Days

Unit 1: Solving One-Step Equations and Inequalities

Students will be able to solve one step equations and inequalities using the properties of equality. Reasoning skills will be emphasized, including justification of results.

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

- Algebraic expressions are connected to more complex algebraic equations.
- Techniques for solving one-step equations and inequalities are developed.

Essential Questions *What provocative questions will foster inquiry, understanding, and transfer of learning?*	**Enduring Understandings** *What will students understand about the big ideas?*
• How does one apply the order of operations in solving one-step equations and inequalities? • How does solving inequalities differ from solving equations?	Students will understand that… • Properties of equality are used to keep equations balanced. • Inequalities can have more than one solution. • Equations and Inequalities can have no solution or infinitely many solutions.
Areas of Focus: Proficiencies (Cumulative Progress Indicators)	**Examples, Outcomes, Assessments**
Students will: 8.EE 7b Solve linear equations, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	**Instructional Focus** (2 weeks): • Properties of numbers, including commutative, associative, properties of equality, and distributive. • Simplifying Variable expressions by combining like terms. • Solving one-step equations • Solving and graphing one-step inequalities. **Sample Assessments:** • 1 unit quiz • 1 unit test **Sample SCR** (short constructed response) Item: *Solve $x - 6 \geq -14$ and graph the solution on the number line provided.* **Sample ECR** (extended constructed response) Item: *Jim determined that $5x + 3y - 2(x + y)$*

	simplified was equivalent to 3x +5y. Determine if Jim's answer was correct and if not identify his mistake. **Instructional Strategies:** ● Use visual aids such as Algebra tiles to help represent equations and the properties of equality. ● Use mnemonic devices to memorize the order for cancelling out using inverse operations. **Technology Integration** ● Use a Smart Board to allow students to physically move parts of the equations to represent cancelling out using inverses. ● Use IXL program for additional practice and enrichment of skills.

Unit 2: Solving Equations with Rational Numbers

Students will be able to solve one step equations using rational numbers.	
Big Ideas: *Course Objectives / Content Statement(s)* ● Recognize rational numbers in the context of one-step equations. ● Solve one-step equations with rational numbers using inverse operations	
Essential Questions *What provocative questions will foster inquiry, understanding, and transfer of learning?*	**Enduring Understandings** *What will students understand about the big ideas?*
● How does solving a one step equation with decimals differ from one with fractions of integers? ● How can we use inverse operations to solve one-step equations? ● How does solving an equation with division of a fraction differ from other equations? ● How can equations with rational numbers be used as tools to best describe and help explain real-life situations?	Students will understand that… ● Solving one-step equations with rational numbers follows the same rules and solving any equation. ● Inverses are used to isolate a variable in order to solve an equation. ● Cancelling out multiplication of a fraction using inverses requires the use of a reciprocal. .
Areas of Focus: Proficiencies	**Examples, Outcomes, Assessments**

(Cumulative Progress Indicators)	
Students will: 8.EE 7b Solve linear equations with rational number coefficients.	**Instructional Focus: (2 weeks)** ● Inverse operations with fractions and decimals. **Sample Assessments:** ● 1 unit quiz ● 1 unit test **SCR:** Solve the equation 2.5 x = -12.5 and check your solution. **ECR:** A group of friends go out to dinner and the bill is $61.56. If they share the cost equally they each pay $10.26. Determine how many people were in the group. If they decide to add a 15% tip to the total bill how would each person's total change? **Instructional Strategies:** ● Use visual aids such as Algebra tiles to help represent equations and the properties of equality. **Interdisciplinary Connections** ● Investigate the value of $100 throughout the history of the United States. Determine how much gas, milk, bread, or how many movie tickets $100 could buy in 1950, 1970, 1990, and today. **Technology Integration** ● Use IXL program for additional practice and enrichment of skills.

Unit 3: Solving Equations

Students will be able to solve linear equations in one variable.
Big Ideas: *Course Objectives / Content Statement(s)* ● Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. ● Show which of the above 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).

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 we choose and implement procedures to solve linear equations in one variable? • How can we use linear equations to describe the association between two quantities? • What do we need to do differently to solve an equation with variables on both sides? • How can technology be used to investigate properties of linear functions and their graphs?	Students will understand that… • The use of the properties of equality and the concept of logical equivalence maintain the solutions of the original equation. • Real world problems can be modeled and solved by using algebraic equations. • The goal of solving a linear equation in one variable is to isolate the variable on one side of the equation and the resultant number on the other.
Areas of Focus: Proficiencies (Cumulative Progress Indicators)	**Examples, Outcomes, Assessments**
Students will: 8.EE 7a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions.	**Instructional Focus:** • Modeling and solving one- and two-step equations using the properties of equality. • Solving equations by combining like terms. • Solving equations that involve the distributive property. • Solving equations that have variables on both sides and identify those that have no solutions or are identities. **Sample Assessments:** • 2 unit quizzes • 1 unit test **SCR:** Write an equation to find three consecutive integers with a sum of 267. **ECR:** Compare and contrast the procedures for solving equations with a variable on one sides and an equation with variables on both sides. $7 = 2x + 1$ $5x - 3 = 3x + 7$

Performance Assessment Task: Suppose you are shopping for a calling plan. You expect to use 10 long-distance minutes per month. Use the table below and the total-cost equation to find out how much you will pay for the first month of each calling plan. Which plan would you choose and why?

