PITTSGROVE TOWNSHIP SCHOOL DISTRICT

Course Name:6th Grade Mathematics Accelerated	Grade Level(s):6
Department:Mathematics	Credits:
BOE Adoption Date: October 17, 2019	Revision Date(s): June 18, 2020

Course Description

Instructional time will focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples.

1. Students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. Students use their understanding of ratios and proportionality to solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease. Students solve problems about scale drawings by relating corresponding lengths between the objects or by using the fact that relationships of lengths within an object are preserved in similar objects. Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope. They distinguish proportional relationships from other relationships.

2. Students develop a unified understanding of number, recognizing fractions, decimals (that have a finite or a repeating decimal representation), and percents as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division to all rational numbers, maintaining the properties of operations and the relationships between addition and subtraction, and multiplication and division. By applying these properties, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers.

They use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems.

3. Students continue their work with area from Grade 6, solving problems involving the area and circumference of a circle and surface area of three-dimensional objects. In preparation for work on congruence and similarity in Grade 8 they reason about relationships among two-dimensional figures using scale drawings and informal geometric constructions, and they gain familiarity with the relationships between angles formed by intersecting lines. Students work with three-dimensional figures, relating them to two-dimensional figures by examining cross-sections. They solve real-world and mathematical problems involving area, surface area, and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes and right prisms.

4. Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.

Mathematical Practices:

1. Make sense of problems and persevere in solving them.

2. Reason abstractly and quantitatively.

3. Construct viable arguments and critique the reasoning of others.

4. Model with mathematics.

5. Use appropriate tools strategically.

6. Attend to precision.

7. Look for and make use of structure.

8. Look for and express regularity in repeated reasoning

Mission Statement

The Pittsgrove Township School District believes in growing all learners to thrive. *The district offers an intellectually rigorous, dynamic curriculum aligned to state and national standards coupled with research-based practices in classrooms. The Pittsgrove Township School District strives to highlight critical thinking, problem-solving, intercultural literacy, digital literacy, collaboration, innovation, and a growth mindset as part of the instructional core of learning. The district provides high quality resources to provide young people the knowledge they need to approach the future as leaders and learners.*

Curriculum & Instruction Goals

1. To ensure students are college and career ready upon graduation
2. To vertically and horizontally align curriculum PreK-12 to ensure successful transition of students at each grade level
3. To identify individual student strengths and weaknesses utilizing various assessment measures (formative, summative, alternative, etc.) so as to differentiate instruction while meeting the rigor of the applicable content standards
4. To improve student achievement as assessed through multiple measures including, but not limited to, state testing, local assessments, and ongoing progress monitoring

How to Read this Document

This curricular document contains both a *pacing guide* and *curriculum units*. The pacing guide serves to communicate an estimated timeframe as to *when* critical knowledge and skills will be taught throughout the year. The pacing, however, may differ slightly depending upon the unique needs of each learner. The *curriculum units* contain more detailed information as to the content, goals, objectives, instructional strategies, resources, and assessments.

NJ Administrative Code and Statutes Key
^=Amistad Law   **O=Diversity & Inclusion Law**   **<>=Holocaust**   **+=LGBT and Disabilities Law**   ***=AAPI (Asian American and Pacific Islanders)**   **$=Financial Literacy**   **Use this key to understand where the NJ mandates are being implemented in the K-12 curriculum units.**

Pacing Guide

Course Title: Math 6
Prerequisite(s): Math 5

Unit Title	Duration/ Month(s)	Related Standards	Learning Goals	Critical Knowledge and Skills
Unit 1: Number System Part 1	**10 weeks Sept/Nov**	**Major:** 6.NS.A.1 **Additional Clusters:** 6.NS.B.2 6.NS.B.3 6.NS.B.4	1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions. 2. Compute fluently with multi-digit numbers and find common factors and multiples. 3. Fluently divide multi-digit numbers using the standard algorithm. 4. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. 5. 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.	*Students will be able to:* 1. Use the standard algorithm to divide multi-digit numbers with speed and accuracy. 2. Add, subtract, multiply, divide decimals and to solve problems involving decimals. 3. Add, subtract, multiply, and divide fractions and mixed numbers. 4. Find the greatest common factor and least common multiple of numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12.
Unit 2: Number System Part 2	**5 weeks Nov/Dec**	**Major:** 6.NS.C.5 6.NS.C.6 6.NS.C.7 6.NS.C.8	1. Position rational numbers on horizontal and vertical number lines.	*Students will be able to:* 1. Understand that the number line extends beyond zero into negative

| | | 7.NS.A.1(a-d)
7.NS.A.2(a-c) | 2. Position pairs of rational numbers on a coordinate plane.
3. Explain the conditions for which pairs of points are reflections across an axes in the coordinate plane.
4. Locate numbers and their opposites on the number line and explain their relation to 0.
5. Given an inequality, determine the position of one rational number relative to another.
6. Write an inequality and explain statements of order for rational numbers in real world situations.
7. Graph points in all four quadrants of the coordinate plane in order to solve real-world and mathematical problems.
8. Use absolute value to find distances between points with the same first coordinate or the same second coordinate.
9. Add, subtract, multiply and divide integers.
10. Use a number line to show addition and subtraction of integers. | numbers and be able to find rational numbers on a number line.
2. Position pairs of rational numbers on a coordinate plane.
3. Reflect points across the x and y-axes in the coordinate plane. Explain how to reflect points.
4. Locate numbers and their opposites on the number line and explain their relation to 0.
5. Given an inequality, determine the position of one rational number relative to another.
6. Write an inequality and explain statements of order for rational numbers in real world situations.
7. Graph points in all four quadrants of the coordinate plane in order to solve real-world and mathematical problems.
8. Use absolute value to find distances between points with the same first coordinate or the same second coordinate.
9. Add, subtract, multiply and divide integers. |

