

TABERNACLE TOWNSHIP PUBLIC SCHOOLS

MATHEMATICS CURRICULUM GRADES 5-8

Revised: July 2017

Board Adopted: August, 21st, 2017

TABERNACLE TOWNSHIP SCHOOL DISTRICT MISSION STATEMENT

The mission of the Tabernacle School District is to create and maintain a safe and secure learning environment that ensures that all students in grades Pre K-8 attain success in mastering the *New Jersey Student Learning Standards*. The home, the school, and the community working together will provide effective learning experiences that foster the academic, personal, intellectual, physical, social, and emotional growth necessary for students to become responsible, productive members of a diverse and global society. We commit to a comprehensive system of support to assure these outcomes.

Glenn Robbins, Superintendent
Barry Saide, Director of Curriculum & Instruction

Steering Committee:
Marc Miller, Math Specialist

Mathematics

Overview/Philosophy

The district's vision for Tabernacle Township students is to develop a community of competent and confident learners who value and apply mathematics in their everyday lives. Mathematics educators must carefully construct educational experiences that support this vision. Opportunities for problem-solving and writing about math are embedded into the daily curriculum at each grade level. Students are also afforded opportunities to share and discuss with their peers to further enhance the development of mathematical communication skills.

All students must be challenged to reach higher levels of understanding. Opportunities must be provided that allow students to explore and investigate using varying modalities and learning styles.

The district curriculum is aligned with the NJSL in the area of mathematics and supports the following:

- All students have the need and capability to learn mathematics.
- A pedagogical shift from rote memorization and application of procedures to problem-solving and development of number sense is critical to the success of effective mathematics instruction.
- Integration of appropriate technology into the mathematics curricula and instruction is essential for effective instruction in the twenty-first century.

In the end, our goal is for students to enjoy as well as value mathematics.

Goals

In order for students to achieve the benefits of mathematical literacy and number sense, the Tabernacle Township School District has identified the following goals:

- Develop mathematical process skills to promote mathematical discourse and enhance understanding and facilitate application of mathematical content in everyday situations
- Develop a strong sense of numbers and its application in real life settings
- Explore, develop, understand, and apply fundamentals of spatial sense and reasoning and related measurements in everyday context
- Read, understand, construct, analyze, and explain representations of data and probability statistics collected from real experiments
- Use concepts of algebraic reasoning to identify patterns, solve problems and equations, and connect algebra to real life experiences

Curriculum Framework

Overview

Mathematics instruction will formally begin in kindergarten and proceed through grade eight. Students will explore the content areas of number, numerical operations, measurement, geometry, patterns, algebra, data, probability, and discrete mathematics. Integration of content and strategies across the curriculum will be incorporated at all grade levels. Content will be presented within contexts to promote development of the mathematical processes of problem solving, connections, communication, representations, reasoning, and technology.

Elementary

In the K-5 grades, curriculum materials provide opportunities for children to explore content within a spiraling context. Concepts repeat several times throughout the instructional year and are presented in a variety of ways to increase children's exposure and understanding. Focus algorithms present operations in child-friendly ways that elevate conceptual number sense. Materials at each grade level allow for the appropriate use of manipulatives and calculators.

Middle

In the middle school grades (6-8), mathematics materials present challenging content embedded in real-world problem solving contexts. Lessons emphasize multiple strategies and approaches to solving problems. Discovery of patterns are emphasized as students explore problems, develop theories, make connections and construct understanding of presented content. The students continue to use manipulatives and technology and are introduced to graphing calculators to solve problems and represent data.

Special Education

Special education teachers at all grade levels may need to adapt and modify the mathematics curriculum for their students based on individual needs and IEP specifications. By using varied instructional strategies, manipulatives, and effective questioning, special needs teachers help to make challenging curricular materials accessible for all special needs students. In most cases, special education classes use the same program resources as regular education to serve as the core instructional platform on which to base any modifications or adaptations. In cases of significant need, a more individualized curriculum and appropriate curricular materials may be designed in accordance with IEP specifications.

