Pacing Guide For Math Curriculum

Grade 6

Topic	Marking Period	Number of Days
Ratio and Proportional Relationships	MP1	6 weeks
The Number System	MP 2	6 weeks
Expressions and Equations	MP 3	6 weeks
Geometry	MP 4	6 weeks
Statistics and Probability	MP 4	6 weeks

Alpha Public School
Math Curriculum Map

Grade: 6th grade

Unit: Ratios and Proportional Relationships	**Content Topic:** Understand ratio concepts and use ratio reasoning to solve problems

Standard	**Disciplinary Core Ideas / Essential Statement / Objective**
6.RP.A.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between 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."
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 ration relationship. For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $\frac{3}{4}$ cup of flour for each cup of sugar. "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger." (Clarification: Expectations for unit rates in this grade are limited to non-complex fractions).
6.RP.A.3.a	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. 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.3.b	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?
6.RP.A.3.c	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. Find a percent of a quantity as a rate per 100 (e.g, 30% of a quantity means $\frac{30}{100}$ times the quantity); solve problems involving finding the whole, given a part and the percent.
6.RP.A.3.d	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying and dividing quantities.

Practices / Skills & Lesson / Learning Activities
● Make sense of problems and persevere in solving them ● Relate variables to real world context ● Reason abstractly and quantitatively ● Construct viable arguments and critique the reasoning of others

- Model with mathematics
- Use graphs and tables to represent a dependent / independent relationship
- Use appropriate tools strategically
- Attend to precision
- Convert measures
- Look for and make use of structure
- Look for and express regularity in repeated reasoning
- Whole group instruction
    - Intro to check for previous understanding
    - Warm up exercises
    - Vocabulary preview
    - Class discussion / instruction
    - Structured notes and examples
- Individual practice
    - Opportunity for practice
    - Tiered level questions
- Small Groups
    - Mini lesson
    - Use of manipulatives
    - Centers / stations / investigations

Formative, Summative and Alternative Assessments	Benchmark Assessments	Core Instructional and Supplemental Materials (including various texts at each grade level)
• Ongoing observations and questions during class discussions • Anecdotal notes • Performance tasks • Short constructed response • Extended constructed response • Self-assessment • Multiple choice • Daily homework • Quizzes • Exit tickets Alternative: Chapter Performance Task	• Preassessment • Mid Chapter Assessment • Unit Assessment • NJSLS practice assessments • IXL diagnostic test	• Khan Academy for videos and practice • Class Zone for animated math activities • IXL for practice • National Library of Virtual Manipulatives • Desmos • Calculators • Illustrative Math • Engage NY • Achieve the Core • Spectrum Math Below level: Learning Basic Mathematics High Level: Singapore Math

Technology	Crosscutting Concepts / Interdisciplinary Connections across grade levels and content areas (at least 1 must be in ELA)
8.1.8.DA.1- Organize and transform data collected using computational tools to make it usable for a specific	Input data into research paper ELA-RI.MF.6.6-Integrate information when presented in different media or

purpose 8.1.8.DA.4- transform data to remove errors and improve the accuracy of the data for analysis 8.1.8.AP.2- Create clearly named variables that represent different data types and perform operations on their values 8.1.8.AP.6- Refine a solution that meets users' needs by incorporating feedback from team members and users	formats (e.g.,visually, quantitatively) to develop a coherent understanding of a topic or issue ELA-W.AW.6.1.B-Support claim(s) with logical reasoning and relevant, accurate data and evidence, that demonstrate an understanding of the topic or text, using credible sources ELA-W.IW.6.2.B-Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples ELA-W.SE.6.6-Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources ELA-SL.PI.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) Science-***MS-ET1-4-***A solution needs to be tested, and then modified on the basis of the test results, in order to improve it (ETS1.B

Differentiation (IEPs / 504s)	**Differentiation (ELL)**	**Differentiation (G &T)**
● Refer to IEPS for more specific accommodations and modifications for special education students ● Refer to 504 plans for more specific accommodations and modifications ● Work at independent level ● Conferencing ● Small group instruction ● Graphic organizer ● Visual aids	● Visual aids ● Anchor charts ● Multisensory approach ● Manipulatives ● Interactive whiteboard activities ● IXL ● Peer help / interaction ● Speaking slowly and distinctly	● Text at higher level ● Student centered projects ● Independent study ● Challenge / brain puzzles ● http://www.math-play.com/6th-grade-math-games.html

