

# Greenwich-Stow Creek Partnership Schools

## Eighth Grade Math Curriculum



**Approved by the Board of Education**  
**Stow Creek Board of Education: 8-22-2024**  
**Greenwich Board of Education: 8-21-2024**

## 8<sup>th</sup> Grade

**Domain:** Expressions and Equations; Geometry

**Marking:** Period: 1

**Cluster Headings:** Analyze and solve linear equations and pairs of simultaneous linear equations; Understand congruence and similarity using physical models, transparencies, or geometry software.

### Overview of Unit:

- Strategically choose and efficiently implement procedures to solve linear equations in one variable, understanding that when they use the properties of equality and the concept of logical equivalence, they maintain the solutions of the original equation
- Use ideas about distance and angles, how they behave under translations, rotations, reflections, and dilations, and ideas about congruence and similarity to describe and analyze two-dimensional figures and to solve problems
- Show that the sum of the angles in a triangle is the angle formed by a straight line, and that various configurations of lines give rise to similar triangles because of the angles created when a transversal cut parallel lines

### Learning Targets—Big Idea and Standards

#### Big Ideas:

- Write and solve a one-step and multi-step equation
- Write and solve equations with variables on both sides of an equation
- Rewrite literal equations and convert temperatures
- Translate, reflect, rotate, and dilate figures in a coordinate plane
- Understand the concept of congruent and similar figures
- Find perimeters and areas of similar figures
- Find missing angle measures created by the intersection of lines
- Understand properties of interior and exterior angles of triangles and polygons
- Use similar triangles to find missing measures

Mathematics Standards: 8.EE.C.7a-b, 8.G.A.1-4

**8.EE.C:** *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, 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.

**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 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.

**Success Criteria**

- Graph and compare rational numbers on a number line
- Find the absolute value of a rational number
- Explain how to model addition and subtraction of integers and rational numbers on a number line
- Find sums and differences of integers and rational numbers by reasoning about absolute values
- Explain why the sum of a number and its opposite is 0
- Use properties of addition to efficiently add rational numbers
- Explain how subtracting integers is related to adding integers

**Evidence of Learning—District Assessment Tools**

- Apply properties of equality to produce equivalent equations
- Solve equations using addition, subtraction, multiplication, or division
- Use one-step and multi-step equations to model and solve real-life problems
- Apply properties to produce equivalent equations
- Solve multi-step equations
- Explain how to solve an equation with variables on both sides
- Determine whether an equation has one solution, no solution, or infinitely many solutions
- Use equations with variables on both sides to model and solve real-life problems
- Use properties of equality to rewrite literal equations
- Use a formula to convert temperatures
- Identify a translations, reflections, rotations, dilations, and congruent figures
- Find the coordinates of a translated figure
- Use coordinates to translate, reflect, rotate, or dilate a figure
- Find the coordinates of a figure reflected in an axis
- Find the coordinates of a figure rotated about the origin
- Describe a sequence of rigid motions between two congruent figures
- Find the coordinates of a figure dilated with respect to the origin
- Identify similar figures
- Describe a similarity transformation between two similar figures
- Use corresponding side lengths to compare perimeters and areas of similar figures
- Use similar figures to solve real-life problems involving perimeter and area

## District Learning Plan and Materials

### Materials:

- Text: *Math and You 2025*
- *Math and You* Record and Practice Journal
- *Math and You* Assessment Book
- See *Math and You* Materials List

### Learning Plan:

#### *Math and You 2025*

- Chapter 1, Sections 1.1-1.4
- Chapter 2, Sections 2.1-2.7

### Web-based activities

- ALEKS, Khan Academy, *Math and You...*)
- Concept and Tools Videos
- Standards Based Practice
- Interactive Whiteboard Lessons
- Online Lesson Video

**Differentiation:**

*Math and You 2025* Website- “Differentiating the Lesson”

- STEAM Performance Task
- Intensive Intervention Activities
- Lesson Tutorials (videos)
- Skills Review Handbook
- Basic Skills Handbook

**Accommodations for ELL:**

- Visual models/drawings
- Use of manipulatives
- Tools (rulers, calculators, measuring cups, etc.)
- Guided and strategy groups
- Multi-leveled cooperative learning groups
- Small group instruction and assistance
- Reduced assignments

**Accommodations for Special Education:**

- Visual models/drawings
- Use of manipulatives
- Tools (rulers, calculators, etc.)
- Guided and strategy groups
- Multi-leveled cooperative learning groups
- Assistance from the Special Education teacher in a small group setting
- Refer to student IEP

