



**Totowa Public Schools**

**Mathematics**

**Grade 6**

**Aligned to NJSL Standards**

**Revised and BOE Adopted: 8/31/2022**

### Units of Study & Pacing Guide

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

<b>Title</b>	Number Sense
<b>Unit Duration</b>	8 Weeks
<b>Unit Summary &amp; Rationale</b>	Unit 1 builds on the students' understanding of number system concepts from previous grades to extend to division of a fraction by a fraction, operations with decimals, and multi-digit division. Students begin this unit by strengthening their number sense through locating rational numbers on a number line and using this to determine inequalities. The concept of absolute value is developed and applied to determining distances of segments on coordinate planes. Students will learn the components of a coordinate plane and further develop their graphing skills
<b>Unit Goals</b>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• How can division of fractions be applied in real life?</li> <li>• Why is it important to be able to work with various operations involving decimals?</li> <li>• What are the similarities and differences between positive and negative numbers?</li> <li>• How is it helpful to understand the</li> <li>• positioning of positive and negative rational</li> <li>• numbers on a number line?</li> <li>• How are ordered pairs graphed on the coordinate plane, and why is this useful?</li> <li>• What is the relationship between absolute value and distance?</li> <li>• How can multiple factors be used to solve real world problems?</li> </ul>
<b>Enduring Understandings</b>	<ul style="list-style-type: none"> <li>• Division of fractions is applicable in many ways, for example if given the area of a rectangular strip of land as a <math>\frac{1}{2}</math> square mile and the length as <math>\frac{3}{4}</math> of a mile the width can be found using division.</li> <li>• Decimals are important in real-life, for example in situations involving money, which everyone can relate to at some point in their lives.</li> <li>• Positive and negative numbers can describe real-world quantities but have opposite directions and values.</li> </ul>

	<ul style="list-style-type: none"> <li>• Understanding the positioning of positive and negative rational numbers on a number line is helpful in comparing the values of given positive and negative rational numbers.</li> <li>• Points are graphed on the coordinate plane by using ordered pairs, which give values that relate to the x and y axes. The understanding of how to graph points on the coordinate plane is useful in problem solving situations, for example, representing the distance between graphed points on the plane.</li> <li>• Absolute value is also important to problem solving situations involving distance on the coordinate plane, because points may be located on opposite sides of a specific axis.</li> <li>• Concepts such as Least Common Multiple and Greatest Common Factor can be used to write equivalent expressions, which can help in the solving of a real-world or math problem.</li> </ul>
<b>Learning Outcomes</b>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Compute quotients of fractions.</li> <li>• Construct visual fraction models to represent quotients and explain the relationship between multiplication and division of fractions.</li> <li>• Solve real-world problems involving quotients of fractions and interpret the solutions in the context given.</li> <li>• Fluently add, subtract, multiply, and divide multi-digit decimals and whole numbers using standard algorithms.</li> <li>• Use positive and negative numbers to describe quantities in real-world situations.</li> <li>• Locate positive and negative rational numbers on the number line and explain the meaning of absolute value of a rational number as indicating locations on opposite sides of zero on the number line.</li> <li>• Write and compare rational numbers using inequality signs.</li> <li>• Plot ordered pairs in all four quadrants on the coordinate plane and described their reflections.</li> <li>• Interpret and explain absolute value as magnitude for a positive or negative quantity in a real-world situation.</li> </ul>

- Solve real world problems mathematically by graphing points in all four quadrants of the coordinate plane. Use the absolute value of the differences of their coordinates to find distances between points with the same first coordinate or same second coordinate.
- Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two numbers less than or equal to 12.

<b>Assessment Evidence</b>	
<b>Formative</b>	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
<b>Summative</b>	LinkIt Benchmark Assessments, Tests, Pre-Assessments, Quizzes, Written Responses
<b>Alternative and Benchmark</b>	<p>LinkIt Benchmark Assessments, Totowa TPA</p> <p>Alternative – Reteaching, One on One Conferencing, Learning Centers, Levels Homework, Higher Order Thinking Problems, Additional leveled practice</p> <p><a href="#">Formative, Summative, Alternative and Benchmark Assessments</a></p>
<b>Resources to Promote Learning</b>	
<b>Resources &amp; Equipment Needed</b>	<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.</p> <p><a href="#">Approved Class Resource List</a></p>
<b>Content &amp; Interdisciplinary Standards</b>	
<b>NJ 2020 SLS: Mathematics</b>	