				11. Divide integers as long as the divisor is not zero.	10. Use a number line to show addition and subtraction of integers.
Unit 3: Expressions & Equations	9 weeks Jan/Feb	Major: 6.EE.A.1 6.EE.A.2 6.EE.A.3 6.EE.A.4 6.EE.B.5 6.EE.B.6 6.EE.B.7 6.EE.B.8 6.EE.C.9		1. Write and evaluate mathematical and algebraic expressions from verbal descriptions, including those with exponents. 2. Apply the properties of operations to generate equivalent expressions. 3. Use mathematical terms (sum, term, product, factor, quotient, coefficient) to identify the parts of an expression. 4. Identify when two expressions are equivalent. 5. Combine like terms, factor and distribute to create equivalent expressions. 6. Solve equations and inequalities by using substitution. 7. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem. 8. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases	*Students will be able to:* 1. Write numerical expressions (involving whole number exponents) from verbal descriptions. 2. Evaluate numerical expressions involving whole number exponents. 3. Write algebraic expressions from verbal descriptions. 4. Use mathematical terms (sum, term, product, factor, quotient, coefficient) to identify the parts of an expression. 5. Evaluate algebraic expressions and formulas, including those involving exponents. 6. Combine like terms to generate an equivalent expression. 7. Factor to generate an equivalent expression. 8. Multiply (apply the distributive property) to generate an equivalent expression.

			in which p, q and x are all nonnegative rational numbers. 9. Write an inequality of the form x > c or x < c to represent a constraint or condition in a realworld or mathematical problem. 10. Recognize that inequalities of the form x > c or x < c have infinitely many solutions; represent solutions of such inequalities on number line diagrams. 11. 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. 12. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.	9. Write expressions for solving real-world problems. 10. Substitute a number into an equation to determine whether it makes an equation true. 11. Substitute a number into an inequality to determine whether it makes the inequality true. 12. Solve real world problems by writing and solving equations of the form $x + p = q$ (p, q, and x are non-negative and rational). 13. Solve real world problems by writing and solving equations of the form $px = q$ (p, q, and x are non-negative and rational). 14. Analyze a given graph and table of values, and relate them to the equation.
Unit 4: Ratios and Proportions	**7 weeks** **March/April**	**Major:** 6.RP.A.1 6.RP.A.2 6.RP.A.3 7.RP.A.1	1. Describe a ratio relationship between two quantities using ratio language.	*Students will be able to:* 1. Describe a ratio relationship between two quantities using ratio language.

			2. Determine the unit rate given a ratio relationship and solve real world problems. 3. Use ratio and rate reasoning to create tables of equivalent ratios relating quantities with *whole number* measurements, find missing values in tables and plot pairs of values. 4. Compare ratios using tables of equivalent ratios. 5. Calculate a percent of a quantity and solve problems by finding the whole when given the part and the percent. 6. Convert measurement units using ratio reasoning. 7. Convert fractions to decimals and percents and vice versa. 8. Compute unit rates with ratios using fractions.	2. Determine the unit rate given a ratio relationship. 3. Describe a unit rate relationship between two quantities using rate language. 4. Use ratio and rate reasoning to create tables of equivalent ratios relating quantities with *whole number* measurements, find missing values in tables and plot pairs of values. 5. Compare ratios using tables of equivalent ratios. 6. Solve real world and mathematical problems involving unit rate (including unit price and constant speed). 7. Calculate a percent of a quantity and solve problems by finding the whole when given the part and the percent. 8. Convert measurement units using ratio reasoning. 9. Convert a fraction to a decimal and percent. 10. Convert a percent to a decimal and fraction. 11. Convert a decimal to a percent and fraction.

| Unit 5: Geometry | 4-5 weeks April/May | Supporting: 6.G.A.1 6.G.A.2 6.G.A.3 6.G.A.4 7.G.B.4 7.G.B.6 | 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 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. 3. Apply the formulas V = l w h and V = B h to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. 4. Draw polygons in the coordinate plane given coordinates for the vertices 5. Use coordinates to find the length of a side joining points with the same first coordinate or the same | *Students will be able to:* 1. Find the volume using right rectangular prisms with fractional edge lengths with unit fraction cubes. 2. Apply volume formulas, *V = l w h* and *V = b h,* to right rectangular prisms with fractional edge lengths. 3. Represent three dimensional objects with nets made up of rectangles and triangles. 4. Find surface area of three-dimensional objects using nets. 5. Solve real world and mathematical problems involving surface area using nets. 6. Compose rectangles in order to find the area of triangles, special quadrilaterals and polygons. 7. Decompose triangles, special quadrilaterals, and polygons into triangles and other shapes in order to find their area. 8. Compose rectangles and decompose into triangles in order to solve real-world problems. |

			second coordinate. Apply these techniques in the context of solving real-world and mathematical problems. 6. 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. 7. Find the area and circumference of a circle. 8. Solve real-world and mathematical problems involving area, volume and surface area of two and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms	9. Find the area and circumference of circles.
Unit 6: Statistics and Probability	**5 weeks** **May/June**	**Additional Cluster:** 6.SP.A.1 6.SP.A.2 6.SP.A.3 6.SP.B.4 6.SP.B.5 7.SP.A.1 7.SP.A.2 7.SP.B.3 7.SP.B.4	1. Distinguish questions that are statistical (anticipate variability in data) from those that are not. 2. Distinguish center from variation. 3. Display numerical data in dot plots, histograms and boxplots on a number line.	*Students will be able to:* 1. Distinguish questions that are statistical (anticipate variability in data) from those that are not. 2. Distinguish center from variation. 3. Display numerical data in dot plots, histograms and boxplots on a number line.