**Accommodations for at Risk Students (504):**

- Visual models/drawings
- Use of manipulatives
- Tools (rulers, calculators, measuring cups, etc.)
- Guided and strategy groups
- Multi-leveled cooperative learning groups
- Reduced assignments

**Web-based Activities**

- ALEKS, Khan Academy, *Math and You...*)
- Concept and Tools Videos
- Standards Based Practice
- *Math and You 2025* ELL Support
- Vocabulary Cards

**Accommodations for Enrichment (G&T):**

- Extension activities
- Independent practices in small groups
- Internet activities

**Interdisciplinary Connections**

**X\_ Interdisciplinary Standards: NJSL**

X NJLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

NJLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content

X NJLSA.L1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking

**Integration of 21st Century Skills: [Career Readiness, Life Literacy, and Key Skills](#)**

**9.1 Personal Financial Literacy**

Financial Health: *Financial Psychology, Civic Financial Responsibility*

Financial Landscape: *Financial Institutions, Economic & Government Influences*

Money Management: *Planning & Budgeting, Risk Management & Insurance, Credit and Debit Management, Credit Profile*

**9.2 Career Awareness and Planning**

**9.4 Life Literacies and Key Skills**

Creativity and Innovation

Critical Thinking and Problem Solving

Global and Cultural Awareness

**Effective Integration of Technology: [Computer Science and Design Thinking](#) & [Life Literacies and Key Skills](#)**

**8.1 Computer Science**

**8.2 Design Thinking**

**9.4 Life Literacies and Key Skills**

Digital Citizenship

Information and Media Literacy

Technology Literacy

**Effective Integration of Media Arts: [Visual and Performing Arts Performance Standards](#)**

**1.2 Media Arts**

Creating - Conceive, Develop, and/or Construct

Performing - Integrate, Practice, and/or Present

Responding - Perceive, Evaluate, and/or Interpret

Connecting - Synthesize and/or Relate

**8<sup>th</sup> Grade**

**Domains:** Geometry; Statistics and Probability;  
Expressions and Equation

**Marking Period:** 2

**Cluster Headings:** Understand congruence and similarity using physical models, transparencies, or geometry software; Investigate patterns of association in bivariate data; Understand the connections between proportional relationships, lines, and linear equations; Analyze and solve linear equations and pairs of simultaneous linear equations.

## Overview of Unit:

- Show that the sum of the angles in a triangle is the angle formed by a straight line, and that various configurations of lines give rise to similar triangles because of the angles created when a transversal cuts parallel lines
- Use linear equations and systems of linear equations to represent, analyze, and solve a variety of problems. Students recognize equations for proportions ( $y/x = m$  or  $y = mx$ ) as special linear equations ( $y = mx + b$ ), understanding that the constant of proportionality ( $m$ ) is the slope, and the graphs are lines through the origin
- Understand that the slope ( $m$ ) of a line is a constant rate of change, so that if the input or  $x$ -coordinate changes by an amount  $A$ , the output or  $y$ -coordinate changes by the amount  $m \cdot A$
- Use a linear equation to describe the association between two quantities in bivariate data (such as arm span vs. height for students in a classroom)
- Express a relationship between the two quantities in question and interpret components of the relationship (such as slope and  $y$ -intercept) in terms of the situation
- Students strategically choose and efficiently implement procedures to solve linear equations in one variable, understanding that when they use the properties of equality and the concept of logical equivalence, they maintain the solutions of the original equation
- Solve systems of two linear equations in two variables and relate the systems to pairs of lines in the plane; these intersect, are parallel, or are the same line.
- Use linear equations, systems of linear equations, linear functions, and their understanding of slope of a line to analyze situations and solve problems

## Learning Targets—Big Idea and Standards

### Big Idea(s):

- Find missing angle measures created by intersections of lines
- Understand properties of interior and exterior angles of triangles
- Find interior angle measures of polygons
- Use similar triangles to find missing measures
- Graph linear equations by using a table
- Find and interpret the slope of a line
- Graph proportional relationships
- Write and graph linear equations in slope-intercept form and in standard form
- Write equations of lines in point-slope form
- Understand how to solve a system of linear equations by graphing, substitution, and elimination

Mathematics Standards: 8.G.A.5, 8.SP.A.3, 8.EE.B.5-6, 8.EE.C.8

**8.G.A: Understand congruence and similarity using physical models, transparencies, or geometry software**



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. 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.