Unit: The Number System	**Content Topic:** Apply and extend previous understandings of multiplication and division to divide fractions by fractions

Standard	**Disciplinary Core Ideas / Essential Statement / Objective**	**Practices / Skills & Lesson**
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	● Apply and extend previous understandings of numbers to the system of rational numbers. ● Make sense of problems and persevere in solving them

	fraction models and equations to represent the problem. For example, create a story context for $(\frac{2}{3}) \div (\frac{3}{4})$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(\frac{2}{3}) \div (\frac{3}{4}) = \frac{8}{9}$ because $\frac{3}{4}$ of $\frac{8}{9}$ is $\frac{2}{3}$. (In general $(\frac{a}{b}) \div (\frac{c}{d}) = \frac{ad}{bc}$). How much chocolate will each person get if 3 people share $\frac{1}{2}$ lb. of chocolate equally? How many $\frac{3}{4}$ cup servings are in $\frac{2}{3}$ of a cup of yogurt? How wide is a rectangular strip of land with length $\frac{3}{4}$ mi and area $\frac{1}{2}$ square mi?	• Relate variables to real world context
		• Reason abstractly and quantitatively
		• Construct viable arguments and critique the reasoning of others
		• Model with mathematics
		• Use graphs and tables to represent a dependent / independent relationship
		• Use appropriate tools strategically
		• Attend to precision
		• Convert measures
		• Whole group instruction
		  ○ Intro to check for previous understanding
		  ○ Warm up exercises
		  ○ Vocabulary preview
		  ○ Class discussion / instruction
		  ○ Structured notes and examples
		• Individual practice
		  ○ Opportunity for practice
		  ○ Tiered level questions
		• Small Groups
		  ○ Mini lesson
		  ○ Use of manipulatives
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Formative, Summative and Alternative Assessments	**Benchmark Assessments**	**Core Instructional and Supplemental Materials (including various texts at each grade level)**
• Quizzes • Homework / classwork • Anecdotal notes / class observations and questions • IXL • Unit Test	• Preassessment • Mid Chapter Assessment • Unit Assessment • NJSLS practice assessments • IXL diagnostic test	• Khan Academy for videos and practice • Class Zone for animated math activities • IXL for practice • National Library of Virtual Manipulatives • Desmos • Calculators • Illustrative Math • Engage NY • Achieve the Core • Spectrum Math Below level: Learning Basic Mathematics High Level: Singapore Math

Technology	**Crosscutting Concepts / Interdisciplinary Connections across grade levels and content areas (at least 1 must be in ELA)**
8.1.8.DA.1- Organize and transform	Input data into research paper

data collected using computational tools to make it usable for a specific purpose 8.1.8.DA.4- transform data to remove errors and improve the accuracy of the data for analysis 8.1.8.AP.2- Create clearly named variables that represent different data types and perform operations on their values 8.1.8.AP.6- Refine a solution that meets users' needs by incorporating feedback from team members and users	ELA-RI.MF.6.6-Integrate information when presented in different media or formats (e.g.,visually, quantitatively) to develop a coherent understanding of a topic or issue ELA-W.AW.6.1.B-Support claim(s) with logical reasoning and relevant, accurate data and evidence, that demonstrate an understanding of the topic or text, using credible sources ELA-W.IW.6.2.B-Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples ELA-W.SE.6.6-Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources ELA-SL.PI.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) Science-***MS-ET1-4-***A solution needs to be tested, and then modified on the basis of the test results, in order to improve it (ETS1.B

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Unit: The Number System	**Content Topic:** Compute fluently with multi-digit numbers and find common factors and multiples

Standard	Disciplinary Core Ideas / Essential Statement / Objective
6.NS.B.2	With accuracy and efficiency, divide multi-digit numbers using the standard algorithm.
6.NS.B.3	With accuracy and efficiency, add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

6.NS.B.4	Find the greatest common factor of two whole numbers less than or equal to 144 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 1-144 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example , express 36 + 8 as 4(9+2).

