



Totowa Public Schools

Mathematics

Grade 7

Aligned to NJSLS 2020 Standards

Revised and BOE Adopted: 8/31/2022

Revised 12/14/2022

Units of Study & Pacing Guide

<u>Unit of Study</u>	<u>Timeline</u>	<u>Notes</u>
Unit 1: Number System	8 Weeks	
Unit 2: Rations and Proportions	8 Weeks	
Unit 3: Expressions & Equations	8 Weeks	
Unit 4: Geometry	8 Weeks	
Unit 5: Statistics & Probability	4 Weeks	

Title	The Number System
Unit Duration	8 Weeks
Unit Summary & Rationale	This unit will allow students to further their understanding of the number system. They will explore rational numbers and perform numerous operations using them. They will add, subtract, multiply, and divide rational numbers when solving equations. They will also extend their knowledge of rational numbers to decimals and real-world applications.
Unit Goals	
Essential Questions	<ul style="list-style-type: none"> • Why are mathematical operations with rational numbers important? • How does subtraction of rational numbers relate to addition of rational numbers? • How does absolute value relate to the distance between numbers on a number line? • Why is it important to be able to convert between rational numbers and decimals? • Why is it important to be able to add, subtract, multiply and divide rational numbers?
Enduring Understandings	<ul style="list-style-type: none"> • Operations such as addition and subtraction of rational numbers. For example, opposite quantities such as 3 or -3 combine to make zero. • The subtraction of rational numbers is the same as adding the additive inverse. • Absolute value is the distance from zero. Therefore, the distance between two rational numbers on the number line is the absolute value of their difference. • Depending on the situation within a given problem, different forms may be better suited for solving the problem at hand. If there are multiple types of numbers within one problem, it can be easier to solve the problem at hand by converting to one type of the number form (rational/decimal) • Rational numbers are any number that can be written in fraction form, so these types of numbers are found every day in real-world situations.

Learning Outcomes	<ul style="list-style-type: none"> • Be able to describe and model, on a horizontal and vertical number line, real-world situations in which rational numbers are combined. • Be able to apply additive inverse to solve subtraction problems and develop the arguments that the distance between two points is the absolute value of the difference between their coordinates. • Be able to explain why a divisor cannot be zero and why division of integers results in a rational number. • Be able to model the multiplication and division of signed numbers using real-world contexts, such as taking multiple steps backwards. • Be able to convert a rational number to a decimal using long division and explain in oral or written language why the decimal is either a terminating or repeating decimal. • Be able to apply properties of operations as strategies to add, subtract, multiply and divide rational numbers. • Be able to solve mathematical and real-world problems involving addition, subtraction, multiplication, and division of rational numbers.
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Assessment Evidence	
Formative	Collaborative Activities, Homework, Classwork, Discussion, Independent Class Assignment, Informal Observations of Students, Digital Personal Math Trainer, Games, Exit Slips, Pre-Assessments, Math Message – Warm up, Questioning, Teacher Made Pages, Learning Centers, LinkIt, Problem of the Day, Problem of the Week, Entrance Slips, Pre-Assessments, Interactive Notebooks
Summative	LinkIt Benchmark Assessments, Tests, Pre-Assessments, Quizzes, Written Responses
Alternative and Benchmark	<p>Alternative – Reteaching, One on One Conferencing, Learning Centers, Levels Homework, Higher Order Thinking Problems, Additional leveled practice</p> <p>Benchmark - LinkIt Benchmark Assessments, Totowa TPA, Teacher generated assessments (end of unit, etc.)</p> <p>Formative, Summative, Alternative and Benchmark Assessments</p>

Resources to Promote Learning

Resources & Equipment Needed

Smartboard, Computers, iPads, websites and digital interactives/models, Multi-media presentations, video streaming, Brain Pop, Microsoft 365, Primary and Secondary Source Documents, Go Math! Resources, Assorted Manipulatives, Khan Academy, Crosswalk Coach for the Common Core Standards, Ready Common Core Mathematics Instruction and Practice, Common Core Coach, Calculators, Whiteboards, [Approved Class Resource List](#)

Content & Interdisciplinary Standards

NJ 2020 SLS: Mathematics

NJSLs

Activity

7.NS.A.1. Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
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

- Teacher driven modeling on how to use number lines to display real-world situations. Students identify where a real-world integer situation would be described on a vertical or horizontal number line.
- Have copies of number lines for the students to use for counting the number of spaces to zero to determine the absolute value.
- Students will divide a number into a certain number of groups. Then they will be asked to divide that by zero groups. Teacher led discussion on how it is undefined.
- Explore multiplication rules through repeated addition on a number line. Students will work on computing multiplication and division of signed numbers during class group work on the smart board.
- Students will be given a rational number to convert into a decimal. They will then place under the correct category of repeating or terminating decimals and explain why.
- Following the class notes, the students determine operation and sign of answer before starting the mathematical calculations.
- Students will work with a partner to solve word problems involving real-world situations such as recipes, distance, measurement and rational numbers.