**8.SP.A: Investigate patterns of association in bivariate data**

3. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.

**8.EE.B: Understand the connections between proportional relationships, lines, and linear equations**

5. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.
6. Use similar triangles to explain why the slope  $m$  is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation  $y = mx$  for a line through the origin and the equation  $y = mx + b$  for a line intercepting the vertical axis at  $b$ .

**8.EE.C: Analyze and solve linear equations and pairs of simultaneous linear equations**

8. Analyze and solve pairs of simultaneous linear equations.
- Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.
  - Solve systems of two linear equations in two variables using the substitution method and estimate solutions by graphing the equations. Solve simple cases by inspection. For example: by inspection, conclude that  $3x + 2y = 5$  and  $3x + 2y = 6$  have no solution because  $3x + 2y$  cannot simultaneously be 5 and 6. Solve  $3x + y = 30$  and  $y = 2x$  using the substitution method; Solve  $y = 3x + 1$  and  $y = -2x + 7$  using the substitution method.
  - Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.

**Success Criteria**

- Identify congruent angles and find angle measures when a transversal intersects parallel lines
- Use equations to find missing angle measures of triangles

- Use interior and exterior angles of a triangle to solve real-life problems
- Explain how to find the sum of and use an equation to find an interior angle measures of a polygon
- Find the interior angle measures of a regular polygon
- Use angle measures to determine whether triangles are similar
- Use similar triangles to solve real-life problems
- Create a table of values and write and plot ordered pairs to create a graph of a given linear equation
- Use a graph of a linear equation to solve a real-life problem
- Find and explain the meaning of slope
- Interpret the slope of a line in a real-life problem
- Write and graph an equation that represents a proportional relationship
- Use graphs to compare proportional relationships
- Identify the slope and y-intercept of a line given an equation to graph a linear equation
- Rewrite a linear equation in slope-intercept form
- Rewrite the standard form of a linear equation in slope-intercept form
- Find intercepts of linear equations written in standard form
- Write equations in slope-intercept form to solve real-life problems
- Use a point on a line and the slope to write an equation of the line
- Use any two points to write an equation of a line
- Find the point where two lines intersect by solving a system of linear equations by graphing, substitution, and elimination
- Solve a linear equation in two variables for either variable
- Use the Multiplication Property of Equality to produce equivalent equations
- Determine the number of solutions of a system
- Solve a system of linear equations with any number of solutions

### **Evidence of Learning—District Assessment Tools**

- Model Curriculum Unit Assessment
- Teacher-made tests and quizzes
- Publisher’s tests and quizzes
- Teacher/student conferencing
- Homework Review
- Class discussion of essential questions
- Teacher observation
- Daily assignments

### **District Learning Plan and Materials**

**Materials:**

- Text: *Math and You 2025*
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- *Math and You* Assessment Book

- See *Math and You* Materials List

**Learning Plan:***Math and You 2025*

- Chapter 3, Sections 3.1-3.4
- Chapter 4, Sections 4.1-4.7
- Chapter 5, Sections 5.1-5.4

**Web-based activities**

- ALEKS, Khan Academy, (*Math and You...*)
- Concept and Tools Videos
- Standards Based Practice
- Game Closet
- Interactive Whiteboard Lessons
- Online Lesson Video
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**Differentiation:***Math and You 2025* Website- “Differentiating the Lesson”

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**9.4 Life Literacies and Key Skills**

Creativity and Innovation

Critical Thinking and Problem Solving

Global and Cultural Awareness

**Effective Integration of Technology: [Computer Science and Design Thinking](#) & [Life Literacies and Key Skills](#)**

**8.1 Computer Science**

**8.2 Design Thinking**

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Digital Citizenship

Information and Media Literacy

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## 8<sup>th</sup> Grade

**Domain:** Statistics and Probability; Functions; Expressions and Equations

**Marking Period:** 3

**Cluster Headings:** Investigate patterns of association in bivariate data; Define, evaluate, and compare functions; Use functions to model relationships between quantities; Work with radicals and integer exponents.