NJSLS	Activity
<p>6.NS.A.1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem,</p>	<ul style="list-style-type: none"> <li>• Review reciprocal and multiplication of fractions before applying rules for quotients of fractions.</li> <li>• Use model fraction tiles as well as crayons and grids to represent multiplication and division of fractions. Use QR codes readers to have students do scavenger hunts by solving problems with fractions.</li> <li>• Use critical thinking open ended questions including grids, all work and explanation for all parts of the question. Explain how to use open ended rubric and have students grade each other's open-ended question.</li> </ul>
<p>6.NS.B.2. Fluently divide multi-digit numbers using the standard algorithm.</p> <p>6.NS.B.3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.</p> <p>6.NS.B.4. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.</p>	<ul style="list-style-type: none"> <li>• Use base-ten blocks to model place value for operations of decimals. Use graph paper for aligning place value.</li> <li>• Use QR code reader to do scavenger hunt in classroom as students solve problems with decimals.</li> <li>• Use rainbow factors to list factors of a composite number and find the gcf of two or three given numbers.</li> <li>• List first a few multiples of two or three numbers to identify the lcm of the given numbers. Play buzz by counting consecutive numbers and omitting multiples of a selected or given number.</li> </ul>
<p>6.NS.C.5. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative</p>	<ul style="list-style-type: none"> <li>• Use positive and negative counters in red and blue chips to represent addition of integers. Use number line and real-life temperature problems to illustrate positives and negative values.</li> <li>• Use a number line and fraction benchmarks to locate given fractions on the line by cutting and placing them in order on the number line.</li> </ul>

electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

6.NS.C.6. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

6.NS.C.6a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g.,  $-(-3) = 3$ , and that 0 is its own opposite.

6.NS.C.6b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.

6.NS.C.6c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

6.NS.C.7. Understand ordering and absolute value of rational numbers.

6.NS.C.7a. Interpret statements of inequality as statements about the relative

- Review place value and use grids to order decimals from least to greatest and greatest to least.
- Students will plot ordered pairs to create a picture for a given season such as fall, winter, spring, summer as well as other areas of interest related topics such as sports or holidays.
- Practice comparing fractions by using proportions as well as visual charts.
- Class discussion about an old comedy movie “Ferris Buellers Day Off” in which high school students put a car on reverse to decrease mileage, as a result the number of mileages increased. Using this real-life example to illustrate distance is always positive. Use number line to show distance from zero.
- Use a coordinate plane to illustrate a word problem by counting units and comparing the distance from x and y axis such as from a reflection or translation of a figure. Use graph paper to set up the four quadrants for plotting given ordered pairs from a word problem.

position of two numbers on a number line diagram.

6.NS.C.7b. Write, interpret, and explain statements of order for rational numbers in real-world contexts.

6.NS.C.7c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

6.NS.C.7d. Distinguish comparisons of absolute value from statements about order.

6.NS.C.8. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

### 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.6.2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
- SL.6.4. Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate speaking behaviors (e.g., eye contact, adequate volume, and clear pronunciation).

**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**

<b>Science</b>	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.
<b>21<sup>st</sup> Century Connections</b>	<ul style="list-style-type: none"> <li>• Creativity and Innovation</li> <li>• Critical thinking</li> <li>• Collaboration and Teamwork</li> <li>• Problem Solving</li> </ul>

<b>Title</b>	Ratios and Proportions
<b>Unit Duration</b>	8 Weeks
<b>Unit Summary &amp; Rationale</b>	Students understand the concept of a ratio as a relationship between two quantities and use ratio language to describe that relationship. Students extend their knowledge of ratios to understand rates and unit rates and apply this knowledge to solve real world problems. Students find the percent of a quantity; solve problems using percent and use ratio reasoning to convert measurement unit
<b>Unit Goals</b>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• How can two different quantities or measures be compared?</li> <li>• What are the similarities/differences between rates and ratios?</li> <li>• Where are rates and ratios useful in real life?</li> <li>• Why is it important to analyze unknowns in problem solving situations?</li> </ul>
<b>Enduring Understandings</b>	<ul style="list-style-type: none"> <li>• A ratio is a comparison of two quantities by division.</li> <li>• Rates are a special type of ratio, in which the comparison is written in a per unit format. For example, “We paid \$75 for 15 hamburgers, which is a unit rate of \$5 per hamburger.”</li> </ul>