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.2. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

7.NS.A.2a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.

7.NS.A.2b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.

7.NS.A.2c. Apply properties of operations as strategies to multiply and divide rational numbers.

7.NS.A.2d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.

7.NS.A.3. Solve real-world and mathematical problems involving the four operations with rational numbers.

Mathematical Practices

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

NJ: 2016 SLS: English Language Arts

- RST.6-8.1. Cite specific textual evidence to support analysis of science and technical texts.
- RST.6-8.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics
- RST.6-8.10. By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.
- W.7.1. Write arguments to support claims with clear reasons and relevant evidence.
- W.7.2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. D. Use precise language and domain-specific vocabulary to inform about or explain the topic.
- SL.7.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- L.7.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression

2020 SLS: Computer Science & Design Thinking

NJSLS Performance Expectations (By the end of 8th Grade)

- 8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose.

2020 SLS: Career Readiness, Life Literacies, and Key Skills

NJSLS Performance Expectations (By the end of 8th Grade)

Career Readiness, Life Literacies, and Key Skills Practices describe the habits of the mind that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. These practices should be taught and reinforced in all content areas with increasingly higher levels of complexity and expectation as a student advances through a program of study.

- Act as a responsible and contributing community members and employee.
- Attend to financial well-being.
- Consider the environmental, social and economic impacts of decisions
- Demonstrate creativity and innovation.
- Utilize critical thinking to make sense of problems and persevere in solving them.
- Model integrity, ethical leadership and effective management.
- Plan education and career paths aligned to personal goals.
- Use technology to enhance productivity increase collaboration and communicate effectively.
- Work productively in teams while using cultural/global competence

- 9.2.8.CAP.2: Develop a plan that includes information about career areas of interest.
- 9.2.8.CAP.3: Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income.

Interdisciplinary/21st Century Connections

Science

- MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

21st Century Connections

- Critical thinking
- Collaboration and Teamwork
- Problem Solving

Title	Ratios and Proportions
Unit Duration	8 Weeks
Unit Summary & Rationale	The standards presented in unit 2 combine rational number arithmetic and linear expressions and equations concepts to build on the work from grade 6. These standards require the students to analyze proportional relationships and use them in

problem solving. The geometry standards will provide opportunities for the students to use proportional reasoning in context.

Unit Goals

Essential Questions

- When and why are unit rates useful in real life?
- Why is important to be able to read different types of mathematical representations such as graphs, tables, equations, diagrams, and verbal descriptions?
- Why is it important to understand a mathematical problem or real-life problem prior to starting to solve it?
- How can scale drawings be related to concepts involving proportions, and why are they important in the real-world?
- What are some different ways to draw geometric shapes with given conditions?

Enduring Understandings

- Unit rates can involve ratios of rational numbers that contain like and different units, which can appear in real life situations such as speed and unit price.
- Mathematical information can be displayed in many ways, so it is important to be able to interpret different types of mathematical representation in order to extract important information for a given problem or mathematical situation.
- Mathematical problems can be solved in many ways. Some problems may have one step to get to a solution, while others may have multiple steps. Understanding the problem at hand will aid in the planning of the process of solving a mathematical problem. In order to solve a real-world mathematics problem, one must keep the result in mind. For example, proportional relationships can be used to solve multistep ratio and percent problems involving tax, interest, gratuity, markdowns or markups, etc.
- Since it is not always possible to draw on paper the actual size of real-life objects such as the real size of a car, an airplane, we need scale drawings to represent the size. Scale drawings have a proportional relationship to the size of the actual object therefore scale drawings can be used to find the actual size of lengths of an object and can be used to reproduce scale drawings of different scales if needed.

	<ul style="list-style-type: none"> Geometric shapes can be drawn freehand, with a ruler/protractor, and with technology.
Learning Outcomes	<ul style="list-style-type: none"> Be able to calculate and interpret unit rates of various quantities involving ratios of fractions that contain like and different units using real-world examples such as speed and unit price. For example, if a person walks $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $\frac{1/2}{1/4}$ miles per hour, equivalently 2 miles per hour. Be able to determine if a proportional relationship exists between two quantities e.g. by testing for equivalent ratios in a table or graph on the coordinate plane and observing whether the graph is a straight line through the origin. Be able to identify the constant of proportionality (unit rate) from tables, graphs, equations, diagrams, and verbal descriptions. Be able to write equations to model proportional relationships in real-world problems. For example, if a recipe that serves 6 people calls for $2\frac{1}{2}$ cups of sugar, how much sugar is needed if you are serving only 2 people? Be able to represent real-world problems with proportions on a graph and describe how the graph can be used to explain the values of any point (x, y) on the graph including the points $(0, 0)$ and $(1, r)$, recognizing that r is the unit rate. Be able to solve multi-step ratio and percent problems using proportional relationships, including scale drawings of geometric figures, simple interest, tax, markups and markdowns, gratuities and commissions, and fees. Be able to use freehand, mechanical (i.e. ruler, protractor) and technological tools to draw geometric shapes with given conditions (e.g. scale factor), focusing on constructing triangles.
Assessment Evidence	
Formative	Collaborative Activities, Homework, Classwork, Discussion, Independent Class Assignment, Informal Observations of Students, Digital Personal Math Trainer, Games, Exit Slips, Pre-Assessments, Math Message – Warm up, Questioning, Teacher Made Pages, Learning Centers, LinkIt, Problem of the Day, Problem of the Week, Entrance Slips, Pre-Assessments, Interactive Notebooks