### Overview of Unit:

- Fitting the model, and assessing its fit to the data are done informally
- Interpreting the model in the context of the data requires students to express a relationship between the two quantities in question and to interpret components of the relationship (such as slope and  $y$ -intercept) in terms of the situation
- Grasp the concept of a function as a rule that assigns to each input exactly one output
- Understand that functions describe situations where one quantity determines another
- Translate among representations and partial representations of functions and describe how aspects of the function are reflected in the different representations

### Learning Targets—Big Idea and Standards

#### Big Idea(s):

- Use scatterplots to describe patterns and relationships between two quantities
- Use lines of fit to model data
- Use two-way tables to represent data
- Use appropriate displays to represent situations
- Understand the concept of a function and represent it in a variety of ways
- Use functions to model linear relationships
- Understand differences between linear and nonlinear functions
- Use graphs of functions to describe relationships between quantities
- Use exponents to write and evaluate expressions
- Generate equivalent expressions involving products and quotients of powers
- Understand the concepts of zero and negative exponents
- Generate equivalent expressions involving powers with rational numbers
- Round numbers and write the results as a product of a single digit and a power of 10
- Understand the concept and perform operations with numbers written in scientific notation

**8.SP.A: Investigate patterns of association in bivariate data**

1. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
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 (e.g. line of best fit) by judging the closeness of the data points to the line.
4. Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*

**8.F.A: Define, evaluate and compare functions**

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. *(Clarification: Function notation is not required in Grade 8)*
2. Compare properties (e.g. rate of change, intercepts, domain and range) of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*
3. Interpret the equation  $y = mx + b$  as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function  $A = s^2$  giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.*

**8.F.B: Use functions to model relationships between quantities**

4. Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two  $(x,y)$  values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
5. Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

**8.EE.A: Work with radicals and integer exponents**

1. Know and apply the properties of integer exponents to generate equivalent numerical

expressions. For example,  $3^2 \times 3^{-5} = 3^{-3} = \frac{1}{3^3} = \frac{1}{27}$ .

5. 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. For example, estimate the population of the United States as  $3 \times 10^8$  and the population of the world as  $7 \times 10^9$  and determine that the world population is more than 20 times larger.
6. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.

**Success Criteria**

- Make a scatter plot and identify outliers, gaps, and clusters
- Use scatter plots to describe relationships between data
- Write, find, and interpret an equation of a line that best fits
- Use a line of fit to make predictions
- Read and make a two-way table
- Use a two-way table to describe relationships between data
- Choose and create appropriate data displays for situations
- Identify misleading data displays
- Analyze a variety of data displays
- Represent a relation as a set of ordered pairs and determine whether a relation is a function
- Use functions to solve real-life problems
- Write a function rule that describes a relationship
- Evaluate functions for given inputs
- Represent functions using tables and graphs
- Write linear functions to model relationships
- Interpret linear functions in real-life situations
- Recognize linear functions represented as tables, equations, and graphs
- Compare linear and nonlinear functions and describe relationships between quantities in graphs
- Sketch graphs given verbal descriptions of relationships and describe the relationships between quantities in graphs
- Find products and quotients of powers that have the same base
- Find powers of powers and powers of products and quotients
- Simplify expressions using the Quotient of Powers Property
- Solve real-life problems involving quotients of powers
- Explain the meanings of zero and negative exponents
- Evaluate and simplify numerical and algebraic expressions involving zero and negative exponents



- Write products and evaluate expressions involving powers
- Solve real-life problems involving powers Round very large and very small numbers
- Write a multiple of 10 as a power
- Compare very large or very small quantities
- Convert between scientific notation and standard form
- Choose appropriate units to represent quantities
- Use scientific notation to solve real-life problems
- Explain how to add, subtract, multiply, and divide numbers in scientific notation
- Use operations in scientific notation to solve real-life problems

### **Evidence of Learning—District Assessment Tools**

- Model Curriculum Unit Assessment
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### **District Learning Plan and Materials**

**Materials:**

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**Learning Plan:**

*Math and You 2025*

- Chapter 6, Sections 6.1-6.6
- Chapter 7, Sections 7.1-7.5
- Chapter 8, Sections 8.1-8.8

**Web-based activities**

- ALEKS, Khan Academy, *Math and You...*)
- Concept and Tools Videos
- Standards Based Practice
- Game Closet

- Interactive Whiteboard Lessons
- Online Lesson Video
- ALEKS, Khan Academy, *Math and You...*)

**Differentiation:**

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- Vocabulary Cards

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**9.1 Personal Financial Literacy**

Financial Health: *Financial Psychology, Civic Financial Responsibility*

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Money Management: *Planning & Budgeting, Risk Management & Insurance, Credit and Debit Management, Credit Profile*