	<ul style="list-style-type: none"> <li>• Rates and ratios are important in real-life, for example when comparing prices in a supermarket to find the better buy.</li> <li>• When working with equations that represent two values that change in relationship to another, a dependent variable and an independent variable are needed. The dependent variable is 'dependent' on the independent variable. So, as the independent variable is changed, the dependent variable's value is affected. The change can be displayed in a graph or table format in order to analyze the relationship between the independent and dependent variables.</li> </ul>
<b>Learning Outcomes</b>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Explain the relationship of two quantities or measures of a given ratio and use ratio language to describe the relationship between the two quantities. For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”</li> <li>• Use rate language in the context of a ratio relationship to describe a unit rate <math>a/b</math> associated with a ratio <math>a:b</math> with <math>b \neq 0</math>. For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is <math>3/4</math> cup of flour for each cup of sugar.” “We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger.”</li> <li>• Use ratio and rate reasoning to solve real world and mathematical problems which include making tables of equivalent ratios, solving unit rate problems, finding percent of a quantity as a rate per 100.</li> <li>• Use ratio and rate reasoning to convert measurement units (manipulate and transform units appropriately when multiplying or dividing quantities).</li> </ul>
<b>Assessment Evidence</b>	
<b>Formative</b>	<p>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</p>

<b>Summative</b>	LinkIt Benchmark Assessments, Tests, Pre-Assessments, Quizzes, Written Responses
<b>Alternative and Benchmark</b>	LinkIt Benchmark Assessments, Totowa TPA  Alternative – Reteaching, One on One Conferencing, Learning Centers, Levels Homework, Higher Order Thinking Problems, Additional leveled practice  <a href="#">Formative, Summative, Alternative and Benchmark Assessments</a>
<b>Resources to Promote Learning</b>	
<b>Resources &amp; Equipment Needed</b>	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. <a href="#">Approved Class Resource List</a>
<b>Content &amp; Interdisciplinary Standards</b>	
<b>NJ 2020 SLS: Mathematics</b>	
<b>NJSLS</b>	<b>Activity</b>
6.RP.A.1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.  6.RP.A.2. Understand the concept of a unit rate $a/b$ associated with a ratio $a:b$ with $b \neq 0$ , and use rate language in the context of a ratio relationship.  6.RP.A.3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of	<ul style="list-style-type: none"> <li>• Use skittles activity to compare colors and representation in three separate ways. Use real life examples such as number of children in the classroom and compare in diverse ways to write ratio of boy to girls, boys to whole class, girls to boys, girls to whole class.</li> <li>• Write equivalent ratios by using proportions and multiplying/dividing. Use real life situations such as shopping in supermarket for ratios of price per pound, per quart, per ounces to compare rates and relate to better price.</li> <li>• Students will find percent of a number by using stores flyers to find percent discount of original price and use to find sale price of an item of their choice.</li> <li>• Complete table of equivalent rations and use to relate to converting percent, decimal, fraction. Read “Math Curse” storybook by Jon Scieszca and solve</li> </ul>

equivalent ratios, tape diagrams, double number line diagrams, or equations.

6.RP.A.3a. Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

6.RP.A.3b. Solve unit rate problems including those involving unit pricing and constant speed.

6.RP.A.3c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

6.RP.A.3d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

math problems involving ratios included in the book. Students will use phrase “king Henry Died Monday Drinking Chocolate Milk” KHDMDCM for converting units in the metric system.

- Review place value chart. Use multiplication and division for converting units. Label units are set up as ratio. Use arms for representing large to small or small to large when deciding to multiply or divide for converting units.

### 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.6.2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
- SL.6.4. Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate speaking behaviors (e.g., eye contact, adequate volume, and clear pronunciation).

**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.

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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.
- 9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b).