			4. Calculate measures of center, mean and median. 5. Calculate measures of spread, interquartile range and mean absolute deviation. 6. Describe the overall shape of a distribution (skewed left, skewed right, etc) and striking deviations (outliers). 7. Choose measures of center and variability appropriate to the shape of the distribution and context. 8. Visually assess, given a distribution, the measure of spread (mean absolute deviation or interquartile range). 9. Understand that statistics can be used to gain information about a population by examining a sample of the population 10. Understand that random sampling tends to produce representative samples and support valid inferences. 11. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. 12. Informally assess the	4. Calculate measures of center, mean and median. 5. Calculate measures of spread, interquartile range and mean absolute deviation. 6. Describe the overall shape of a distribution (skewed left, skewed right, etc) and striking deviations (outliers). 7. Choose measures of center and variability appropriate to the shape of the distribution and context. 8. Visually assess, given a distribution, the measure of spread (mean absolute deviation or interquartile range). 9. Use statistics to gain information about a population and make inferences based on sampling. 10. Assess overlap of two numerical data distributions with similar variability. 11. Compare two populations and make informal inferences using measures of center and measures of variability.

			degree of visual overlap of two numerical data distributions with similar variabilities 13. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations	

Instructional Unit Map

Course Title: **6th grade Math Accelerated**				

Unit Title	**Unit 1: Number System Part 1**		Start Date:	**September-November**
			Length of Unit:	**10 weeks**
Content Standards What do we want them to know, understand, & do?	Major: 6.NS.A Apply and extend previous understandings of multiplication and	Learning Goals	*Students will know how to:* 1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions. 2. Compute fluently with multi-digit numbers and find common factors and multiples.	

	division to divide fractions by fractions. 6.NS.A.1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions. Additional Clusters: 6.NS.B Compute fluently with multi-digit numbers and find common factors and multiples. 6.NS.B.2 Fluently divide multi-digit numbers using the standard algorithm. 6.NS.B.3 Fluently 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 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		3. Fluently divide multi-digit numbers using the standard algorithm. 4. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. 5. 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.

	as a multiple of a sum of two whole numbers with no common factor.) * this part of the standard is addressed in a later unit.		
Essential Questions	How can we use decimals and fractions in the real world? Why is decimal placement important when computing with decimals? How do models to help us describe dividing fractions? How do you know which operations to choose when solving real life problems? How do we use numbers and their operations in the real world?		
Assessments How will we know they have gained the knowledge & skills?	**Formative**	**Summative**	**Alternative**
	● Warm ups and Exit Tickets. ● Homework ● Choral and individual responses to questioning. ● Thumbs up/down, and other interactive answering strategies. ● White-board responses or Pear Deck responses. ● Quizizz, Khan Academy, Kahoot, Prodigy and other on-line assessment tools. ● I Have, Who Has questions.	● Unit Assessment ● Quizzes and End of Chapter Tests ● Projects ● Stations	● Decimal Operation Cartoon ● Cooking with Fractions
Unit Pre-Assessment(s) What do they already know?	Decimal Pre-test Fraction Pre-test (given at approximately week 5)		

Instructional Strategies/Student Activities	- Direct Instruction - Guided Practice - Cooperative learning - Modeling - Learning Centers - Guided note pages - Turn and talk/Think-pair-share - Student choice of assignments - Use mnemonic devices for division such as "Does McDonalds Serve Cheeseburgers" –Divide, multiply, subtract, check			
Instructional/Assessment Scaffolds (Modifications /Accommodations) – planned for prior to instruction	English Language Learners	Special Education Learners	Struggling Learners	Advanced Learners
	*Simplify instructions *Give students extra time to complete tests *Make all or part of the assessment oral *Small group administration of classroom tests/quizzes as needed and/or available *Class "Buddy" *Provide vocabulary list for the unit.	*Allow extra time for task completion as needed *Allow for oral follow-up for student to expand on written responses *Read, restate and clarify directions/instructions. *Additional time to complete classroom tests/quizzes *Small group administration of classroom tests/quizzes as needed	*Small group instruction. *Chunk projects or long-term assignments. *Give directions in small pieces *Modified length of test *Use manipulatives *Test re-takes	*Individualized assessment or Independent study *Have students answer open ended questions *Additional research into topics *Tiered assignments

		*Allow students to make corrections to tests for partial credit.		
Differentiated Instructional Methods: (Multiple means for students to access content and multiple modes for student to express understanding)	**Access (Resources and/or Process)**		**Expression (Products and/or Performance)**	
	- Interactive notebook - Classroom presentations - Standard-aligned Learning Stations - Targeted IXL lessons based on results of diagnostic and classroom progress - Flexible grouping		- Student choice of assignments - Leveled assignments	
Vocabulary Highlight key vocabulary (both Tier II and Tier III words)	Tier II: solve, explain, compute, sum. difference, multiplication, product, decimal, fraction, division, numerator, denominator, quotient, divisor, dividend, multiple, least, common, factor, greatest, terminating decimal, repeating decimal Tier III: standard algorithm			
Integration of Technology SAMR	S/A: Quiz via Google Forms; Quizizz, and Kahoot S/A: Pear Deck A/M: Differentiated IXL lessons assigned based on student strengths/weaknesses A/M: Prodigy S/A/M: Khan Academy A: Math teaching videos R: Kahoot or Quizizz, created by student to prepare for a test and shared with their peers.			
Interdisciplinary Connections NJ Student Learning Standards	ELA: NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text. NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. Technology: 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities. 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems. 21st Century Life and Careers: CRP2. Apply appropriate academic and technical skills.			