Calling Plan	A	B	C	D
Monthly Fee	$19.99	$34.99	$19.99	$29.99
Long-Distance Rate	$.15	$.15	$.00	$.20
Activation Fee	$36.00	$24.00	$30.00	$35.00

Instructional Strategies:

- Modeling and solving one- and two-step equations using algebra tiles.
- Use of direct instruction with guided notes, when possible.

Interdisciplinary Connections

- To convert from Celsius to Fahrenheit, you can get an estimate by using this rule: multiply the Celsius temperature by 2, and then add 30. Use this strategy to convert 4°C, 15°C, and 50°C.

Technology Integration

- As you work through this unit, you will use equations to help model your personal finances. You will develop spreadsheets to analyze your weekly budget, including regular savings. You will use percents to create graphs. Then you will display and present your budget plan using the graphs and spreadsheets.

Unit 4: Linear Functions

Students will understand the connection between proportional relationships, lines, and linear equations ; define, evaluate, and compare functions.

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

- Graph proportional relationships, interpreting the unit rate as the slope of the graph.
- Use similar triangles to explain why the slope *m* is the same between any two distinct points on a non-vertical line in the coordinate plane; derive an equation between two points in slope-intercept form.
- Use scatter plots to interpret bivariate measurement data.
- Define, evaluate, and compare functions both algebraically and graphically.
- Understand and interpret data and data models representing a variety of real-world situations.

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 we compare two different proportional relationships represented in different ways? ● How can we write an equation in slope-intercept form between two distinct points? ● How can we gather, organize, and display data to communicate and justify results in the real world? ● How can we analyze data to make predictions? ● What methods can be used to compare functions? ● Why does it make sense to examine more than one set of data to look for trends and associations?	**Students will understand that…** ● In graphing proportional relationships, the unit rate is the slope of the graph. ● The slope between any two distinct points on a non-vertical line in the coordinate plane is the identical. ● Scatter plots can display patterns and trends, based on the data's correlation, that can be interpreted using a linear model. ● Functions can be represented in different ways (algebraically, graphically, numerically in tables, or by verbal descriptions). ● Different sets of data can be associated and visual representations can help determine that association.
Areas of Focus: Proficiencies (Cumulative Progress Indicators)	**Examples, Outcomes, Assessments**
Students will: 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.	**Instructional Focus:** ● Modeling and interpreting rates of change and direct variation as proportional relationships. ● Determining the slope between two distinct points on a coordinate plane.

8.EE.6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane. 8.F.1 Understand that a function is a rule that assigns to each input exactly one output. 8.F.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). 8.F.3 Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line.; give examples that are not linear. 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. 8.F.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (where the function is increasing or decreasing, linear or nonlinear) 8.SP.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative correlation, linear association, and nonlinear association. 8.SP.2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	• Writing the equation of a line between two points in slope-intercept form. • Determining if a relation is a function and, if so, writing a function rule. • Collecting data from students involving two quantitative variables, and based on a scatter plot, assessing the relationship (if any) between the two variables. Make predictions and assumptions based of the data, if applicable. • Compare two sets of associated data and look for relationships between the sets. **Sample Assessments:** • 2 unit quizzes • 1 unit test **SCR:** Determine the slope of the line that passes through the points (0, 3) and (-2, 7). **ECR:** Determine if the table represents a function. If so, write a function rule and graph the function. {(-1, 4), (0, 7), (1, 10), (2, 13)} **Instructional Strategies:** • Check for understanding frequently. • Provide environment for discovery/inquiry-based learning. • Present functions in different representations (graphs, tables, equations). **Interdisciplinary Connections** • The force of gravity is less on Mars than it is on Earth. As a result, the weight of an object on Mars m is 40% of its weight on Earth w. Find the weight on Mars of a space probe that weighs 15 lb on Earth.

8.SP.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data. 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.	**Technology Integration** ● Using a graphing calculator, input the data from the table below. Then follow the steps to create a line of best fit.