**Interdisciplinary/21st Century Connections**

<b>Science</b>	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.
<b>21<sup>st</sup> Century Connections</b>	<ul style="list-style-type: none"> <li>• Creativity and Innovation</li> <li>• Critical thinking</li> <li>• Collaboration and Teamwork</li> <li>• Problem Solving</li> </ul>

<b>Title</b>	Expressions
<b>Unit Duration</b>	8 Weeks
<b>Unit Summary &amp; Rationale</b>	Students will understand how to write and evaluate mathematical expressions. The use of appropriate mathematical languages aids in the understanding of mathematical properties, such as the distributive property, greatest common factor, and least common multiple, and how they apply to writing equivalent expressions. Students will develop their mathematical language base as they describe algebraic expressions in real world context
<b>Unit Goals</b>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• Why is it essential to understand math language before learning a math concept?</li> <li>• Do letters of the alphabet really apply in math?</li> <li>• Why is it necessary to identify equivalent expressions?</li> </ul>
<b>Enduring Understandings</b>	<ul style="list-style-type: none"> <li>• Understanding math terminology (sum, term, product, factor, quotient, coefficient, etc.) is essential to write expressions and equations from context.</li> </ul>

	<ul style="list-style-type: none"> <li>• Letters, or mathematically speaking, variables stand for unknown in a real-world and mathematical problem. It is important to be able to identify and solve for unknowns in real-world and mathematical problems.</li> <li>• Being able to understand and identify equivalent expressions is useful in problem solving situations and in simplifying expressions.</li> </ul>
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<b>Learning Outcomes</b>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Use mathematical language to identify parts of an expression.</li> <li>• Write and evaluate numerical expressions involving whole number exponents.</li> <li>• Read, write, and evaluate expressions in which letters stand for numbers (Including formulas that arise from real-world contexts).</li> <li>• Apply the properties of operations to generate equivalent expressions (Including the distributive property; for example, express <math>36 + 8</math> as <math>4(9 + 2)</math> and <math>y + y + y = 3y</math>).</li> <li>• Identify when two expressions are equivalent; for example, are the two expressions equal? <math>81 + 18</math> and <math>9(9 + 2)</math>.</li> </ul>
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<b>Assessment Evidence</b>	
<b>Formative</b>	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
<b>Summative</b>	LinkIt Benchmark Assessments, Tests, Pre-Assessments, Quizzes, Written Responses
<b>Benchmark and Alternative</b>	<p>LinkIt Benchmark Assessments, Totowa TPA</p> <p>Alternative – Reteaching, One on One Conferencing, Learning Centers, Levels Homework, Higher Order Thinking Problems, Additional leveled practice</p> <p><a href="#">Formative, Summative, Alternative and Benchmark Assessments</a></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.  
[Approved Class Resource List](#)

## Content & Interdisciplinary Standards

### NJ 2020 SLS: Mathematics

#### NJSLS

#### Activity

.EE.A.1. Write and evaluate numerical expressions involving whole-number exponents.

6.EE.A.2. Write, read, and evaluate expressions in which letters stand for numbers.

6.EE.A.2a. Write expressions that record operations with numbers and with letters standing for numbers.

6.EE.A.2b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.

6.EE.A.2c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole

- Review and introduce to students algebraic and mathematical terminology such as sum, term, quotient, product, factor, and coefficient. Have students identify and highlight key words from a word problem to translate to an expression.
- Illustrate geometric examples of formulas and visuals of a cube and square to substitute values in a given formula and solve following order of operations to find area, perimeter, and volume of figures.
- Use real world examples and Please Excuse My Dear Aunt Sally to represent the order of operations.

<p>number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations)</p>	
<p>6.EE.A.3. Apply the properties of operations to generate equivalent expressions.</p> <p>6.NS.B.4. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.</p>	<ul style="list-style-type: none"> <li>• Use index cards to represent like terms and illustrate how to combine like terms such as <math>x+x+x+x=4x</math>.</li> <li>• Recognize coefficient and terms to simplify an expression.</li> <li>• Play teacher created matching game from <a href="http://quizlet.com">quizlet.com</a> on the smart board.</li> </ul>
<p>6.EE.A.4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).</p>	<ul style="list-style-type: none"> <li>• Use area models to represent distributive property.</li> <li>• Students will answer questions from <a href="http://njctl.org">njctl.org</a> expressions presentation by using white boards and dry erase markers to record their answers and share with class.</li> </ul>
<b>Mathematical Practices</b>	
<ul style="list-style-type: none"> <li>• MP.1. Make sense of problems and persevere in solving them.</li> <li>• MP.2. Reason abstractly and quantitatively.</li> <li>• MP.3. Construct viable arguments and critique the reasoning of others.</li> <li>• MP.4. Model with mathematics.</li> <li>• MP.5. Use appropriate tools strategically.</li> <li>• MP.6. Attend to precision.</li> <li>• MP.7. Look for and make use of structure.</li> <li>• MP.8. Look for and express regularity in repeated reasoning.</li> </ul>	

**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.
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**2020 SLS: Computer Science & Design Thinking**

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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**

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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.