	CRP4. Communicate clearly and effectively and with reason. CRP6. Demonstrate creativity and innovation. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP11. Use technology to enhance productivity. Financial Literacy: 9.1.8.E.1 Explain what it means to be a responsible consumer and the factors to consider when making consumer decisions.	
21st Century Themes/Skills P21 Framework	**Themes**	**Skills**
	Financial, Economic, Business, and Entrepreneurial Literacy • Know how to make appropriate personal economic choices • Understand the role of the economy in society	● Flexibility and adaptability ● Initiative and Self-Direction ● Social and Cross-Cultural Skills ● Productivity and accountability ● Leadership and Responsibility ● Think creatively ● Work creatively with others ● Reason effectively ● Make judgements and decisions ● Communicate clearly ● Collaborate with others ● Adapt to change ● Work independently ● Interact effectively with others
Resources/Materials	Resources: NJCTL website Math Antics IXL Khan Academy Google Classroom Pear Deck Google Slides Illustrative Mathematics Materials: Interactive notebooks Chromebooks Manipulatives White boards	

Instructional Unit Map		

Course Title: 6th grade math

Unit Title	Unit 2: Number System part 2	Start Date:	November-December
		Length of Unit:	5 weeks

| Content Standards
What do we want them to know, understand, & do? | **Major:**
6.NS.C.5
Understand that positive and negative numbers are used together to describe quantities having opposite directions or values; 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.7
Understand ordering and absolute value of rational numbers. | Learning Goals | *Students will know how to:*
1. Position rational numbers on horizontal and vertical number lines.
2. Position pairs of rational numbers on a coordinate plane.
3. Explain the conditions for which pairs of points are reflections across an axes in the coordinate plane.
4. Locate numbers and their opposites on the number line and explain their relation to 0.
5. Given an inequality, determine the position of one rational number relative to another.
6. Write an inequality and explain statements of order for rational numbers in real world situations.
7. Graph points in all four quadrants of the coordinate plane in order to solve real-world and mathematical problems.
8. Use absolute value to find distances between points with the same first coordinate or the same second coordinate.
9. Add, subtract, multiply and divide integers.
10. Use a number line to show addition and subtraction of integers.
11. Divide integers as long as the divisor is not zero. |

	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. **7.NS.A.1(a-d)** Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. a. Describe situations in which opposite quantities combine to make 0. b. Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses).		

| | Interpret sums of rational numbers by describing real-world contexts.
c. Understand subtraction of rational numbers as adding the additive inverse, p – q = p + (–q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
d. Apply properties of operations as strategies to add and subtract rational numbers.
7.NS.A.2(a-c) Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such | | |

	as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. c. Apply properties of operations as strategies to multiply and divide rational numbers		
Essential Questions	What does it mean to have less than zero? Why do we need numbers other than positive whole numbers? What is absolute value? What do we use maps for and why are they useful? How does a coordinate plane help you solve real-world problems?		
Assessments *How will we know they have gained the knowledge & skills?*	**Formative**	**Summative**	**Alternative**
	- Warm ups and Exit Tickets. - Homework - Choral and individual responses to questioning. - Thumbs up/down, and other interactive answering strategies.	- Unit Assessment - Quizzes and End of Chapter Tests - Projects - Stations	

	● White-board responses or Pear Deck responses. ● Quizizz, Khan Academy, Kahoot, Prodigy and other on-line assessment tools. ● I Have, Who Has questions.		
Unit Pre-Assessment(s) *What do they already know?*	Integer and Coordinate Plane Pre-Test		
Instructional Strategies/Student Activities	● Direct Instruction ● Guided Practice ● Cooperative learning ● Modeling ● Learning Centers ● Guided note pages ● Turn and talk/Think-pair-share ● Student choice of assignments		
Instructional/Assessment Scaffolds *(Modifications /Accommodations) – planned for prior to instruction*	**English Language Learners**	**Special Education Learners**	**Struggling Learners**	**Advanced Learners**
	*Simplify instructions *Give students extra time to complete tests *Make all or part of the assessment oral *Small group administration of classroom tests/quizzes as needed and/or available	*Allow extra time for task completion as needed *Allow for oral follow-up for student to expand on written responses *Read, restate and clarify directions/instructions.	*Small group instruction. *Chunk projects or long-term assignments. *Give directions in small pieces *Modified length of test *Use manipulatives *Test re-takes	*Individualized assessment or Independent study *Have students answer open ended questions *Additional research into topics *Tiered assignments

	*Class "Buddy" *Provide vocabulary list for the unit.	*Additional time to complete classroom tests/quizzes *Small group administration of classroom tests/quizzes as needed *Allow students to make corrections to tests for partial credit.		
Differentiated Instructional Methods: *(Multiple means for students to access content and multiple modes for student to express understanding)*	**Access** (Resources and/or Process)		**Expression** (Products and/or Performance)	
	● Interactive notebook ● Classroom presentations ● Standard-aligned Learning Stations ● Targeted IXL lessons based on results of diagnostic and classroom progress ● Flexible grouping		● Student choice of assignments ● Leveled assignments	
Vocabulary *Highlight key vocabulary (both Tier II and Tier III words)*	Tier II: solve, explain, compute, sum. difference, multiplication, product, division, quotient, inequality, coordinate, opposites, reflection Tier III: rational number, integer, absolute value, x-axis, y-axis, inverse operations			
Integration of Technology <u>SAMR</u>	S/A: Quiz via Google Forms; Quizizz, and Kahoot S/A: Pear Deck A/M: Differentiated IXL lessons assigned based on student strengths/weaknesses A/M: Prodigy S/A/M: Khan Academy A: Math teaching videos R: Kahoot, created by student to prepare for a test and shared with their peers.			

Interdisciplinary Connections NJ Student Learning Standards	**ELA:**
	NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
	NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
	Technology:
	8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.
	8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
	21st Century Life and Careers:
	CRP2. Apply appropriate academic and technical skills.
	CRP4. Communicate clearly and effectively and with reason.
	CRP6. Demonstrate creativity and innovation.
	CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
	CRP11. Use technology to enhance productivity.