Summative	LinkIt Benchmark Assessments, Tests, Pre-Assessments, Quizzes, Written Responses
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Resources to Promote Learning	
Resources & Equipment Needed	<p>Smartboard, Computers, iPads, websites and digital interactives/models, Multi-media presentations, video streaming, Brain Pop, Microsoft 365, Primary and Secondary Source Documents, Go Math! Resources, Assorted Manipulatives, Khan Academy, Crosswalk Coach for the Common Core Standards, Ready Common Core Mathematics Instruction and Practice, Common Core Coach, Calculators, Whiteboards</p> <p>Approved Class Resource List</p>
Content & Interdisciplinary Standards	
NJ 2020 SLS: Mathematics	
NJSLS	Activity
<p>7.RP.A.1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. Show details</p> <p>7.RP.A.2. Recognize and represent proportional relationships between quantities.</p> <p>7.RP.A.2a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or</p>	<ul style="list-style-type: none"> • Give the students the cost of two of the same items, but different brands. They will find the unit rates to determine which brand has the better buy. • Use examples of gas prices from two different areas to discuss unit price and what happens to the cost as the unit increases or decreases (WB). Students will look at a line graph from the data to observe the relationship. • Have students observe a variety of graphs and determine a general relationship between them. They will calculate the proportions of each. • Students will work with a partner to read word problems and set up proportions in order to solve the problems.

<p>graphing on a coordinate plane and observing whether the graph is a straight line through the origin.</p> <p>7.RP.A.2b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</p> <p>7.RP.A.2c. Represent proportional relationships by equations.</p> <p>Show details</p> <p>7.RP.A.2d. 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.</p> <p>7.RP.A.3. Use proportional relationships to solve multistep ratio and percent problems.</p> <p>Show details</p>	<ul style="list-style-type: none"> • Students will write a real-world problem where graphing a proportional relationship would be useful. Students will trade problems with a partner and solve.
<p>7.G.A.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.</p> <p>7.G.A.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.</p>	<ul style="list-style-type: none"> • Have students visit stations around the room to buy items for discounts, go to dinner with tax and tip, buy a house with commission and buy a car with interest. • Have students find the distance between two places using a scale on a map. Replicate a map drawing using a different scale than the one given.

Mathematical Practices	
<ul style="list-style-type: none">• MP.1. Make sense of problems and persevere in solving them.• MP.2. Reason abstractly and quantitatively.• MP.3. Construct viable arguments and critique the reasoning of others.• MP.4. Model with mathematics.• MP.5. Use appropriate tools strategically.• MP.6. Attend to precision.• MP.7. Look for and make use of structure.• MP.8. Look for and express regularity in repeated reasoning.	
NJ: 2016 SLS: English Language Arts	
<ul style="list-style-type: none">• RST.6-8.1. Cite specific textual evidence to support analysis of science and technical texts.• RST.6-8.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics• RST.6-8.10. By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.• W.7.1. Write arguments to support claims with clear reasons and relevant evidence.• W.7.2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. D. Use precise language and domain-specific vocabulary to inform about or explain the topic.• SL.7.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.• L.7.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression	
2020 SLS: Computer Science & Design Thinking	
NJSLS Performance Expectations (By the end of 8th Grade)	
<ul style="list-style-type: none">• 8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose.	
2020 SLS: Career Readiness, Life Literacies, and Key Skills	

NJSLs Performance Expectations (By the end of 8th Grade)

<p>Career Readiness, Life Literacies, and Key Skills Practices describe the habits of the mind that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. These practices should be taught and reinforced in all content areas with increasingly higher levels of complexity and expectation as a student advances through a program of study.</p>	<ul style="list-style-type: none"> • Act as a responsible and contributing community members and employee. • Attend to financial well-being. • Consider the environmental, social and economic impacts of decisions • Demonstrate creativity and innovation. • Utilize critical thinking to make sense of problems and persevere in solving them. • Model integrity, ethical leadership and effective management. • Plan education and career paths aligned to personal goals. • Use technology to enhance productivity increase collaboration and communicate effectively. • Work productively in teams while using cultural/global competence
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- 9.2.8.CAP.2: Develop a plan that includes information about career areas of interest.
- 9.2.8.CAP.3: Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income.
- 9.1.8.CDM.3: Compare and contrast loan management strategies, including interest charges and total principal repayment costs.
- 9.1.8.CDM.4: Evaluate the application process for different types of loans (e.g., credit card, mortgage, student loans).
- 9.1.8.CP.1: Compare prices for the same goods or services.