Years Employed	Salary
3	29,000
4	30,000
5	33,000
5	32,000
7	34,000
9	37,000
10	38,000
12	44,000

(4b) Systems of Linear Equations

Students will analyze and solve pairs of simultaneous linear equations	
Big Ideas: ***Course Objectives / Content Statement(s)*** ● Analyze and solve pairs of simultaneous linear equations both graphically and algebraically.	
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 graphing two linear equations on the same coordinate plane lead to an estimate of the solution of the system? ● How can systems of equations be used to represent situations and solve problems?	**Students will understand that…** ● The solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs. ● The solutions to a system of two linear equations is the point which makes both equations true.
Areas of Focus: Proficiencies (Cumulative Progress Indicators)	**Examples, Outcomes, Assessments**
Students will:	**Instructional Focus:** ● Solving systems of equations by

8.EE.8a 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.. 8.EE.8b Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. 8.EE.8c Solve real-world and mathematical problems leading to two linear equations in two variables.	graphing, substitution and elimination. ● Writing systems of linear equations from real-world applications. **Sample Assessments:** ● 1 unit quiz **SCR:** Solve the system by graphing. $\{y = -x + 4\ y = 2x + 1$ **ECR:** Suppose you and your friends form a band, and you want to record a demo tape. Studio A rents for $100 plus $50 per hour. Studio B rents for $50 plus $75 per hour. Solve the system and explain what the solution means in terms of your band renting a studio. **Performance Assessment Task:** Suppose you are a member of the student council and must plan a dance. You want to keep the ticket prices as low as possible to encourage students to attend. Band A charges $600 to play for the evening. Band B charges $350 plus $1.25 for each ticket sold. Write a linear equation for the cost of each band. Graph each equation and find the number of tickets for which the cost of the two bands will be equal. Assume that 200 people will attend the dance. Write a report listing which band you would choose and the cost per ticket that you need to charge to cover expenses. **Instructional Strategies:** ● Show multiple representations of linear systems and how to find a solution (visual models and algebraic models). ● Explore the meaning behind a solution to a system of linear equations through the use of the various representations discussed.

	Interdisciplinary Connections ● A chemist has 70 mL of a 50% methane solution. How much of a 80% solution must she add so the final solution is 60% methane? **Technology Integration** ● A cable company offers a "pay-per-view" club. Let c = the annual cost and n = the number of movies you watch in a year. Using a graphing calculator, input the system of equations then decide whether to join the club.

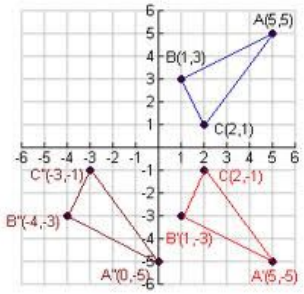
Unit 5: Geometry

Students will understand congruence and similarity through physical and/or computer modeling.	
Big Ideas: ***Course Objectives / Content Statement(s)*** ● Explore properties of rotations, reflections and translations. ● Draw conclusions regarding 2-dimensional congruent figures through sequences of rotations, reflections, and translations. ● Explore dilations and the impact it has on similar polygons. ● Define, evaluate, and compare angles formed by a transversal passing through a pair of parallel lines in the same plane ● Solve real world problems involving the volume of 3-dimensional shapes.	
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 we manipulate two congruent shapes in the coordinate plane so that they end up on top of each other? ● How does the dilation of a 2-dimensional polygon affect the lengths of corresponding sides? ● What observations and inferences can be made about the two types of angles formed when a transversal cuts across a	**Students will understand that…** ● Transformational geometry can determine the congruency of 2-dimensional polygons. ● Corresponding sides of similar polygons form proportions that may be represented by dilation. ● Angles resulting from this unique model form pairs of congruent and supplementary angles. ● Volume is a measure of capacity and

<table>
<tr><td>pair of parallel lines?
● What are the real world applications of determining the volume of more complex 3-dimensional shapes?</td><td>relates to the product of base-area and height.</td></tr>
<tr><td>Areas of Focus: Proficiencies (Cumulative Progress Indicators)</td><td>Examples, Outcomes, Assessments</td></tr>
<tr><td>Students will:
8.G.1(a-c) 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.
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.
8.G.3 Describe the effect of dilations, translations, rotations and reflections on two-dimensional
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, dimensional figures, describe a sequence that exhibits the similarity between them.
8.G.5. Identify pairs of congruent and supplementary angles (and their measures) resulting from a transversal cutting across a pair of parallel lines.
8.G.9. Determine the volume of cones, cylinders, spheres and composite figures.</td><td>Instructional Focus/Instructional Strategies:
● Model and manipulate 2-dimensional shapes as the means for students to develop inferences regarding properties of transformational geometry.
● Assist students in identifying the real-world applications and significance of 2- & 3-dimensional geometry.
● Provide students sufficient opportunities to explore individually and in small groups the targeted geometric properties.