21st Century Themes/Skills P21 Framework	Themes	Skills
	Financial, Economic, Business, and Entrepreneurial Literacy • Know how to make appropriate personal economic choices • Understand the role of the economy in society	• Flexibility and adaptability • Initiative and Self-Direction • Social and Cross-Cultural Skills • Productivity and accountability • Leadership and Responsibility • Think creatively • Work creatively with others • Reason effectively

		● Make judgements and decisions ● Communicate clearly ● Collaborate with others ● Adapt to change ● Work independently ● Interact effectively with others
Resources/Materials	**Resources:** NJCTL website Math Antics website IXL Khan Academy Google Classroom Pear Deck Google Slides Illustrative Mathematics **Materials:** Interactive notebooks Chromebooks Manipulatives White boards	

Instructional Unit Map

Course Title: 6th Grade Math

Unit Title	Unit 3: Expressions and Equations		Start Date:	January
			Length of Unit:	9 weeks

Content Standards	Major:	Learning Goals	*Students will know how to:*
What do we want them to know, understand, & do?	**6.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.3** Apply the properties of operations to generate equivalent expressions. **6.EE.A.4** Identify when two expressions are equivalent. **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		1. Write and evaluate mathematical and algebraic expressions from verbal descriptions, including those with exponents. 2. Apply the properties of operations to generate equivalent expressions. 3. Use mathematical terms (sum, term, product, factor, quotient, coefficient) to identify the parts of an expression. 4. Identify when two expressions are equivalent. 5. Combine like terms, factor and distribute to create equivalent expressions. 6. Solve equations and inequalities by using substitution. 7. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem. 8. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers. 9. Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a realworld or mathematical problem. 10. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams. 11. 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.

| | 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 $x + p = q$ 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 realworld 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. **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 | | 12. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. |

	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.		
Essential Questions	Why do we use variables? How can equations be used to help us solve real world problems? How can we represent mathematical expressions that have unknown numbers? Why is order so important when solving mathematical problems? What does it mean for two expressions to be equivalent? Are there times in life when more than one answer can make a statement true, explain?		
Assessments *How will we know they have gained the knowledge & skills?*	**Formative**	**Summative**	**Alternative**
	- Warm ups and Exit Tickets. - Homework - Choral and individual responses to questioning. - Thumbs up/down, and other interactive answering strategies. - White-board responses or Pear Deck responses. - Quizizz, Khan Academy, Kahoot, Prodigy and other on-line assessment tools.	- Unit Assessment - Quizzes and End of Chapter Tests - Projects - Stations	

	● I Have, Who Has questions.		
Unit Pre-Assessment(s) *What do they already know?*	Expressions and Equations Pre-test		
Instructional Strategies/Student Activities	Direct Instruction ● Guided Practice ● Cooperative learning ● Modeling ● Learning Centers ● Guided note pages ● Turn and talk/Think-pair-share ● Student choice of assignments ● Use mnemonic devices: Please Excuse My Dear Aunt Sally, for order of operations		
Instructional/Assessment Scaffolds *(Modifications /Accommodations) – planned for prior to instruction*	**English Language Learners**	**Special Education Learners**	**Struggling Learners**	**Advanced Learners**
	*Simplify instructions *Give students extra time to complete tests *Make all or part of the assessment oral *Small group administration of classroom tests/quizzes as needed and/or available *Class "Buddy" *Provide vocabulary list for the unit.	*Allow extra time for task completion as needed *Allow for oral follow-up for student to expand on written responses *Read, restate and clarify directions/instructions. *Additional time to complete classroom tests/quizzes *Small group administration of classroom	*Small group instruction. *Chunk projects or long-term assignments. *Give directions in small pieces *Modified length of test *Use manipulatives *Test re-takes	*Individualized assessment or Independent study *Have students answer open ended questions *Additional research into topics *Tiered assignments

Note: The header row "English Language Learners / Special Education Learners / Struggling Learners / Advanced Learners" spans the content columns in the Instructional/Assessment Scaffolds section.

	tests/quizzes as needed *Allow students to make corrections to tests for partial credit.		
Differentiated Instructional Methods: *(Multiple means for students to access content and multiple modes for student to express understanding)*	**Access** (Resources and/or Process) ● Interactive notebook ● Classroom presentations ● Standard-aligned Learning Stations ● Targeted IXL lessons based on results of diagnostic and classroom progress ● Flexible grouping	**Expression** (Products and/or Performance) ● Student choice of assignments ● Leveled assignments	
Vocabulary *Highlight key vocabulary (both Tier II and Tier III words)*	Tier II: solve, explain, compute, sum. difference, multiplication, product, division, quotient, equation, substitution, inequality, term, constant, factor, distribute, equivalent, expression, dependent, variable Tier III: co-efficient, associative property, commutative property, inverse operations		
Integration of Technology <u>SAMR</u>	S/A: Quiz via Google Forms; Quizizz, and Kahoot S/A: Pear Deck A/M: Differentiated IXL lessons assigned based on student strengths/weaknesses A/M: Prodigy S/A/M: Khan Academy A: Math teaching videos R: Kahoot, created by student to prepare for a test and shared with their peers.		
Interdisciplinary Connections <u>NJ Student Learning Standards</u>	**ELA:** NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text. NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.		

NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

Technology:
8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.
8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

21st Century Life and Careers:
CRP2. Apply appropriate academic and technical skills.
CRP4. Communicate clearly and effectively and with reason.
CRP6. Demonstrate creativity and innovation.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11. Use technology to enhance productivity.