Practices / Skills & Lesson / Learning Activities
● Apply and extend previous understandings of numbers to the system of rational numbers. ● Compare and order integers and rational numbers ● Compute fluently with multi-digit numbers and find common factors and multiples ● Review divisibility rules ● Use factors and multiples to find both GCFs and LCMs. ● Whole group instruction ○ Intro to check for previous understanding ○ Warm up exercises ○ Vocabulary preview ○ Class discussion / instruction ○ Structured notes and examples ● Individual practice ○ Opportunity for practice ○ Tiered level questions ● Small Groups ○ Mini lesson ○ Use of manipulatives ○ Centers / stations / investigations

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Unit: The Number System	**Content Topic:** Apply and extend previous understandings of numbers to the system of rational numbers

Standard	Disciplinary Core Ideas / Essential Statement / Objective
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 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.a	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. 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.6.b	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. 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.6.c	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. 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.a	Understand ordering and absolute value of rational numbers. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret -3 > -7 as a statement that -3 is located to the right of -7 on a number line oriented from left to right.
6.NS.C.7.b	Understand ordering and absolute value of rational numbers. Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write -3°*C* > -7°*C* to express the fact that -3°*C* is warmer than -7°*C*
6.NS.C.7.c	Understand ordering and absolute value of rational numbers. 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. For example, for an account balance of -30 dollars, write |-30| = 30 to describe the size of the debt in dollars.
6.NS.C.7.d	Understand ordering and absolute value of rational numbers. Distinguish comparisons of absolute value from statements about order. For example, recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars.
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.

Practices / Skills & Lesson / Learning Activities

- Apply and extend previous understandings of numbers to the system of rational numbers.
- Become secure in the concepts of opposite numbers, negative numbers, and absolute value.
- Compare and order integers and rational numbers
- Compute fluently with multi-digit numbers and find common factors and multiples
- Practice and learn different powers
- Explore odd and even numbers
- Review divisibility rules
- Use factors and multiples to find both GCFs and LCMs.
- Whole group instruction
    - Intro to check for previous understanding
    - Warm up exercises
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Differentiation (IEPs / 504s)	Differentiation (ELL)	Differentiation (G &T)

● Refer to IEPS for more specific accommodations and modifications for special education students ● Refer to 504 plans for more specific accommodations and modifications ● Preferential Seating ● Reduced number of problems ● Simplified directions ● tutoring ● Advanced notes ● Extended time ● Small group instruction ● Printed copy of board work / notes provided ● Multi-sensory presentation ● Flexible grouping	● Graphic organizers / manipulatives ● Visual Aids ● Peer help / interactions ● Speaking slowly and distinctly ● Modified assessments ● Advanced notes ● Extended time ● Additional copy of textbook ● Extended time ● Guided notes ● Allow students to correct errors ● Teach key aspects of a topic and eliminate nonessential information using videos, illustrations, pictures and drawings to explain or clarify allowing products (projects, timelines, demonstrations, etc) to demonstrate student learning ● Decrease amount of work required	● Text at higher levels ● Student centered projects ● Independent study ● Accelerated curriculum ● Extension assignments ● Increased higher order questioning ● Choice boards ● Games and tournaments ● Project based learning

Unit: Expressions and Equations	**Content Topic:** Apply and extend previous understandings of arithmetic to algebraic expressions

Standard	Disciplinary Core Ideas / Essential Statement / Objective
6.EE.A.1	Write and evaluate numerical expressions involving whole-number exponents.
6.EE.A.2.a	Write, read, and evaluate expressions in which letters stand for numbers. Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation “Subtract y from 5” as $5 - y$
6.EE.A.2.b	Write, read, and evaluate expressions in which letters stand for numbers. 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. For example, describe the expression $2(8 + 7)$ as a product of two factors; view $(8 + 7)$ as both a single entity and a sum of two terms.
6.EE.A.2.c	Write, read, and evaluate expressions in which letters stand for numbers. 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 number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V=6\ s^3$ and $A = 6\ s^2$ to find the volume and surface area of a cube with sides of length $s = \frac{1}{2}$.
6.EE.A.3	Apply the properties of operations to generate equivalent expressions. For example, apply the distributive

	property to the expressions $3(2 + x)$ to produce the equivalent expression $6 + 3x$ apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.
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). For example, the expressions $y + y + y$ and $3y$ are equivalent because they name the same number regardless of which number y stands for.