**9.2 Career Awareness and Planning**

**9.4 Life Literacies and Key Skills**

Creativity and Innovation

Critical Thinking and Problem Solving

Global and Cultural Awareness

**Effective Integration of Technology:** [Computer Science and Design Thinking](#) & [Life Literacies and Key Skills](#)

**8.1 Computer Science**

**8.2 Design Thinking**

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Digital Citizenship

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Performing - Integrate, Practice, and/or Present

Responding - Perceive, Evaluate, and/or Interpret

Connecting - Synthesize and/or Relate

**8<sup>th</sup> Grade**

**Domain:** Geometry; The Number System; Expressions and Equations; Personal Finance

**Marking Period:** 4

**Cluster Headings:** Know that there are numbers that are not rational and approximate them by rational numbers and understand properties of rational and irrational numbers; Work with radicals and integer

exponents; Understand and apply the Pythagorean Theorem; Solve real-world and mathematical problems involving volume of cylinders, cones and spheres; Financial Health.

### Overview of Unit:

- Understand the statement of the Pythagorean Theorem and its converse and can explain why the Pythagorean Theorem holds, for example, by decomposing a square in two different ways
- Apply the Pythagorean Theorem to find distances between points on the coordinate plane, to find lengths, and to analyze polygons
- Solve volume problems involving cones, cylinders, and spheres
- Develop the necessary knowledge, skills and dispositions to thrive in an interconnected global economy

## Learning Targets—Big Idea and Standards

### Big Idea(s):

- Understand the concept of a square root and a cube root of a number
- Understand the Pythagorean Theorem
- Convert between different forms of rational and irrational numbers
- Understand the converse of the Pythagorean Theorem
- Find the volume of a cylinder, cone, and a sphere
- Find the surface area and volumes of similar solids
- Explore money management
- Explore the psychology of spending and saving that influences decisions related to finances

Mathematics Standards: 8.NS.A.1-3, 8.EE.A.2a-b, 8.G.B.6-8, 8.G.C.9

### ***8.NS.A: Know that there are numbers that are not rational and approximate them by rational numbers***

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.
2. Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., For example, by truncating the decimal expansion of  $\sqrt{2}$ , show that  $\sqrt{2}$  is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.
3. Understand that 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.

### ***8.EE.A: Work with radicals and integer exponents***

2. Use square root and cube root symbols to represent solutions to equations of the form  $x^2 = p$  and  $x^3 = p$  where  $p$  is a positive rational number.

a. Evaluate square roots of small perfect squares and cube roots of small perfect cubes.  
Know that  $\sqrt{2}$  is irrational.

b. Simplify numerical radicals, limiting to square roots (i.e. nonperfect squares). For example, simplify  $\sqrt{8}$  to  $2\sqrt{2}$ .

**8.G.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 real-world and mathematical problems in two and three dimensions
8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system

**8.G.C: Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres**

9. Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

**Financial Literacy Standards:**

- 9.1.2.FP.1: Explain how emotions influence whether a person spends or saves
- 9.1.2.FP.2: Differentiate between financial wants and needs
- 9.1.2.FP.3: Identify the factors that influence people to spend or save (e.g., commercials, family, culture, society)
- 9.1.2.PB.2: Explain why an individual would choose to save money
- 9.1.5.CP.1: Identify the advantages of maintaining a positive credit history
- 9.1.5.EG.3: Explain the impact of the economic system on one's personal financial goals
- 9.1.5.FI.1: Identify various types of financial institutions and the services they offer including banks, credit unions, and credit card companies
- 9.1.5.FP.1: Illustrate the impact of financial traits on financial decisions
- 9.1.5.FP.3: Analyze how spending choices and decision-making can result in positive or negative consequences
- 9.1.12.CDM.1: Identify the purposes, advantages, and disadvantages of debt
- 9.1.12.CDM.2: Compare and contrast the advantages and disadvantages of various types of mortgages
- 9.1.12.CDM.4: Identify issues associated with student loan debt, requirements for repayment, and consequences of failure to repay student loan debt