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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**

<b>Science</b>	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.
<b>21<sup>st</sup> Century Connections</b>	<ul style="list-style-type: none"> <li>• Creativity and Innovation</li> <li>• Critical thinking</li> <li>• Collaboration and Teamwork</li> <li>• Problem Solving</li> </ul>

<b>Title</b>	Equations and Inequalities
<b>Unit Duration</b>	8 Weeks
<b>Unit Summary &amp; Rationale</b>	Students understand that solving an equation or inequality is the process of solving a problem. Students use this knowledge to use variables to represent numbers to write and solve real world problems. Students recognize that inequalities have infinitely many solutions. Students use variables to represent two quantities in a real world problem that change in relationship to one another and recognize the concept of dependent and independent variables.
<b>Unit Goals</b>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• Do letters of the alphabet really apply in math?</li> <li>• Can problems have more than one solution?</li> <li>• How can algebraic expressions be used to analyze or solve a math problem?</li> <li>• How is an equation compared to a balanced scale?</li> <li>• What is the difference between an independent variable and a dependent variable, and why are they each important?</li> </ul>

<p><b>Enduring Understandings</b></p>	<ul style="list-style-type: none"> <li>• Letters, or mathematically speaking, variables stand for unknown in a real-world or mathematical problem. It is essential to be able to identify and solve for unknowns in real world and mathematical problems.</li> <li>• The number of solutions for a problem depends on the specifics of a problem. Equations are problems in which one value will satisfy the situation, but inequalities allow for a set of various solutions.</li> <li>• Given a situation with an unknown, an expression can be written by using a variable to solve for the unknown value.</li> <li>• An equation is similar to a balanced scale because the separate parts on each side of the equal sign represent the same quantity. Therefore, if an operation is performed on one side of the equation it must be also performed on the other side of the equation to keep the equation balanced.</li> <li>• When working with equations that represent two values that change in relationship to another, a dependent variable and an independent variable are needed. The dependent variable is 'dependent' on the independent variable. So, as the independent variable is changed, the dependent variable's value is affected. The change can be displayed in a graph or table format in order to analyze the relationship between the independent and dependent variables.</li> </ul>
<p><b>Learning Outcomes</b></p>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Use variables to represent numbers and write expressions when solving real world or mathematical problems.</li> <li>• Solve an equation or inequality to answer the question “which values from a specified set, if any, make the equation or inequality true?” and use substitution to determine whether a given number in a specified set makes an equation or inequality true. (Including formulas <math>V=lwh</math> and <math>V=bh</math>).</li> <li>• Write and solve one step equations that represent real world or mathematical problems.</li> <li>• Write an inequality of the form <math>x &gt; c</math> or <math>x &lt; c</math> to represent a constraint or condition in a real world or mathematical problem and represent them on a number line diagram.</li> <li>• Analyze the relationship between the dependent and independent variables in an equation using graphs and tables. For example, in a problem involving</li> </ul>

motion at constant speed, list and graph ordered pairs of distances and times, and write the equation  $d = 65t$  to represent the relationship between distance and time.

- Use variables to represent two quantities that change in relationship to one another in a real world problem and write an equation to express one quantity, thought of as the dependent variable, in terms of another quantity, thought of as the independent variable.