21st Century Themes/Skills P21 Framework	Themes	Skills
	Financial, Economic, Business, and Entrepreneurial Literacy • Know how to make appropriate personal economic choices • Understand the role of the economy in society	• Flexibility and adaptability • Initiative and Self-Direction • Social and Cross-Cultural Skills • Productivity and accountability • Leadership and Responsibility • Think creatively • Work creatively with others • Reason effectively • Make judgements and decisions • Communicate clearly • Collaborate with others • Adapt to change • Work independently • Interact effectively with others
Resources/Materials	**Resources:** NJCTL website Math Antics website	

	IXL
	Khan Academy
	Google Classroom
	Pear Deck
	Google Slides
	Illustrative Mathematics
	Materials:
	Interactive notebooks
	Chromebooks
	Manipulatives
	White boards

Instructional Unit Map			
Course Title: 6th Grade Math			
Unit Title	**Unit 4: Ratios, Proportions and Percents**	**Start Date:**	March
		Length of Unit:	5 Weeks

Content Standards	Major:	Learning Goals	*Students will know how to:*
What do we want them to know, understand, & do?	**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 ≠0, and use rate language in the context of a ratio relationship. **6.RP.A.3a** 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. a. 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**		1. **Describe a ratio relationship between two quantities using ratio language.** 2. **Determine the unit rate given a ratio relationship and solve real world problems.** 3. **Use ratio and rate reasoning to create tables of equivalent ratios relating quantities with *whole number* measurements, find missing values in tables and plot pairs of values.** 4. **Compare ratios using tables of equivalent ratios.** 5. **Calculate a percent of a quantity and solve problems by finding the whole when given the part and the percent.** 6. **Convert measurement units using ratio reasoning.** 7. **Convert fractions to decimals and percents and vice versa.** 8. **Compute unit rates with ratios using fractions.**

	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. **7.RP.A.1** Analyze proportional relationships and use them to solve real-world and mathematical problems. 1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units		
Essential Questions	How can you represent a relationship between two quantities? How can you find two ratios that describe the same relationship? How can you use rates to describe changes in real life problems? What are percents? How do they relate to ratios? How can you compare lengths between the customary and metric system?		
Assessments	**Formative**	**Summative**	**Alternative**

How will we know they have gained the knowledge & skills?	- Warm ups and Exit Tickets. - Homework - Choral and individual responses to questioning. - Thumbs up/down, and other interactive answering strategies. - White-board responses or Pear Deck responses. - Quizizz, Khan Academy, Kahoot, Prodigy and other on-line assessment tools. - I Have, Who Has questions. - Math Snacks worksheets	- Unit Assessment - Quizzes and End of Chapter Tests - Projects - Stations	
Unit Pre-Assessment(s) *What do they already know?*	Ratios and Proportions Pre-Test Percents Pre-Test (third week of the unit)		
Instructional Strategies/Student Activities	- Direct Instruction - Guided Practice - Cooperative learning - Modeling - Learning Centers - Guided note pages - Turn and talk/Think-pair-share - Student choice of assignments		
Instructional/Assessment Scaffolds *(Modifications /Accommodations) – planned for*	**English Language Learners**	**Special Education Learners**	**Struggling Learners**	**Advanced Learners**

prior to instruction	*Simplify instructions *Give students extra time to complete tests *Make all or part of the assessment oral *Small group administration of classroom tests/quizzes as needed and/or available *Class "Buddy" *Provide vocabulary list for the unit.	*Allow extra time for task completion as needed *Allow for oral follow-up for student to expand on written responses *Read, restate and clarify directions/instructions. *Additional time to complete classroom tests/quizzes *Small group administration of classroom tests/quizzes as needed *Allow students to make corrections to tests for partial credit.	*Small group instruction. *Chunk projects or long-term assignments. *Give directions in small pieces *Modified length of test *Use manipulatives *Test re-takes	*Individualized assessment or Independent study *Have students answer open ended questions *Additional research into topics *Tiered assignments

Differentiated Instructional Methods: *(Multiple means for students to access content and multiple modes for student to express understanding)*	**Access** (Resources and/or Process)		**Expression** (Products and/or Performance)	
	● Interactive notebook ● Classroom presentations ● Standard-aligned Learning Stations ● Targeted IXL lessons based on results of diagnostic and classroom progress ● Flexible grouping		● Student choice of assignments ● Leveled assignments	

Vocabulary *Highlight key vocabulary (both Tier II and Tier III words)*	Tier II: solve, explain, compute, sum. difference, multiplication, product, division, quotient, fraction, decimal, equation, equivalent, expression, ratio, percent, metric, measurement, proportion, rates, conversion, rate, tax, discount, tip

	Tier III: cross products, unit rate
Integration of Technology SAMR	S/A: Quiz via Google Forms; Quizizz, and Kahoot S/A: Pear Deck A/M: Differentiated IXL lessons assigned based on student strengths/weaknesses A/M: Prodigy S/A/M: Khan Academy A: Math teaching videos A: Math Snacks R: Kahoot, created by student to prepare for a test and shared with their peers.
Interdisciplinary Connections NJ Student Learning Standards	**ELA:** NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text. NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. **Technology:** 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities. 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems. **21st Century Life and Careers:** CRP2. Apply appropriate academic and technical skills. CRP4. Communicate clearly and effectively and with reason. CRP6. Demonstrate creativity and innovation. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP11. Use technology to enhance productivity.
21st Century Themes/Skills P21 Framework	Themes Skills

	Financial, Economic, Business, and Entrepreneurial Literacy • Know how to make appropriate personal economic choices • Understand the role of the economy in society	● Flexibility and adaptability ● Initiative and Self-Direction ● Social and Cross-Cultural Skills ● Productivity and accountability ● Leadership and Responsibility ● Think creatively ● Work creatively with others ● Reason effectively ● Make judgements and decisions ● Communicate clearly ● Collaborate with others ● Adapt to change ● Work independently ● Interact effectively with others
Resources/Materials	**Resources:** NJCTL website Math Antics website IXL Khan Academy Google Classroom Pear Deck Google Slides Math Snacks Illustrative Mathematics **Materials:** Interactive notebooks Chromebooks Manipulatives White boards	