**Success Criteria**

- Use a formula to find the volume of a cylinder, cone, or sphere
- Use the formula for the volume of a cylinder or cone find a missing dimension
- Use the formula for the volume of a sphere to find the radius
- Solve real-life problems involving volumes of spheres
- Use corresponding dimensions to determine whether solids are similar
- Use corresponding dimensions to find missing measures in similar solids
- Use linear measures to find surface areas and volumes of similar solids
- Find square roots and cubed roots of numbers
- Evaluate expressions involving square and cubed roots
- Use square and cubed roots to solve equations
- Explain the Pythagorean Theorem
- Use the Pythagorean Theorem to find unknown side lengths of triangles and distances between points in the coordinate plane
- Explain the meaning of rational numbers
- Write fractions and mixed numbers as decimals
- Write repeating decimals as fractions or mixed numbers
- Classify real numbers as rational or irrational
- Approximate irrational numbers
- Solve real-life problems involving irrational numbers
- Explain the converse of the Pythagorean Theorem
- Identify right triangles given three side lengths or in a coordinate plane
- Understand how taxes affect one's personal finances
- Explain how a budget aligned with an individual's financial goals can help prepare for life events
- Credit management includes making informed choices about sources of credit and requires an understanding of the cost of credit

### **Evidence of Learning**

- Model Curriculum Unit Assessment
- Teacher-made tests and quizzes
- Publisher's tests and quizzes
- Teacher/student conferencing
- Homework Review
- Class discussion of essential questions
- Teacher observation
- Daily assignments

### **District Learning Plan and Materials**

#### **Materials:**

- Text: *Math and You 2025*
- *Math and You* Record and Practice Journal
- *Math and You* Assessment Book
- See *Math and You* Materials List

**Learning Plan:***Math and You 2025*

- Chapter 9, Sections 9.1-9.6
- Chapter 10, Sections 10.1-10.4
- Budget Project Extension

**Web-based activities**

- ALEKS, Khan Academy, *Math and You...*)
- Concept and Tools Videos
- Standards Based Practice
- Game Closet
- Interactive Whiteboard Lessons
- Online Lesson Video
- ALEKS, Khan Academy, *Math and You...*)

**Differentiation:***Math and You 2025 Website- “Differentiating the Lesson”*

- STEAM Performance Task
- Intensive Intervention Activities
- Lesson Tutorials (videos)
- Skills Review Handbook
- Basic Skills Handbook

**Accommodations for ELL:**

- Visual models/drawings
- Use of manipulatives
- Tools (rulers, calculators, etc.)
- Guided and strategy groups
- Multi-leveled cooperative learning groups
- Small group instruction and assistance
- Reduced assignments

**Accommodations for Special Education:**

- Visual models/drawings
- Use of manipulatives
- Tools (rulers, calculators, etc.)
- Guided and strategy groups
- Multi-leveled cooperative learning groups
- Assistance from the Special Education teacher in a small group setting
- Refer to student IEP



**Accommodations for at Risk Students (504):**

- Visual models/drawings
- Use of manipulatives
- Tools (rulers, calculators, etc.)
- Guided and strategy groups
- Multi-leveled cooperative learning groups
- Reduced assignments

**Web-based Activities**

- ALEKS, Khan Academy, *Math and You...*)
- Concept and Tools Videos
- Standards Based Practice
- Game Closet
- *Math and You 2025* ELL Support
- Vocabulary Cards

**Accommodations for Enrichment (G&T):**

- Extension activities
- Independent practices in small groups
- Internet activities

**Interdisciplinary Connections**

**X Interdisciplinary Standards: NJSL**

X NJLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

NJLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content

X NJLSA.L1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking

**Integration of 21st Century Skills: [Career Readiness, Life Literacy, and Key Skills](#)**

**☒9.1 Personal Financial Literacy**

Financial Health: *Financial Psychology, Civic Financial Responsibility*

Financial Landscape: *Financial Institutions, Economic & Government Influences*

Money Management: *Planning & Budgeting, Risk Management & Insurance, Credit and Debit Management, Credit Profile*

**9.2 Career Awareness and Planning**

**9.4 Life Literacies and Key Skills**

Creativity and Innovation

Critical Thinking and Problem Solving

Global and Cultural Awareness

**Effective Integration of Technology: [Computer Science and Design Thinking](#) & [Life Literacies and Key Skills](#)**

**8.1 Computer Science**

**8.2 Design Thinking**

**9.4 Life Literacies and Key Skills**

Digital Citizenship

Information and Media Literacy

Technology Literacy

**Effective Integration of Media Arts: [Visual and Performing Arts Performance Standards](#)**

**1.2 Media Arts**

Creating - Conceive, Develop, and/or Construct

Performing - Integrate, Practice, and/or Present

Responding - Perceive, Evaluate, and/or Interpret

Connecting - Synthesize and/or Relate