Interdisciplinary/21st Century Connections

Science	<ul style="list-style-type: none"> • MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
21st Century Connections	<ul style="list-style-type: none"> • Critical thinking • Collaboration and Teamwork • Problem Solving

Title	Expression and Equations
Unit Duration	8 Weeks

Unit Summary & Rationale	Success with problem solving and developing fluency with rewriting linear expressions and solving linear equations presented in unit 2 will be dependent upon the completion of the work with rational numbers in unit 1.
Unit Goals	
Essential Questions	<ul style="list-style-type: none"> • Why is it important to be able to write equivalent expressions? • How can you set up the unknowns for real-world situations mathematically and why is this important? • After solving equations or inequalities, why is it important to be able to graph the solution(s)?
Enduring Understandings	<ul style="list-style-type: none"> • Using properties such as the additive and multiplicative inverses, distributive, commutative, and associative properties can shed light on a problem and allow for finding solutions much more efficiently. • Unknown values can be mathematically represented as variables. This is an important skill because after assigning unknowns a variable and setting up the appropriate equation/inequality one can use mathematical reasoning, inverse operations, and properties to solve for unknowns in a real-world or mathematical problem. • Graphs will represent the entire solution set of an equation or inequality and allow the reader of the graph to better interpret the solutions in the context of the problem.
Learning Outcomes	<ul style="list-style-type: none"> • Be able to apply the properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients (including additive and multiplicative inverse, distributive, commutative, and associative properties). • Be able to use equivalent expressions to demonstrate the relationship between quantities and determine simpler solutions to a problem, such as $a + 0.05a = 1.05a$ means that "increase by 5%" is the same as "multiply by 1.05". • Be able to solve multi-step real life and mathematical problems with rational numbers in any form (fractions, decimals, percents) by applying properties of operations and converting rational numbers between forms as needed, and then assess the reasonableness of results using mental computation and estimation strategies.

- Be able to use variables to represent quantities in a real-world or mathematical problem by constructing simple equations and inequalities to represent problems.
- Be able to use equations of the form $px + q = r$ and $p(x + q) = r$ and inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers.
- Be able to fluently solve equations and inequalities and graph the solution set of the inequality; interpret the solutions in the context of the problem.

Assessment Evidence	
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Content & Interdisciplinary Standards

NJ 2020 SLS: Mathematics

NJSLs	Activity
<p>7.EE.A.1. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.</p> <p>7.EE.A.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</p>	<ul style="list-style-type: none"> • Teacher driven modeling to visualize decimal or fractional coefficients. • Students will solve word problems in small groups dealing with equivalent expressions and real-world situations such as, adding twenty percent more yogurt to a meal, agent taking ten percent commission from actor etc.
<p>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.</p> <p>Show details</p> <p>7.EE.B.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.</p> <p>7.EE.B.4a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific</p>	<ul style="list-style-type: none"> • Students can identify algebraic situations in their own lives or in the world around them. Have them describe the situation using words and then turn it into an algebraic equation. • Use word problems to make an inequality based on the information and then graph the solution on the number line. • Students will identify algebraic situations in their own lives or in the world around them. They will describe the situations using words and algebraic expressions.

rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.

Show details

7.EE.B.4b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.

Show details

Mathematical Practices

- MP.1. Make sense of problems and persevere in solving them.
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- RST.6-8.10. By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.
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2020 SLS: Computer Science & Design Thinking

NJSLS Performance Expectations (By the end of 8th Grade)

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2020 SLS: Career Readiness, Life Literacies, and Key Skills

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- 9.2.8.CAP.2: Develop a plan that includes information about career areas of interest.
- 9.2.8.CAP.3: Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income.

Interdisciplinary/21st Century Connections	
Science	<ul style="list-style-type: none"> MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
21st Century Connections	<ul style="list-style-type: none"> Critical thinking Collaboration and Teamwork Problem Solving

Title	Geometry
Unit Duration	8 Weeks
Unit Summary & Rationale	In previous units, students were taught Algebra concepts are essential for solving geometry real-world and mathematical problems. In this unit, students are going to solve real world problems involving surface area and volume of prisms, pyramids, and cylinders. Students will also describe the cross sections that result when you slice three dimensional figures.
Unit Goals	
Essential Questions	<ul style="list-style-type: none"> Why is it important to be able to work with positive and negative rational numbers in any form? How can algebraic expressions be use to analyze or solve a problem? How are geometric calculations such as area, volume, and surface area helpful in the real-world? How can expressions and equations help when solving geometric types of mathematics problems? Why is it important to know how to calculate the area and circumference of a circle? What happens to a three-dimensional shape when it is sliced to a resulting two-dimensional figure?
Enduring Understandings	<ul style="list-style-type: none"> There are many real life and mathematical problems that can be posed involving positive and negative rational numbers of any form. For example, if a woman making \$25 an hour get a 10% raise, she will make an additional 1/10 of her salary an hour, or \$2.50, for a new salary of \$27.50.