MATHEMATICS GRADE 5 CURRICULUM MAP

	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY
Unit /Topics	<p>Topic 1 – Place Value</p> <p>Topic 2 – Adding and Subtracting Decimals</p>	<p>Topic 3 – Multiplying Whole Numbers</p> <p>Topic 4 – Dividing by 1-Digit Divisors</p>	<p>Topic 5 – Dividing by 2-Digit Divisors</p>	<p>Topic 6 – Multiplying Decimals</p>	<p>Topic 7 – Dividing Decimals</p> <p>Topic 8 – Numeral Expressions, Patterns, and Relationships</p>
Instructional Materials	<p>-enVisionMATH program (teacher resource kits, student pages, online resources at pearsonsuccessnet.com)</p> <p>-Place Value Chart</p> <p>-Fraction Models</p> <p>-Place Value Blocks</p>	<p>-enVisionMATH program (teacher resource kits, student pages, online resources at pearsonsuccessnet.com)</p> <p>-Two Color Counters</p> <p>-Grid Paper</p> <p>-Multiplication Table</p> <p>-Bills and Coins</p> <p>-Number Cubes</p>	<p>-enVisionMATH program (teacher resource kits, student pages, online resources at pearsonsuccessnet.com)</p> <p>-Grid Paper</p> <p>-Calculators</p>	<p>-enVisionMATH program (teacher resource kits, student pages, online resources at pearsonsuccessnet.com)</p> <p>-Decimal Grids</p>	<p>-enVisionMATH program (teacher resource kits, student pages, online resources at pearsonsuccessnet.com)</p> <p>-Calculator</p> <p>-Decimal Models</p> <p>-Decimal Grids</p> <p>-Counters</p> <p>-Color Tiles</p>
Curricular Connections (Interdisciplinary)	<p>Reading: Represent Text in Different Ways and Read to Understand</p> <p>Literature: <i>Keeping Records</i> and <i>Destination Hawaii</i></p> <p>Social Studies: Comparing Sandcastles and Areas of National Parks</p>	<p>Reading: Read to Understand and Describe Mental Images with Text</p> <p>Literature: <i>Keeping Records</i> and <i>Everest Adventures</i></p> <p>Science: Hummingbird Wings and Average Lifespans of Desert Animals</p>	<p>Reading: Represent Text in Different Ways</p> <p>Literature: <i>Everest Adventures</i></p> <p>STEM: Hiking Trails</p>	<p>Reading: Represent Text in Different Ways</p> <p>Literature: <i>Everest Adventures</i></p> <p>STEM: Fibonacci Sequence</p>	<p>Reading: Use Questioning to Comprehend and Generate Questions</p> <p>Literature: <i>Cruising the Caribbean</i> and <i>Keeping Records</i></p> <p>Social Studies: US Roller Coasters</p> <p>STEM: Age, Size, and Molting Patterns of Crabs</p>
Integration of 21st Century Themes & Skills	<p>-Make Sense of Problems and Persevere in Solving Them</p> <p>-Reason Abstractly and Quantitatively</p>	<p>-Construct Viable Arguments and Critique the Reasoning of Others</p>	<p>-Model with Mathematics</p> <p>-Use Appropriate Tools Strategically</p>	<p>-Attend to Precision</p> <p>-Look for and Make Use of Structure</p>	<p>-Look for and Express Regularity in Repeated Reasoning</p>

Assessments (Formative, Summative, Benchmark)	-Daily Quick Checks -Placement Test -Topic Tests -MAP Assessment - Fall	-Daily Quick Checks -Topic Tests -Topics 1-4 Benchmark Test	-Daily Quick Checks -Topic Tests	-Daily Quick Checks -Topic Tests	-Daily Quick Checks -Topic Tests -MAP Assessment – Winter -Topics 5-8 Benchmark Test
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MATHEMATICS GRADE 5 CURRICULUM MAP