Practices / Skills & Lesson / Learning Activities
● Apply and extend previous understandings of arithmetic to algebraic expressions ● Practice and learn different powers ● Solve problems using order of operations ● Differentiate between an algebraic expression and equation ● Translate between words and expressions ● Evaluate expressions ● Distributive property to combine like terms ● Whole group instruction ○ Intro to check for previous understanding ○ Warm up exercises ○ Vocabulary preview ○ Class discussion / instruction ○ Structured notes and examples ● Individual practice ○ Opportunity for practice ○ Tiered level questions ● Small Groups ○ Mini lesson ○ Use of manipulatives ○ Centers / stations / investigations

Formative, Summative and Alternative Assessments	**Benchmark Assessments**	**Core Instructional and Supplemental Materials (including various texts at each grade level)**
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		Below level: Learning Basic Mathematics High Level: Singapore Math

Technology	Crosscutting Concepts / Interdisciplinary Connections across grade levels and content areas (at least 1 must be in ELA)
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Unit: Expressions and Equations	**Content Topic:** Reason about and solve one-variable equations and inequalities

Standard	Disciplinary Core Ideas / Essential Statement / Objective
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.
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.
6.EE.B.7	Solve real-world and mathematical problems by writing and solving equations of the form $x + p$ and $px = q$ for cases in which p, q, and x are all nonnegative rational numbers.
6.EE.B.8	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

Practices / Skills & Lesson / Learning Activities
● Apply and extend previous understandings of arithmetic to algebraic expressions ● Reason about and solve one-variable equations and inequalities ● Practice and learn different powers ● Solve problems using order of operations ● Differentiate between an algebraic expression and equation ● Translate between words and expressions ● Evaluate expressions ● Distributive property to combine like terms ● Whole group instruction ○ Intro to check for previous understanding ○ Warm up exercises ○ Vocabulary preview ○ Class discussion / instruction ○ Structured notes and examples ● Individual practice ○ Opportunity for practice ○ Tiered level questions ● Small Groups ○ Mini lesson ○ Use of manipulatives ○ Centers / stations / investigations

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Unit: Expressions and Equations	**Content Topic:**Represent and analyze quantitative relationships between dependent and independent variables

Standard	Disciplinary Core Ideas / Essential Statement / Objective
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. For example, in a problem involving motion as 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.

Practices / Skills & Lesson / Learning Activities
● Apply and extend previous understandings of arithmetic to algebraic expressions ● Reason about and solve one-variable equations and inequalities ● Practice and learn different powers ● Solve problems using order of operations ● Differentiate between an algebraic expression and equation ● Translate between words and expressions ● Evaluate expressions

- Distributive property to combine like terms
- Whole group instruction
    - Intro to check for previous understanding
    - Warm up exercises
    - Vocabulary preview
    - Class discussion / instruction
    - Structured notes and examples
- Individual practice
    - Opportunity for practice
    - Tiered level questions
- Small Groups
    - Mini lesson
    - Use of manipulatives
    - Centers / stations / investigations

Formative, Summative and Alternative Assessments	Benchmark Assessments	Core Instructional and Supplemental Materials (including various texts at each grade level)
● Quizzes ● Homework / classwork ● Anecdotal notes / class observations and questions ● IXL ● Unit Test	● Preassessment ● Mid Chapter Assessment ● Unit Assessment ● NJSLS practice assessments ● IXL diagnostic test	● Khan Academy for videos and practice ● Class Zone for animated math activities ● IXL for practice ● National Library of Virtual Manipulatives ● Desmos ● Calculators ● Illustrative Math ● Engage NY ● Achieve the Core ● Spectrum Math Below level: Learning Basic Mathematics High Level: Singapore Math

Technology	Crosscutting Concepts / Interdisciplinary Connections across grade levels and content areas (at least 1 must be in ELA)
8.1.8.DA.1- Organize and transform data collected using computational tools to make it usable for a specific purpose 8.1.8.DA.4- transform data to remove errors and improve the accuracy of the data for analysis 8.1.8.AP.2- Create clearly named	ELA-RI.MF.6.6-Integrate information when presented in different media or formats (e.g.,visually, quantitatively) to develop a coherent understanding of a topic or issue ELA-W.AW.6.1.B-Support claim(s) with logical reasoning and relevant, accurate data and evidence, that demonstrate an understanding of the topic or text, using credible sources ELA-W.IW.6.2.B-Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples

variables that represent different data types and perform operations on their values 8.1.8.AP.6- Refine a solution that meets users' needs by incorporating feedback from team members and users	ELA-W.SE.6.6-Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources ELA-SL.PI.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) Science-***MS-ET1-4-***A solution needs to be tested, and then modified on the basis of the test results, in order to improve it (ETS1.B