<b>Assessment Evidence</b>	
<b>Formative</b>	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
<b>Summative</b>	LinkIt Benchmark Assessments, Tests, Pre-Assessments, Quizzes, Written Responses
<b>Alternative and Benchmark</b>	LinkIt Benchmark Assessments, Totowa TPA  Alternative – Reteaching, One on One Conferencing, Learning Centers, Levels Homework, Higher Order Thinking Problems, Additional leveled practice  <a href="#">Formative, Summative, Alternative and Benchmark Assessments</a>
<b>Resources to Promote Learning</b>	
<b>Resources &amp; Equipment Needed</b>	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.  <a href="#">Approved Class Resource List</a>
<b>Content &amp; Interdisciplinary Standards</b>	

**NJ 2020 SLS: Mathematics**

NJSLs	Activity
<p>6.EE.B.5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.</p> <p>6.EE.B.6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.</p> <p>6.EE.B.7. Solve real-world and mathematical problems by writing and solving equations of the form <math>x + p = q</math> and <math>px = q</math> for cases in which <math>p</math>, <math>q</math> and <math>x</math> are all nonnegative rational numbers.</p> <p>6.EE.B.8. Write an inequality of the form <math>x &gt; c</math> or <math>x &lt; c</math> to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form <math>x &gt; c</math> or <math>x &lt; c</math> have infinitely many solutions; represent solutions of such inequalities on number line diagrams.</p>	<ul style="list-style-type: none"> <li>• Students will use variables, computations, and numbers to write algebraic expressions to represent word problems.</li> <li>• Use balanced scale with algebra tiles to represent solving equations by keeping the scale balanced. Perform inverse operations on both sides of the equation. Use mental math such as I'm thinking of a number... for students to work with opposite operations to solve for the mystery number. Use flow chart to illustrate working backwards to solve an equation. Use NJSLA reference sheet for students to solve equations/formulas to find the volume of a rectangular prism.</li> <li>• Use balanced scale with algebra tiles to represent solving equations by keeping the scale balanced. Perform inverse operations on both sides of the equation.</li> <li>• Students will use number line to graph an inequality. Use crayons or color pencils to highlight the inequality solution on the number line.</li> </ul>

<p>6.EE.C.9. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.</p>	<ul style="list-style-type: none"> <li>• Students will use spaghetti and marbles to set a table of values and plot ordered pairs to represent the number of spaghetti strands needed to hold x number of marbles. “When an object is dropped” discussion will be held in science class and followed by experiment and recording of results in math class.</li> <li>• Describe a real word problem involving two variables such as wages times hours work, and time multiplied by speed.</li> <li>• Create spreadsheet comparing two business offers such as cell phone companies with different rates for flat fee and per minute fee.</li> </ul>
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- 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.
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**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.

**21<sup>st</sup> Century Connections**

- Creativity and Innovation
- Critical thinking
- Collaboration and Teamwork
- Problem Solving

<b>Title</b>	Geometry and Statistics/Data
<b>Unit Duration</b>	4 Weeks
<b>Unit Summary &amp; Rationale</b>	Students will determine area and perimeter of polygons graphed on a coordinate plane. The standards from the Geometry and Statistics and Probability domains are included as a means of providing real world contexts. Students find area and volume of two and three dimensional figures and apply these techniques to solving real world and mathematical problems. Students use nets consisting of rectangles and triangles to represent three dimensional figures to find surface area of these solids. The unit is concluded with further development of skills in the area of statistics. Students will create dot plots and histograms from a given data set. Students will analyze dot plots and histograms to describe shape and interpret data.
<b>Unit Goals</b>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• How does area and volume relate to real-world situations?</li> <li>• Why is it important to organize, and Display collected data?</li> <li>• How can the measures of central tendency be used to describe the shape of the data?</li> <li>• Why is it important to understand the variability of a data set?</li> <li>• What are different ways that data can be displayed using a number line, and why is this necessary?</li> <li>• How do geometric models describe visual and spatial relationships?</li> </ul>
<b>Enduring Understandings</b>	<ul style="list-style-type: none"> <li>• Data can be displayed on the number line by using dot plots, histograms, and box plots, so the data can be properly read and summarized.</li> <li>• Every geometric shape encloses an area of space, so it is important to be able to find the area of geometric shapes such as triangles, quadrilaterals, and irregular figures composed of multiple shapes.</li> <li>• In three-dimensional shapes, nets are helpful to find the surface area.</li> </ul>