	FEBRUARY	MARCH	APRIL	MAY	JUNE
Unit /Topics	<p>Topic 9 – Adding and Subtracting Fractions</p> <p>Topic 10 – Adding and Subtracting Mixed Numbers</p>	<p>Topic 11 – Multiplying and Dividing Fractions and Mixed Numbers</p> <p>Topic 12 – Volume of Solids</p>	<p>Topic 13 – Units of Measure</p> <p>Topic 14 – Data</p>	<p>Topic 15 – Classifying Plane Figures</p>	<p>Topic 16 – Coordinate Geometry</p> <p>Step-Up to Grade 6</p>
Instructional Materials	<p>-enVisionMATH program (teacher resource kits, student pages, online resources at pearsonsuccessnet.com)</p> <p>-Fraction Models</p> <p>-Number Lines</p> <p>-Hundred Chart</p> <p>-Fraction Models</p>	<p>-enVisionMATH program (teacher resource kits, student pages, online resources at pearsonsuccessnet.com)</p> <p>-Geometric Solids</p> <p>-Centimeter Cubes</p> <p>-Unit Cubes</p>	<p>-enVisionMATH program (teacher resource kits, student pages, online resources at pearsonsuccessnet.com)</p> <p>-Inch and Yardstick Rulers</p> <p>-Liquid Measurement Containers</p> <p>-Centimeter Ruler</p>	<p>-enVisionMATH program (teacher resource kits, student pages, online resources at pearsonsuccessnet.com)</p> <p>-Wooden Sticks</p> <p>-Straws</p>	<p>-enVisionMATH program (teacher resource kits, student pages, online resources at pearsonsuccessnet.com)</p> <p>-Coordinate Grids</p> <p>-Grid Paper</p>
Curricular Connections (Interdisciplinary)	<p>Reading: Summarizing and Relate New Vocabulary to Familiar Words</p> <p>Literacy: <i>The Mighty Mekong</i> and <i>Cruising the Caribbean</i></p> <p>STEM: Spider Species and Bat Species</p>	<p>Reading: Represent Text in Different Ways and Main Idea</p> <p>Literature: <i>The Mighty Mekong</i> and <i>Cruising the Caribbean</i></p> <p>STEM: Changes in Weight</p> <p>Social Studies: US Geodesic Dome Structures</p>	<p>Reading: Main Idea and Make and Confirm Predictions</p> <p>Literature: <i>Destination Hawaii</i> and <i>Cracking the Code</i></p> <p>Social Studies: Florida Fishing Records</p> <p>STEM: Tornado Safety</p>	<p>Reading: Locate Text Features</p> <p>Literature: <i>Go Fly a Kite!</i></p> <p>STEM: Tessellations</p>	<p>Reading: Locate Text Features</p> <p>Literature: <i>Go Fly a Kite!</i></p> <p>Social Studies: Coordinate Points on US Maps</p>
Integration of 21st Century Themes & Skills	<p>-Make Sense of Problems and Persevere in Solving Them</p> <p>-Reason Abstractly and Quantitatively</p>	<p>-Construct Viable Arguments and Critique the Reasoning of Others</p>	<p>-Model with Mathematics</p> <p>-Use Appropriate Tools Strategically</p>	<p>-Attend to Precision</p> <p>-Look for and Make Use of Structure</p>	<p>-Look for and Express Regularity in Repeated Reasoning</p>

Assessments (Formative, Summative, Benchmark)	-Daily Quick Checks -Topic Tests -Topics 9-12 Benchmark Test	-Daily Quick Checks -Topic Tests -Topics 9-12 Benchmark Test	-Daily Quick Checks -Topic Tests	-Daily Quick Checks -Topic Tests	-Daily Quick Checks -Topic Tests -MAP Assessment – Spring -Topics 13-16 Benchmark Test -Topics 1-16 End-of-Year Test
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MATHEMATICS CURRICULUM
GRADE 5**