Instructional Unit Map

Course Title: 6th Grade Math			

Unit Title	Unit 5: Geometry	**Start Date:**	**April**
		Length of Unit:	**4-5 weeks**

Content Standards *What do we want them to know, understand, & do?*	**Supporting:** **6.GA.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.GA.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 $V = l\,w\,h$ and $V = B\,h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. **6.GA.3**	**Learning Goals**	*Students will know how to:* 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 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. 3. Apply the formulas $V = l\,w\,h$ and $V = B\,h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. 4. Draw polygons in the coordinate plane given coordinates for the vertices 5. 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. 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. 7. Find the area and circumference of a circle. 8. Solve real-world and mathematical problems involving area, volume and surface area of two and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms

	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.GA.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. **7.G.B.4** Know the formulas for the area and circumference of a circle and use them to solve problems **7.G.B.6** Solve real-world and mathematical problems involving area, volume and surface area of two and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms		

Essential Questions	How can we decompose shapes into more familiar ones? How are formulas helpful when finding the area of a shape? How can we represent the surfaces of 3D objects in two dimensions? What is a net? What is surface area? What is volume? How are nets used to find surface area and volume?		
Assessments *How will we know they have gained the knowledge & skills?*	**Formative**	**Summative**	**Alternative**
	● Warm ups and Exit Tickets. ● Homework ● Choral and individual responses to questioning. ● Thumbs up/down, and other interactive answering strategies. ● White-board responses or Pear Deck responses. ● Quizizz, Khan Academy, Kahoot, Prodigy and other on-line assessment tools. ● I Have, Who Has questions. ● Math Snacks worksheets	● Unit Assessment ● Quizzes and End of Chapter Tests ● Projects ● Stations	
Unit Pre-Assessment(s) *What do they already know?*	2D Geometry Pre-Test 3D Geometry Pre-test (given in week 2)		

Instructional Strategies/Student Activities	- Direct Instruction - Guided Practice - Cooperative learning - Modeling - Learning Centers - Guided note pages - Turn and talk/Think-pair-share - Student choice of assignments			
Instructional/Assessment Scaffolds *(Modifications /Accommodations) – planned for prior to instruction*	**English Language Learners**	**Special Education Learners**	**Struggling Learners**	**Advanced Learners**
	*Simplify instructions *Give students extra time to complete tests *Make all or part of the assessment oral *Small group administration of classroom tests/quizzes as needed and/or available *Class "Buddy" *Provide vocabulary list for the unit.	*Allow extra time for task completion as needed *Allow for oral follow-up for student to expand on written responses *Read, restate and clarify directions/instructions. *Additional time to complete classroom tests/quizzes *Small group administration of classroom tests/quizzes as needed *Allow students to make corrections to tests for partial credit.	*Small group instruction. *Chunk projects or long-term assignments. *Give directions in small pieces *Modified length of test *Use manipulatives *Test re-takes	*Individualized assessment or Independent study *Have students answer open ended questions *Additional research into topics *Tiered assignments
Differentiated Instructional Methods:	**Access** (Resources and/or Process)		**Expression** (Products and/or Performance)	

(Multiple means for students to access content and multiple modes for student to express understanding)	● Interactive notebook ● Classroom presentations ● Standard-aligned Learning Stations ● Targeted IXL lessons based on results of diagnostic and classroom progress ● Flexible grouping	● Student choice of assignments ● Leveled assignments
Vocabulary *Highlight key vocabulary (both Tier II and Tier III words)*	Tier II: solve, explain, compute, sum. difference, multiplication, product, division, quotient, fraction, decimal, equation, equivalent, expression, area, nets, triangle, rectangle, square, trapezoid, parallelogram, irregular, volume, surface area, solid, two dimensional, three dimensional, prism, pyramid, polygons, quadrilaterals, edge, faces Tier III: polyhedron, vertex	
Integration of Technology <u>SAMR</u>	S/A: Quiz via Google Forms; Quizizz, and Kahoot S/A: Pear Deck A/M: Differentiated IXL lessons assigned based on student strengths/weaknesses A/M: Prodigy S/A/M: Khan Academy A: Math teaching videos R: Kahoot, created by student to prepare for a test and shared with their peers.	
Interdisciplinary Connections <u>NJ Student Learning Standards</u>	**ELA:** NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text. NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. **Technology:** 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities. 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.	

	21st Century Life and Careers: CRP2. Apply appropriate academic and technical skills. CRP4. Communicate clearly and effectively and with reason. CRP6. Demonstrate creativity and innovation. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP11. Use technology to enhance productivity.	
21st Century Themes/Skills <u>P21 Framework</u>	Themes	Skills
	Financial, Economic, Business, and Entrepreneurial Literacy • Know how to make appropriate personal economic choices • Understand the role of the economy in society	● Flexibility and adaptability ● Initiative and Self-Direction ● Social and Cross-Cultural Skills ● Productivity and accountability ● Leadership and Responsibility ● Think creatively ● Work creatively with others ● Reason effectively ● Make judgements and decisions ● Communicate clearly ● Collaborate with others ● Adapt to change ● Work independently ● Interact effectively with others
Resources/Materials	**Resources:** NJCTL website Math Antics website IXL Khan Academy Google Classroom Pear Deck Google Slides Math Snacks **Materials:**	