	<p>Properties can be applied to rewrite between forms to show different types of understanding towards a real life mathematics problem.</p> <ul style="list-style-type: none"> • Given a situation with an unknown, an expression can be written using a variable to solve for the unknown value. The expressions can be written to relate to the problem resulting in either an equation or inequality that can be used to solve for the unknown value(s). • Area of a geometric figure is the amount of space enclosed by a two-dimensional figure, and can be applied to many real-world uses for example, calculating the amount of flooring needed in the room of a house. Volume of a geometric figure is the amount of space enclosed by a three-dimensional figure, and can be applied to many real-world used for example, find the amount of water needed to fill a pool. Surface area is the total area of all of the sides of a three dimensional figure, and can be applied to many real-world uses for example, finding the amount of paint needed to paint the walls of a room in a house. • Expressions and equations can be written and solved to find unknown angle measures involving supplementary, complementary, vertical, and adjacent angles. • Circles are found in many places in real life, so it is important to know how to calculate the area and circumference. For example, car manufacturers use circumference to determine appropriate size of tires for a car or truck. • When a three-dimensional figure is cut the resulting plane figure will be two-dimensional. The resulting two-dimensional figure that results will depend on the original three-dimensional figure.
Learning Outcomes	<ul style="list-style-type: none"> • Be able to use variables to represent quantities in a real-world or mathematical problem; write and fluently solve simple equations and inequalities, interpret the solutions in the context of the problem and graph the solution set on a number line. • Be able to use tools strategically to solve multi-step real-world and mathematical problems involving positive and negative rational numbers in any form (converting between forms as needed) and determine the reasonableness of the answers.

- Be able to 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.
- Be able to write and solve simple algebraic equations involving supplementary, complementary, vertical, and adjacent angles for multi-step problems and finding the unknown measure of an angle in a figure.
- Be able to 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.
- Be able to describe, using drawings or written descriptions, the 2-dimensional figures that result when 3-dimensional figures (right rectangular prisms and pyramids) are sliced from multiple angles given both concrete models and a written description of the 3-dimensional figure.

Assessment Evidence	
Formative	Collaborative Activities, Homework, Classwork, Discussion, Independent Class Assignment, Informal Observations of Students, Digital Personal Math Trainer, Games, Exit Slips, Pre-Assessments, Math Message – Warm up, Questioning, Teacher Made Pages, Learning Centers, LinkIt, Problem of the Day, Problem of the Week, Entrance Slips, Pre-Assessments, Interactive Notebooks
Summative	LinkIt Benchmark Assessments, Tests, Pre-Assessments, Quizzes, Written Responses
Alternative and Benchmark	<p>Alternative – Reteaching, One on One Conferencing, Learning Centers, Levels Homework, Higher Order Thinking Problems, Additional leveled practice</p> <p>Benchmark - LinkIt Benchmark Assessments, Totowa TPA, Teacher generated assessments (end of unit, etc.)</p> <p>Formative, Summative, Alternative and Benchmark Assessments</p>
Resources to Promote Learning	
Resources & Equipment Needed	Smartboard, Computers, iPads, websites and digital interactives/models, Multi-media presentations, video streaming, Brain Pop, Microsoft 365, Primary and

Secondary Source Documents, Go Math! Resources, Assorted Manipulatives, Khan Academy, Crosswalk Coach for the Common Core Standards, Ready Common Core Mathematics Instruction and Practice, Common Core Coach, Calculators, Whiteboards
[Approved Class Resource List](#)

Content & Interdisciplinary Standards

NJ 2020 SLS: Mathematics

NJSLS	Activity
<p>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. Show details</p> <p>7.EE.B.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.</p> <p>7.EE.B.4a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. Show details</p>	<p>Students will bring in a 3-dimensional real-world object. They will work with a partner to measure the dimensions to calculate the surface area and volume of their object.</p>

<p>7.EE.B.4b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. Show details</p>	
<p>7.G.B.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.</p>	<p>Students will bring in a 3-dimensional real-world object. They will work with a partner to measure the dimensions to calculate the surface area and volume of their object.</p>
<p>7.G.B.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.</p> <p>7.G.B.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.</p>	<p>Have students use a string to measure the diameter and circumference of a variety of circular objects. They will then set up ratios to compare their findings. Students will find the area and circumference of each circle and compare.</p> <p>Have students in small groups and give them each an index card with angle measures on it. Students will find complementary, supplementary and possible angles to form a triangle with their cards.</p>
<p>7.G.A.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.</p>	<p>Teacher driven modeling- Teacher will show the various three dimensional shapes and discuss what shapes will show when there is a diagonal, horizontal or vertical cut made through it.</p>
<p>Mathematical Practices</p>	

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

NJ: 2016 SLS: English Language Arts

- RST.6-8.1. Cite specific textual evidence to support analysis of science and technical texts.
- RST.6-8.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics
- RST.6-8.10. By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.
- W.7.1. Write arguments to support claims with clear reasons and relevant evidence.
- W.7.2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. D. Use precise language and domain-specific vocabulary to inform about or explain the topic.
- SL.7.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- L.7.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression

2020 SLS: Computer Science & Design Thinking

NJSLS Performance Expectations (By the end of 8th Grade)

- 8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose.