NJSLs	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
5.OA Operations and Algebraic Thinking				
A. Write and interpret numerical expressions.				
5.OA.A.1	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	<ul style="list-style-type: none"> ● Students use the order of operations to evaluate expressions with whole numbers and decimals. ● Write and evaluate expressions involving multiplication, division, and subtraction. 	<ul style="list-style-type: none"> ● Observation ● Student Guide Pages ● Oral Responses ● Topic Assessments ● Topic Center Activities ● Topic Addressing Standards: 8 	<ul style="list-style-type: none"> ● Manipulatives ● EnVisionMATH Program ● Teacher Resource Masters ● Center Materials ● Pearson website ● Topic Addressing Standards: 8
5.OA.A.2	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.			
B. Analyze patterns and relationships.				
5.OA.B.3	Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice	<ul style="list-style-type: none"> ● Extend patterns in a table using given rules and will then look for the relationship between corresponding terms in the sequences. ● Students will study completed tables to determine a rule and write an expression. ● Create and interpret coordinate graphs. 	<ul style="list-style-type: none"> ● Observation ● Student Guide Pages ● Oral Responses ● Topic Assessments ● Topic Center Activities ● Problem solving lessons in units 1-16 ● Topic Addressing Standards: 8 	<ul style="list-style-type: none"> ● Manipulatives ● EnVisionMATH Program ● Teacher Resource Masters ● Center Materials ● Pearson website ● Topic Addressing Standards: 8

	the corresponding terms in the other sequence. Explain informally why this is so.	<ul style="list-style-type: none">• Use coordinate graphs to explore the relationship between two rules.		
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NJSLs	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
5.NBT Number and Operations in Base Ten				
A. Understand the place value system.				
5.NBT.A.1	Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	<ul style="list-style-type: none"> ● Students mentally multiply decimals by 10, 100, and 1,000. ● Use place-value patterns to mentally multiply and divide decimals by 10, 100, and 1,000. ● Write decimals in standard form, word form, and expanded form through millionths. ● Use place-value to compare and order decimals through thousandths. ● Round whole numbers through millions and decimals through thousandths 	<ul style="list-style-type: none"> ● Observation ● Student Guide Pages ● Oral Responses ● Topic Assessments ● Topic Center Activities ● Problem solving lessons in units 1-16 ● Topic Addressing Standards: 1 	<ul style="list-style-type: none"> ● Manipulatives ● EnVisionMATH Program ● Teacher Resource Masters ● Center Materials ● Pearson website ● Topic Addressing Standards: 1
5.NBT.A.2	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.			
5.NBT.A.3	Read, write, and compare decimals to thousandths.			
5.NBT.A.3.a	Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.			
5.NBT.A.3.b	Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.			
5.NBT.A.4	Use place value understanding to round decimals to any place.			

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NJSLs	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
B. Perform operations with multi-digit whole numbers and with decimals to hundredths.				
5.NBT.B.5	Fluently multiply multi-digit whole numbers using the standard algorithm.	<ul style="list-style-type: none"> ● Apply the standard multiplication algorithm to multiply multi-digit whole numbers. 	<ul style="list-style-type: none"> ● Observation 	<ul style="list-style-type: none"> ● Manipulatives
5.NBT.B.6	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	<ul style="list-style-type: none"> ● Divide whole numbers with up to four-digit dividends and two-digit divisors ● Create an array/area model to model the process for dividing whole numbers by 2-digit divisors. 	<ul style="list-style-type: none"> ● Student Guide Pages ● Oral Responses ● Topic Assessments ● Topic Center Activities ● Problem solving lessons in units 1-16 ● Topics Addressing Standards: 2 - 7 	<ul style="list-style-type: none"> ● EnVisionMATH Program ● Teacher Resource Masters ● Center Materials ● Pearson website ● Topics Addressing Standards: 2 - 7
5.NBT.B.7	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	<ul style="list-style-type: none"> ● Compute sums and differences of decimals involving tenths and hundredths using concrete models and/or strategies based on place value. ● Apply number sense and place value concepts to find products of whole numbers and decimals to hundredths. ● Use reasoning to correctly place the decimal point in a quotient. 		