	<ul style="list-style-type: none"> <li>• Both area in two-dimensional figures and surface area in three-dimensional figures can be applied to solving real-world and mathematical problems such as amount of cardboard used for a cereal box, amount of wrapping paper used to wrap and gift. Volume real-world applications include converting units of measurement to determine volume of water needed to fill a swimming pool.</li> <li>• It is essential to collect, organize, and display data in an appropriate way so that it can be analyzed and summarized to better understand the data's overall shape.</li> <li>• Central tendency measures are used to find the data's center, which is helpful when summarizing and analyzing data.</li> <li>• A statistical question is one that anticipates variability; therefore, it is important to study the spread of the data when drawing conclusions about a data set. Analyzing both the center and variability of data, one can better draw conclusions about a data set.</li> </ul>
<b>Learning Outcomes</b>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Draw polygons in the coordinate plane given the coordinates of the vertices and use the coordinates to solve real world distance, perimeter, and area problems.</li> <li>• Display numerical data in plots on the number line (including dot plots, histograms, and box plots) and summarize in relation to their context.</li> <li>• Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes to solve real world or mathematical problems.</li> <li>• Represent three dimensional figures using nets made of rectangles and triangles and use the nets to find the surface area of the figures in the context of solving real world and mathematical problems.</li> </ul>

- Calculate, compare, and interpret measures of central and variability in a data set to answer a statistical question.(Including median, mean, interquartile range, mean absolute deviation and overall pattern.)

<b>Assessment Evidence</b>	
<b>Formative</b>	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
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<b>Resources to Promote Learning</b>	
<b>Resources &amp; Equipment Needed</b>	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.  <a href="#">Approved Class Resource List</a>
<b>Content &amp; Interdisciplinary Standards</b>	
<b>NJ 2020 SLS: Mathematics</b>	
<b>NJSLS</b>	<b>Activity</b>
6.G.A.1. Find the area of right triangles, other triangles, special quadrilaterals, and	<ul style="list-style-type: none"> <li>• Use NJSLA math reference sheet for students to solve equations/formulas to find the area of triangles, quadrilaterals. Create a origami pinwheel</li> </ul>

<p>polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.</p> <p>6.G.A.2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas <math>V = l w h</math> and <math>V = B h</math> to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.</p> <p>6.G.A.3. Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.</p> <p>6.G.A.4. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.</p>	<p>composed of various geometric figures and find the area of the shapes used to create the pinwheel.</p> <ul style="list-style-type: none"> <li>• Students will use paper models to cut, fold, glue to create polyhedrons and count the number of faces, vertices, and edges of the 3-d figure. Use the net of a prism and pyramid on graph paper to find area of the faces and add to find total surface area. Compare with formula given on reference sheet.</li> <li>• Construct a paper model grid of a cube and fill in with <math>2 \times 2 \times 2</math> cubic cm cubes to find volume and compare to formula and how many of <math>2 \times 2 \times 2</math> cubes can fit in a <math>4 \times 4 \times 4</math> cube.</li> <li>• Students will use the coordinate plane to plot ordered pairs and complete to form a polygon. Describe and give the ordered pairs needed to create the given polygon. Use smart board to plot ordered pairs and create polygons.</li> </ul>
<p>6.SP.A.1. Recognize a statistical question as one that anticipates variability in the data</p>	<ul style="list-style-type: none"> <li>• Play landmark everyday math game to identify median, mode, range, and mean from a deck of cards selected data values.</li> </ul>

<p>related to the question and accounts for it in the answers.</p> <p>6.SP.A.2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.</p> <p>6.SP.A.3. Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.</p>	<ul style="list-style-type: none"> <li>• Select and organize up to date data from scholastics math magazines by finding measures of central tendency and use those finding to organize in a graph.</li> <li>• Organize presidents’ data in a dot plot and histogram. Students will use data given from LinkIt and discussed in Social Studies class.</li> </ul>
<p>6.SP.B.4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.</p> <p>6.SP.B.5. Summarize numerical data sets in relation to their context, such as by:</p> <p>6.SP.B.5a. Reporting the number of observations.</p> <p>6.SP.B.5b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.</p> <p>6.SP.B.5c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.</p> <p>6.SP.B.5d. Relating the choice of measures of center and variability to the shape of the</p>	<ul style="list-style-type: none"> <li>• Organize presidents’ data in a dot plot and histogram. Students will use data given from LinkIt and discussed in Socia Studies class.</li> </ul>

data distribution and the context in which the data were gathered.

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

**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.