Differentiation (IEPs / 504s)	**Differentiation (ELL)**	**Differentiation (G &T)**
● Refer to IEPS for more specific accommodations and modifications for special education students ● Refer to 504 plans for more specific accommodations and modifications ● Preferential Seating ● Reduced number of problems ● Simplified directions ● tutoring ● Advanced notes ● Extended time ● Small group instruction ● Printed copy of board work / notes provided ● Multi-sensory presentation ● Flexible grouping	● Graphic organizers / manipulatives ● Visual Aids ● Peer help / interactions ● Speaking slowly and distinctly ● Modified assessments ● Advanced notes ● Extended time ● Additional copy of textbook ● Extended time ● Guided notes ● Allow students to correct errors ● Teach key aspects of a topic and eliminate nonessential information using videos, illustrations, pictures and drawings to explain or clarify allowing products (projects, timelines, demonstrations, etc) to demonstrate student learning ● Decrease amount of work required	● Text at higher levels ● Student centered projects ● Independent study ● Accelerated curriculum ● Extension assignments ● Increased higher order questioning ● Choice boards ● Games and tournaments ● Project based learning

Unit: Geometry	**Content Topic:** Solve real-world and mathematical problems involving area, surface area, and volume

Standard	**Disciplinary Core Ideas / Essential Statement / Objective**
6.G.A.1	Find the area of right triangles, other triangles, special quadrilaterals, and 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.
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 $V=lwh$ and $V=Bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
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.
6.G.A.4	Represent three-dimensional figures (e.g., pyramid, triangular prism, rectangular prism) 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.

Practices / Skills & Lesson / Learning Activities

- Apply and extend previous understandings of numbers to the system of rational numbers
- Solve real-world and mathematical problems involving area, surface area, and volume
- Recognize the different parts of the Cartesian plane
- Practice and learn how to graph an ordered pair
- Examine polygons in the coordinate plane
- Solve problems involving distance between two points
- Calculate the area of rectangles, parallelograms, triangles, and trapezoids
- Solve for the area of irregular figures and shaded regions
- Be introduced to 3-Dimensional solids
- Determine the surface area and volume of different solids
- Examine polygons in the coordinate plane
- Whole group instruction
    - Intro to check for previous understanding
    - Warm up exercises
    - Vocabulary preview
    - Class discussion / instruction
    - Structured notes and examples
- Individual practice
    - Opportunity for practice
    - Tiered level questions
- Small Groups
    - Mini lesson
    - Use of manipulatives
    - Centers / stations / investigations

Formative, Summative and Alternative Assessments	Benchmark Assessments	Core Instructional and Supplemental Materials (including various texts at each grade level)
● Quizzes ● Homework / classwork ● Anecdotal notes / class	● Preassessment ● Mid Chapter Assessment ● Unit Assessment	● Khan Academy for videos and practice ● Class Zone for animated

observations and questions ● IXL ● Unit Test	● NJSLS practice assessments ● IXL diagnostic test	math activities ● IXL for practice ● National Library of Virtual Manipulatives ● Desmos ● Calculators ● Illustrative Math ● Engage NY ● Achieve the Core ● Spectrum Math Below level: Learning Basic Mathematics High Level: Singapore Math

Technology	**Crosscutting Concepts / Interdisciplinary Connections across grade levels and content areas (at least 1 must be in ELA)**
8.1.8.DA.1- Organize and transform data collected using computational tools to make it usable for a specific purpose 8.1.8.DA.4- transform data to remove errors and improve the accuracy of the data for analysis 8.1.8.AP.2- Create clearly named variables that represent different data types and perform operations on their values 8.1.8.AP.6- Refine a solution that meets users' needs by incorporating feedback from team members and users	ELA-RI.MF.6.6-Integrate information when presented in different media or formats (e.g.,visually, quantitatively) to develop a coherent understanding of a topic or issue ELA-W.AW.6.1.B-Support claim(s) with logical reasoning and relevant, accurate data and evidence, that demonstrate an understanding of the topic or text, using credible sources ELA-W.IW.6.2.B-Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples ELA-W.SE.6.6-Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources ELA-SL.PI.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) Science-***MS-ET1-4-***A solution needs to be tested, and then modified on the basis of the test results, in order to improve it (ETS1.B

Differentiation (IEPs / 504s)	**Differentiation (ELL)**	**Differentiation (G &T)**
● Refer to IEPS for more specific accommodations and modifications for special education students ● Refer to 504 plans for more specific accommodations and modifications ● Preferential Seating ● Reduced number of problems ● Simplified directions	● Graphic organizers / manipulatives ● Visual Aids ● Peer help / interactions ● Speaking slowly and distinctly ● Modified assessments ● Advanced notes ● Extended time	● Text at higher levels ● Student centered projects ● Independent study ● Accelerated curriculum ● Extension assignments ● Increased higher order questioning ● Choice boards ● Games and tournaments