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NJSLs	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
5.NF Number and Operations – Fractions				
A. Use equivalent fractions as a strategy to add and subtract fractions.				
5.NF.A.1	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$. (In general, $\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}$.)	<ul style="list-style-type: none"> ● Use models and computational procedures to add and subtract fractions with unlike denominators. ● Use models and computational procedures to add and subtract mixed numbers. ● Explain how estimated fractional amounts of objects were found using words, pictures, numbers, or symbols. ● Estimate sums and differences of fractions using a number line. 	<ul style="list-style-type: none"> ● Observation ● Student Guide Pages ● Oral Responses ● Topic Assessments ● Topic Center Activities ● Problem solving lessons in units 1-16 ● Topics Addressing Standards: 9 - 10 	<ul style="list-style-type: none"> ● Manipulatives ● EnVisionMATH Program ● Teacher Resource Masters ● Center Materials ● Pearson website ● Topics Addressing Standards: 9 - 10
5.NF.A.2	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result $\frac{2}{5} + \frac{1}{2} = \frac{3}{7}$, by observing that $\frac{3}{7} < \frac{1}{2}$.			
B. Apply and extend previous understandings of multiplication and division to multiply and divide fractions.				
5.NF.B.3	Interpret a fraction as division of the numerator by the denominator ($\frac{a}{b} = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret $\frac{3}{4}$ as the result of dividing 3 by 4, noting that $\frac{3}{4}$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $\frac{3}{4}$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?	<ul style="list-style-type: none"> ● Students learn that division can be used to divide objects into equal parts that are fractions of a whole and that these fractions can be represented on a number line. 	<ul style="list-style-type: none"> ● Observation ● Student Guide Pages ● Oral Responses ● Topic Assessments ● Topic Center Activities ● Problem solving lessons in units 1-16 ● Topic Addressing Standards: 11 	<ul style="list-style-type: none"> ● Manipulatives ● EnVisionMATH Program ● Teacher Resource Masters ● Center Materials ● Pearson website ● Topic Addressing Standards: 11

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5.NF.B.4	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.	<ul style="list-style-type: none"> ● Apply and extend previous understandings of multiplication and division to multiply and divide fractions. ● Find the areas of rectangles with fractional side lengths by drawing them on grid paper and by multiplying the fractions, recognizing that the results are the same. ● Compare the size of the product to the size of one factor without multiplying to begin to consider multiplication as scaling. 	<ul style="list-style-type: none"> ● Observation ● Student Guide Pages ● Oral Responses ● Topic Assessments ● Topic Center Activities ● Problem solving lessons in units 1-16 ● Topic Addressing Standards: 11 	<ul style="list-style-type: none"> ● Manipulatives ● EnVisionMATH Program ● Teacher Resource Masters ● Center Materials ● Pearson website ● Topic Addressing Standards: 11
5.NF.B.4.a	Interpret the product $(a/b) \times q$ as a parts of a partition of 1 into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.)			
5.NF.B.4.b	Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.			
5.NF.B.5	Interpret multiplication as scaling (resizing), by:			
5.NF.B.5.a	Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.			
5.NF.B.5.b	Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.			