Sample Assessments:
● 2 unit quizzes
● 1 unit test

SCR:
Write a rule to describe the following transformation of a point from: G (-3, 5) to G’ (2, 1).

ECR:
 

Given three congruent shapes (different quadrants) on the coordinate plane, identify a series of transformations to one shape such that it ends up in the exact</td></tr>
</table>

	position of one of the other shapes. **Performance Assessment Task:** Using pencil & graph paper or computer software, use square models to construct a proof of the Pythagorean Theorem. **Interdisciplinary Connections** ● Transformational Geometry is an important element in the art world. Artwork involving tessellations serve as one example:  **Technology Integration** ● Geometric modeling is available several SMART Exchange applications such as "Alphabet Geometry – Transformations" (http://exchange.smarttech.com/details.html?id=291b82b3-21fa-4ec6-8689-7488b5a764d9)

Unit 6: Integer Exponents & The Number System

Students will be able to apply the properties of integer exponents to generate equivalent numerical expressions. Students will also be able to classify rational and irrational numbers.
Big Ideas: *Course Objectives / Content Statement(s)* ● Use square root and cube root symbols to represent solutions to equations. ● Approximate irrational numbers by rational numbers. ● Understand and apply the Pythagorean Theorem. ● Use scientific notation to estimate very large or very small quantities. ● Perform operations with numbers expressed in scientific notation.

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 repetitive patterns be written using exponents? • What are the inverse operations for raising a number to the second or third power? • How can computations involving very large or very small numbers be simplified? • What is the difference between a rational number and an irrational one and how can they be located on a number line? • How can a number written as a decimal expression be transformed into a rational number and vice versa? • What mathematical and real-world applications result from the principles associated with the Pythagorean Theorem?	**Students will understand that…** • The properties of integer exponents can generate equivalent numerical expressions. • If a number is the product of two identical factors, each factor is the *square root* of the number. Likewise, if a number is the product of three identical factors, each factor is the *cube root* of the number. • Numbers expressed in the form of a single digit times an integer power of 10 can be used to estimate very large or very small quantities and to express how many times as much one is than the other. • Every number has a rational expansion and a decimal expansion that repeats can be converted into a rational number. • Rational approximations of irrational numbers can be used to compare the size of irrational numbers. • Right triangles reflect this unique property and that there are a multitude of theoretical and practical applications.
Areas of Focus: Proficiencies (Cumulative Progress Indicators)	**Examples, Outcomes, Assessments**
Students will:	**Instructional Focus/Instructional Strategies:** • Using the order of operations and the properties of exponents to simplify expressions. • Evaluating the square roots of small perfect square and the cube roots of small perfect cubes. • Writing numbers and calculating
8EE 1. Know and apply the properties of integer exponents to generate equivalent numerical expressions.	
8EE 2. Use square root and cube root symbols to represent solutions to appropriate equations. Evaluate square roots of small perfect squares and cube roots of small perfect squares.	

8EE 3. Use scientific notation to estimate very large or very small quantities.

8 EE 4. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used.

8.NS.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion;for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.

8.NS.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions.

8.G.6 Explain a proof of the Pythagorean Theorem and its converse.

8.G.7 Apply the Pythagorean Theorem to determine the unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions

8.G.8 Apply the Pythagorean Theorem to find the distance between points in the coordinate system.

using scientific notation.

- Converting repeating decimals to fractions.
- Locating irrational numbers on a number line diagram and estimate the value of irrational expressions.

Sample Assessments:

- 3 unit quizzes

  SCR: Simplify the expression: x^2/x^5

  ECR: Develop a method for multiplying numbers that are written in scientific notation. Use your method to find each product.
  a. $(3x10^4)(2x10^7)$
  b. $(6x10^2)(8x10^5)$

Performance Assessment Task: Fold a sheet of paper in half. Notice that the fold line divides the paper into two rectangles. Fold the paper in half again and determine the number of rectangles. Continue folding the paper in half until you cannot make another fold. Keep track of your results in the table below.

Number of Folds	Number of Rectangles
0	1
1	2
2	4
3	
4	
5	

Suppose you could continue to fold the paper. Extend your table to include 10 folds. What pattern do you notice?

Interdisciplinary Connections

- Light travels through space at a constant speed of about $3x10^5$

	km/s. Earth is about $1.5x10^8$ km from the sun. How long does it take for light from the sun to reach the earth? **Technology Integration** ● Graph the functions $y = x^2$ and $y = 2^x$ on the same set of axes on a graphing calculator. a. What happens to the graphs between x = 1 and x = 3? b. How do you think the graph of $y = 6^x$ would compare to the graphs of $y = x^2$ and $y = 2^x$?