2020 SLS: Career Readiness, Life Literacies, and Key Skills

NJSLS Performance Expectations (By the end of 8th Grade)

<p>Career Readiness, Life Literacies, and Key Skills Practices describe the habits of the mind that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. These practices should be taught and reinforced in all content areas with increasingly higher levels of complexity and expectation as a student advances through a program of study.</p>	<ul style="list-style-type: none"> • Act as a responsible and contributing community members and employee. • Attend to financial well-being. • Consider the environmental, social and economic impacts of decisions • Demonstrate creativity and innovation. • Utilize critical thinking to make sense of problems and persevere in solving them. • Model integrity, ethical leadership and effective management. • Plan education and career paths aligned to personal goals. • Use technology to enhance productivity increase collaboration and communicate effectively. • Work productively in teams while using cultural/global competence
<ul style="list-style-type: none"> • 9.2.8.CAP.2: Develop a plan that includes information about career areas of interest. • 9.2.8.CAP.3: Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income. 	
Interdisciplinary/21st Century Connections	
Science	<ul style="list-style-type: none"> • MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
21st Century Connections	<ul style="list-style-type: none"> • Critical thinking • Collaboration and Teamwork • Problem Solving

Title	Statistics and Probability
Unit Duration	4 Weeks
Unit Summary & Rationale	In unit 5 the students will continue to use ratios and proportional reasoning in multi-step ratio and percent problems. The standards from the Statistics and Probability domain will support the use of proportional reasoning in context.
Unit Goals	
Essential Questions	<ul style="list-style-type: none"> • Why is it important to understand a mathematical problem or real life problem prior to starting to solve it?

	<ul style="list-style-type: none"> • Why is data collected and analyzed? • What is probability? • What are the types of probability? • What is the difference between probabilities involving single events and compound events, and how can they be displayed and calculated?
<p>Enduring Understandings</p>	<ul style="list-style-type: none"> • Mathematical problems can be solved in many ways. Some problems may have one step to get to a solution, while others may have multiple steps. Understanding the problem at hand will aid in the planning of the process of solving a mathematical problem. In order to solve a real-world mathematics problem one must keep the end result in mind. For example, proportional relationships can be used to solve multistep ratio and percent problems involving tax, interest, gratuity, markdowns or markups, etc. • Data collection can be used to study a population in order to gather and analyze in order to draw conclusions. When collecting data it is important to use random sampling to produce a representative sample. It is also important to recognize the difference between a valid and invalid sample. Analyzing data is important and can be done by graphically representing the data, so that appropriate conclusions can be made about the population. • Probability is the likelihood of the occurrence of an event. The probability of an event occurring can be represented as a number from 0-1. The closer the likelihood is to zero the less likely it is to happen, but the closer the likelihood is to one the more likely it is to occur. • There are two types of basic probability: Theoretical & Experimental. Theoretical probability is the ratio of the number of favorable outcomes to the total number of outcomes possible. Experimental probability is found by doing an experiment to collect and analyze data to make predictions for the approximate relative frequency of chance events. • Probability involving compound events uses the theory of theoretical probability single events. When probability involve more than one desired outcome to happen it is referred to as involving compound events. The theoretical probability of each of the separate events must be calculated, and then the Counting Principle is applied to find the probability of the compound events together. These compound events outcomes can be organized in organized lists, tables, and tree diagrams.

Learning Outcomes

- Be able to solve multi-step ratio and percent problems using proportional relationships (simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error).
- Be able to distinguish between valid and invalid samples from a population by determining if the sample is representative of the subgroups within the population (e.g. if the class had 50% girls and the sample had 25% girls, then the number of girls was not representative of the whole population).
- Be able to use random sampling to produce a representative sample, develop valid inferences about a population with an unknown characteristic of interest, and compare the variation in estimates using multiple samples of the same and different size. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.
- Be able to use graphical representations and statistical calculations to compare the means and variations of two distinct populations (such as the mean height of different sports teams) to draw informal comparative inferences about measures of center and variability.
- Be able to interpret and express the likelihood of a chance event as a number between 0 and 1; (the probability of an unlikely event happening is near 0, a likely event is near 1, and $1/2$ is neither likely nor unlikely)
- Be able to conduct experimental probability events that are both uniform (rolling a number cube multiple times) and non-uniform (tossing a paper cup to see if it lands up or down) to collect and analyze data to make predictions for the approximate relative frequency of chance events.
- Be able to develop uniform and non-uniform theoretical probability models by listing the probabilities of all possible outcomes in an event, for instance, the probability of the number cube landing on each number being $1/6$. Then, conduct an experiment of the event using frequencies to determine the probabilities of each outcome and use the results to explain possible sources of discrepancies in theoretical and experimental probabilities.
- Be able to design a simulation of a compound probability event and determine the sample space using organized lists, tables, and tree diagrams, calculate the fractional probabilities for each outcome in the sample space,

and conduct the simulation using the data collected to determine the frequencies of the outcomes in the sample space.