	Interactive notebooks Chromebooks Manipulatives White boards

Instructional Unit Map

Course Title: 6th Grade Math				

Unit Title	Unit 6: Statistics		Start Date:	May-June
			Length of Unit:	5 weeks

Content Standards *What do we want them to know, understand, & do?*	Additional Cluster: **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 **6.SP.A.2** Understand that a set of data collected to answer a statistical question has a	Learning Goals	*Students will know how to:* 1. **Distinguish questions that are statistical (anticipate variability in data) from those that are not.** 2. **Distinguish center from variation.** 3. **Display numerical data in dot plots, histograms and boxplots on a number line.** 4. **Calculate measures of center, mean and median.** 5. **Calculate measures of spread, interquartile range and mean absolute deviation.**

| | 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. **6.SP.B.4** Display numerical data in plots on a number line, including dot plots, histograms, and box plots **6.SP.B.5** Summarize numerical data sets in relation to their context, such as by: a. Reporting the number of observations. b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. c. 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 | | 6. **Describe the overall shape of a distribution (skewed left, skewed right, etc) and striking deviations (outliers).**
7. **Choose measures of center and variability appropriate to the shape of the distribution and context.**
8. **Visually assess, given a distribution, the measure of spread (mean absolute deviation or interquartile range).**
9. **Understand that statistics can be used to gain information about a population by examining a sample of the population**
10. **Understand that random sampling tends to produce representative samples and support valid inferences.**
11. **Use data from a random sample to draw inferences about a population with an unknown characteristic of interest.**
12. **Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities**
13. **Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations** |

reference to the context in which the data were gathered.

d. 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.

7.SP.A.1
Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

7.SP.A.2
Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.

7.SP.B.3
Informally assess the degree of visual overlap of two numerical data

	distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. **7.SP.B.4** Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations		
Essential Questions	What are the ways to organize, measure, and display data? What is statistical variability? What can the shape of a statistical graph (dot plot, histogram, or box plot) reveal about the data? How can outliers affect data? What information can be gathered from a dot plot, a histogram, or a box plot? What inferences and predictions can be made based on the data set as a whole?		
Assessments *How will we know they have gained the knowledge & skills?*	**Formative**	**Summative**	**Alternative**
	• Warm ups and Exit Tickets. • Homework • Choral and individual responses to questioning. • Thumbs up/down, and other interactive answering strategies. • White-board responses or Pear Deck responses. • Quizizz, Khan Academy, Kahoot, Prodigy and	• Unit Assessment • Quizzes and End of Chapter Tests • Projects • Stations	

	other on-line assessment tools. ● I Have, Who Has questions. ● Math Snacks worksheets

Unit Pre-Assessment(s) *What do they already know?*	Statistics Pre-Test

Instructional Strategies/Student Activities	● Direct Instruction ● Guided Practice ● Cooperative learning ● Modeling ● Learning Centers ● Guided note pages ● Turn and talk/Think-pair-share ● Student choice of assignments

Instructional/Assessment Scaffolds *(Modifications /Accommodations) – planned for prior to instruction*	English Language Learners	Special Education Learners	Struggling Learners	Advanced Learners
	*Simplify instructions *Give students extra time to complete tests *Make all or part of the assessment oral *Small group administration of classroom tests/quizzes as needed and/or available *Class "Buddy" *Provide vocabulary list for the unit.	*Allow extra time for task completion as needed *Allow for oral follow-up for student to expand on written responses *Read, restate and clarify directions/instructions. *Additional time to complete classroom tests/quizzes *Small group administration of	*Small group instruction. *Chunk projects or long-term assignments. *Give directions in small pieces *Modified length of test *Use manipulatives *Test re-takes	*Individualized assessment or Independent study *Have students answer open ended questions *Additional research into topics *Tiered assignments

	classroom tests/quizzes as needed *Allow students to make corrections to tests for partial credit.	

Differentiated Instructional Methods: *(Multiple means for students to access content and multiple modes for student to express understanding)*	**Access** (Resources and/or Process)	**Expression** (Products and/or Performance)
	● Interactive notebook ● Classroom presentations ● Standard-aligned Learning Stations ● Targeted IXL lessons based on results of diagnostic and classroom progress ● Flexible grouping	● Student choice of assignments ● Leveled assignments

Vocabulary *Highlight key vocabulary (both Tier II and Tier III words)*	Tier II: solve, explain, compute, sum. difference, multiplication, product, division, quotient, fraction, decimal, equation, equivalent, expression, mean, median, mode, range, variability Tier III: mean absolute deviation, box and whisker plot, histogram, dot plot, line plot
Integration of Technology SAMR	S/A: Quiz via Google Forms; Quizizz, and Kahoot S/A: Pear Deck A/M: Differentiated IXL lessons assigned based on student strengths/weaknesses A/M: Prodigy S/A/M: Khan Academy A: Math teaching videos R: Kahoot, created by student to prepare for a test and shared with their peers.
Interdisciplinary Connections NJ Student Learning Standards	**ELA:** NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text. NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

	Technology: 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities. 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems. **21st Century Life and Careers:** CRP2. Apply appropriate academic and technical skills. CRP4. Communicate clearly and effectively and with reason. CRP6. Demonstrate creativity and innovation. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP11. Use technology to enhance productivity.

21st Century Themes/Skills P21 Framework	Themes	Skills
	Financial, Economic, Business, and Entrepreneurial Literacy • Know how to make appropriate personal economic choices • Understand the role of the economy in society	• Flexibility and adaptability • Initiative and Self-Direction • Social and Cross-Cultural Skills • Productivity and accountability • Leadership and Responsibility • Think creatively • Work creatively with others • Reason effectively • Make judgements and decisions • Communicate clearly • Collaborate with others • Adapt to change • Work independently • Interact effectively with others
Resources/Materials	**Resources:** NJCTL website Math Antics website IXL Khan Academy Google Classroom	

	Pear Deck Google Slides Math Snacks **Materials:** Interactive notebooks Chromebooks Manipulatives White boards