● tutoring ● Advanced notes ● Extended time ● Small group instruction ● Printed copy of board work / notes provided ● Multi-sensory presentation ● Flexible grouping	● Additional copy of textbook ● Extended time ● Guided notes ● Allow students to correct errors ● Teach key aspects of a topic and eliminate nonessential information using videos, illustrations, pictures and drawings to explain or clarify allowing products (projects, timelines, demonstrations, etc) to demonstrate student learning ● Decrease amount of work required	● Project based learning

Unit: Statistics and Probability	**Content Topic:** Develop understanding of statistical variability

Standard	Disciplinary Core Ideas / Essential Statement / Objective
6.SP.A.1	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, "How old am I" is not a statistical question, but "How old are the students in my school" is a statistical question because one anticipates variability in students' ages.
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.
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.

Practices / Skills & Lesson / Learning Activities

- Develop an understanding for statistical variability
- Review the vocabulary for measurements of center
- Practice and strengthen their understanding of measurements of center by working through application problems
- Review vocabulary for measurements of variation such as min/ max, range, quartiles, outliers, and mean absolute deviation
- Practice and strengthen their understanding of measurements of center by working through application problems
- Explore and understand the different ways to display data
- Whole group instruction
    - Intro to check for previous understanding
    - Warm up exercises
    - Vocabulary preview
    - Class discussion / instruction

- Structured notes and examples
- Individual practice
  - Opportunity for practice
  - Tiered level questions
- Small Groups
  - Mini lesson
  - Use of manipulatives
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Formative, Summative and Alternative Assessments	Benchmark Assessments	Core Instructional and Supplemental Materials (including various texts at each grade level)
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Technology	Crosscutting Concepts / Interdisciplinary Connections across grade levels and content areas (at least 1 must be in ELA)
8.1.8.DA.1- Organize and transform data collected using computational tools to make it usable for a specific purpose 8.1.8.DA.4- transform data to remove errors and improve the accuracy of the data for analysis 8.1.8.AP.2- Create clearly named variables that represent different data types and perform operations on their values 8.1.8.AP.6- Refine a solution that meets users' needs by incorporating feedback from team members and	ELA-RI.MF.6.6-Integrate information when presented in different media or formats (e.g.,visually, quantitatively) to develop a coherent understanding of a topic or issue ELA-W.AW.6.1.B-Support claim(s) with logical reasoning and relevant, accurate data and evidence, that demonstrate an understanding of the topic or text, using credible sources ELA-W.IW.6.2.B-Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples ELA-W.SE.6.6-Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources ELA-SL.PI.6.4-Present claims and findings, sequencing ideas logically and

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Unit: Statistics and Probability	**Content Topic:** Summarize and describe distributions

Standard	Disciplinary Core Ideas / Essential Statement / Objective
6.SP.B.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
6.SP.B.5.a	Summarize numerical data sets in relation to their context, such as by: reporting the number of observations
6.SP.B.5.b	Summarize numerical data sets in relation to their context, such as by: Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
6.SP.B.5.c	Summarize numerical data sets in relation to their context, such as by: 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.
6.SP.B.5.d	Summarize numerical data sets in relation to their context, such as by: Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Practices / Skills & Lesson / Learning Activities

- Develop an understanding for statistical variability
- Review the vocabulary for measurements of center
- Practice and strengthen their understanding of measurements of center by working through application problems
- Review vocabulary for measurements of variation such as min/ max, range, quartiles, outliers, and mean absolute deviation
- Practice and strengthen their understanding of measurements of center by working through application problems
- Explore and understand the different ways to display data
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For all Math units:

21st Century Education (NJSLS Standard 9)	Career Education
<u>THEMES:</u> Global Awareness Financial, Economic, Business and Entrepreneurial Literacy Critical Thinking Problem Solving Communication Collaboration Information Literacy ICT (Information, Communication and Technology) Literacy <u>SKILLS:</u> CRP2. Apply appropriate academic and technical skills CRP3. Attend to personal health and financial well-being CRP4. Communicate clearly and effectively with reason CRP7. Employ valid and reliable research	-Business Management & Administration -Education & Training -Finance -Information Technology -Manufacturing -Marketing -Science, Technology, Engineering & Mathematics (STEM) -Transportation, Distribution & Logistics

strategies CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP9. Model integrity, ethical leadership and effective management. CRP11. Use technology to enhance productivity CRP12. Work productively in teams while using cultural global competence	