- Career Exploration – Students will examine careers in math and statistics.

Assessment Evidence	
Formative	Collaborative Activities, Homework, Classwork, Discussion, Independent Class Assignment, Informal Observations of Students, Digital Personal Math Trainer, Games, Exit Slips, Pre-Assessments, Math Message – Warm up, Questioning, Teacher Made Pages, Learning Centers, LinkIt, Problem of the Day, Problem of the Week, Entrance Slips, Pre-Assessments, Interactive Notebooks
Summative	LinkIt Benchmark Assessments, Tests, Pre-Assessments, Quizzes, Written Responses
Alternative and Benchmark	<p>Alternative – Reteaching, One on One Conferencing, Learning Centers, Levels Homework, Higher Order Thinking Problems, Additional leveled practice</p> <p>Benchmark - LinkIt Benchmark Assessments, Totowa TPA, Teacher generated assessments (end of unit, etc.)</p> <p>Formative, Summative, Alternative and Benchmark Assessments</p>
Resources to Promote Learning	
Resources & Equipment Needed	Smartboard, Computers, iPads, websites and digital interactives/models, Multi-media presentations, video streaming, Brain Pop, Microsoft 365, Primary and Secondary Source Documents, Go Math! Resources, Assorted Manipulatives, Khan Academy, Crosswalk Coach for the Common Core Standards, Ready Common Core Mathematics Instruction and Practice, Common Core Coach, Calculators, Whiteboards Approved Class Resource List
Content & Interdisciplinary Standards	
NJ 2020 SLS: Mathematics	
NJSLS	Activity

<p>7.RP.A.1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.</p> <p>7.RP.A.3. Use proportional relationships to solve multistep ratio and percent problems.</p>	<ul style="list-style-type: none"> • Have students visit stations around the room to buy items for discounts, go to dinner with tax and tip, buy a house with commission and buy a car with interest. (covered in Unit 3) • Have the students participate in a survey of their favorite restaurant in town. Assign each student a number and then use a random number table to choose the sample of students. Those students will share their results.
<p>7.SP.A.1. Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.</p> <p>7.SP.A.2. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.</p>	<ul style="list-style-type: none"> • Have the students participate in a survey of their favorite restaurant in town. Assign each student a number and then use a random number table to choose the sample of students. Those students will share their results.
<p>7.SP.B.3. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.</p> <p>Show details</p>	<ul style="list-style-type: none"> • Students will roll a number cube 20 times and record the data. They will make predictions if they were rolling the number cube 100 times. • Students will each bring in a novel with at least 200 pages in it to work with a partner. In pairs, the students will take a random sample of the amount of words on a page. Then they will calculate the mean to compare.

<p>7.SP.B.4. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.</p> <p>Show details</p>	
<p>7.SP.C.5. Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.</p> <p>7.SP.C.6. Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.</p> <p>Show details</p> <p>7.SP.C.7. Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.</p>	<ul style="list-style-type: none"> • Students will roll a number cube 20 times and record the data. They will make predictions if they were rolling the number cube 100 times. • Have students predict/discuss the theoretical probability for rolling each number on a number cube. Then students will roll the number cube 20 times and record the data. They will then roll the number cube 40 times and record. They will discuss and compare the different experimental probability and the theoretical probability. • Have students spin a spinner with four colors and a number cube 10 times. They will keep track of their outcomes using an organized list. They will then calculate the probabilities of their outcomes.

7.SP.C.7a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.

Show details

7.SP.C.7b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.

Show details

7.SP.C.8. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

7.SP.C.8a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.

7.SP.C.8b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.

7.SP.C.8c. Design and use a simulation to generate frequencies for compound events.

Show details

Mathematical Practices

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

NJ: 2016 SLS: English Language Arts

- RST.6-8.1. Cite specific textual evidence to support analysis of science and technical texts.
- RST.6-8.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics
- RST.6-8.10. By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.
- W.7.1. Write arguments to support claims with clear reasons and relevant evidence.
- W.7.2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. D. Use precise language and domain-specific vocabulary to inform about or explain the topic.
- SL.7.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- L.7.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression

2020 SLS: Computer Science & Design Thinking

NJSLS Performance Expectations (By the end of 8th Grade)

- 8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose.

2020 SLS: Career Readiness, Life Literacies, and Key Skills

NJSLS Performance Expectations (By the end of 8th Grade)

<p>Career Readiness, Life Literacies, and Key Skills Practices describe the habits of the mind that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. These practices should be taught and reinforced in all content areas with increasingly higher levels of complexity and expectation as a student advances through a program of study.</p>	<ul style="list-style-type: none"> • Act as a responsible and contributing community members and employee. • Attend to financial well-being. • Consider the environmental, social and economic impacts of decisions • Demonstrate creativity and innovation. • Utilize critical thinking to make sense of problems and persevere in solving them. • Model integrity, ethical leadership and effective management. • Plan education and career paths aligned to personal goals. • Use technology to enhance productivity increase collaboration and communicate effectively. • Work productively in teams while using cultural/global competence
<ul style="list-style-type: none"> • 9.2.8.CAP.2: Develop a plan that includes information about career areas of interest. • 9.2.8.CAP.3: Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income. 	
Interdisciplinary/21st Century Connections	
Science	<ul style="list-style-type: none"> • MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
21st Century Connections	<ul style="list-style-type: none"> • Critical thinking • Collaboration and Teamwork • Problem Solving

Accommodations & Modifications
Special Education Students, 504 students, English Language Learners, Students at-Risk Based on Students' Individual Needs

<p style="text-align: center;">Time/General</p> <ul style="list-style-type: none"> • Allow extra time • Repeat and clarify directions • Provide breaks in between tasks • Have student verbalize directions • Provide timelines/due dates for reports and projects 	<p style="text-align: center;">Processing</p> <ul style="list-style-type: none"> • Provide extra response time • Have student verbalize steps • Repeat directions • Provide small group instruction • Include partner work 	<p style="text-align: center;">Comprehension</p> <ul style="list-style-type: none"> • Provide reading material on student's level • Have student underline important points • Assist student on how to use context clues to identify words/phrases • Ensure short manageable tasks
<p style="text-align: center;">Tests/Quizzes/Grading</p> <ul style="list-style-type: none"> • Provide extended time • Provide study guides • Limit number of responses 	<p style="text-align: center;">Behavior/Attention</p> <ul style="list-style-type: none"> • Establish classroom rules • Write a contract with the student specifying expected behaviors • Provide preferential seating • Re-focus student as needed • Reinforce student for staying on task 	<p style="text-align: center;">Organization</p> <ul style="list-style-type: none"> • Monitor the student and provide reinforcement of directions • Verify the accurateness of homework assignments • Display a written agenda

ELL, Enrichment, Gifted & Talented Strategies

Accommodations Based on Students' Individual Needs

ELL Strategies

- Provide explicit, systematic instruction in vocabulary.
- Ensure that ELLs have ample opportunities to talk with both adults and peers and provide ongoing feedback and encouragement.
- Expose ELLs to rich language input.
- Scaffolding for ELLs language learning.

- Encourage continued L1 language development.
- Alphabet knowledge
- Phonological awareness
- Print awareness
- Design instruction that focuses on all of the foundational literacy skills.
- Recognize that many literacy skills can transfer across languages.
- English literacy development by helping ELLs make the connection between what they know in their first language and what they need to know in English.
- Graphic organizers
- Modified texts
- Modified assessments
- Written/audio instruction
- Shorter paragraph/essay length
- Homogeneously grouped by level

Accommodations Based on Students' Individual Needs:

Enrichment Strategies

- Evaluate vocabulary
- Elevate Text Complexity
- Incorporate inquiry based assignments and projects
- Extend curriculum
- Balance individual, small group and whole group instruction
- Provide tiered/multi-level activities
- Include purposeful learning centers
- Provide open-ended activities and projects
- Offer opportunities for heterogeneous grouping to work with age and social peers as well as homogeneous grouping to provide time to work with individual peers
- Provide pupils with experiences outside the 'regular' curriculum

- Alter the pace the student uses to cover regular curriculum in order to explore topics of interest in greater depth/breadth within their own grade level
- Require a higher quality of work than the norm for the given age group
- Promote higher level of thinking and making connections.
- Focus on process learning skills such as brainstorming, decision making and social skills
- Use supplementary materials in addition to the normal range of resources.
- Encourage peer to peer mentoring
- Integrate cross-curricular lessons
- Incorporate real-world problem solving activities
- Facilitate student-led questioning and discussions

Gifted & Talented Strategies

- More elaborate, complex, and in-depth study of major ideas, problems, and themes that integrate knowledge within and across systems of thought.
- Development and application of productive thinking skills to enable students to reconceptualize existing knowledge and/or generate new knowledge.
- Explore constantly changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world.
- Encourage exposure to, selection, and use of appropriate and specialized resources.
- Promote self-initiated and self-directed learning and growth.
- Provide for the development of self-understanding and the understanding of one's relationship to persons, societal institutions, nature, and culture.
- Flexible pacing
- Use of more advanced or complex concepts, abstractions, and materials
- Encourage students to move through content areas at their own pace. If they master a particular unit, they need to be provided with more advanced learning activities, not more of the same activity.
- Questions that require a higher level of response and/or open-ended questions that stimulate inquiry, active exploration, and discovery.
- Encourage students to think about subjects in more abstract and complex ways

- Activity selection based on student interests, that encourage self-directed learning
- Group interaction and simulations
- Guided self-management
- Encourage students to demonstrate what they have learned in a wide variety of forms that reflect both knowledge and the ability to manipulate ideas.
- Engage students in active problem-finding and problem-solving activities and research.
- Provide students opportunities for making connections within and across systems of knowledge by focusing on issues, themes, and ideas.