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NJSLs	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
5.NF.B.6	Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	<ul style="list-style-type: none"> ● Discover the inverse relationship between multiplication and division and use it to help divide unit fractions by whole numbers. ● Apply and extend previous understandings of multiplication and division to multiply and divide fractions. ● Find the areas of rectangles with fractional side lengths by drawing them on grid paper and by multiplying the fractions, recognizing that the results are the same. ● Compare the size of the product to the size of one factor without multiplying to begin to consider multiplication as scaling. 	<ul style="list-style-type: none"> ● Observation ● Student Guide Pages ● Oral Responses ● Topic Assessments ● Topic Center Activities ● Problem solving lessons in units 1-16 ● Topic Addressing Standards: 11 	<ul style="list-style-type: none"> ● Manipulatives ● EnVisionMATH Program ● Teacher Resource Masters ● Center Materials ● Pearson website Topic Addressing Standards: 11
5.NF.B.7	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.			
5.NF.B.7.a	Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for $(1/3) \div 4$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$.			
5.NF.B.7.b	Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for $4 \div (1/5)$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (1/5) = 20$ because $20 \times (1/5) = 4$.			
5.NF.B.7.c	Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $1/3$ -cup servings are in 2 cups of raisins?			

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NJSLs	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
5.MD Measurement and Data				
A. Convert like measurement units within a given measurement system.				
5.MD.A.1	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	<ul style="list-style-type: none"> ● Covert customary units of measure using multiplication and division. ● Convert metric units of measure using multiplication and division. 	<ul style="list-style-type: none"> ● Observation ● Student Guide Pages ● Oral Responses ● Topic Assessments ● Topic Center Activities ● Problem solving lessons in units 1-16 ● Topic Addressing Standards: 13 	<ul style="list-style-type: none"> ● Manipulatives ● EnVisionMATH Program ● Teacher Resource Masters ● Center Materials ● Pearson website ● Topic Addressing Standards: 13
B. Represent and interpret data.				
5.MD.B.2	Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.	<ul style="list-style-type: none"> ● Make and interpret a line plot from data in a frequency table. ● Use the information in a line plot to solve problems involving the data. 	<ul style="list-style-type: none"> ● Observation ● Student Guide Pages ● Oral Responses ● Topic Assessments ● Topic Center Activities ● Problem solving lessons in units 1-26 ● Topic Addressing Standards: 14 	<ul style="list-style-type: none"> ● Manipulatives ● EnVisionMATH Program ● Teacher Resource Masters ● Center Materials ● Pearson website ● Topic Addressing Standards: 14
C. Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.				
5.MD.C.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement.	<ul style="list-style-type: none"> ● Count cubic units and use formulas to determine the volume of rectangular prisms. 	<ul style="list-style-type: none"> ● Observation ● Student Guide Pages ● Oral Responses ● Topic Assessments ● Topic Center Activities ● Problem solving lessons in units 1-26 ● Topic Addressing Standards: 12 	<ul style="list-style-type: none"> ● Manipulatives ● EnVisionMATH Program ● Teacher Resource Masters ● Center Materials ● Pearson website ● Topic Addressing Standards: 12
5.MD.C.3.a	A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.			
5.MD.C.3.b	A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.			

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GRADE 5**

NJSLS	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
5.MD.C.4 5.MD.C.5 5.MD.C.5.a 5.MD.C.5.b 5.MD.C.5.c	<p>Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and non-standard units.</p> <p>Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.</p> <p>Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.</p> <p>Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.</p> <p>Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.</p>	<ul style="list-style-type: none"> ● Decompose an irregular solid into smaller, regular solids to determine volume ● Count cubic units and use formulas to determine the volume of rectangular prisms. 	<ul style="list-style-type: none"> ● Observation ● Student Guide Pages ● Oral Responses ● Topic Assessments ● Topic Center Activities ● Problem solving lessons in units 1-26 Topic Addressing Standards: 12 	<ul style="list-style-type: none"> ● Manipulatives ● EnVisionMATH Program ● Teacher Resource Masters ● Center Materials ● Pearson website Topic Addressing Standards: 12
5.G Geometry				
A. Graph points on the coordinate plane to solve real-world and mathematical problems.				
5.G.A.1	<p>Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how</p>	<ul style="list-style-type: none"> ● Identify and graph points on a coordinate plane. 	<ul style="list-style-type: none"> ● Observation ● Student Guide Pages ● Oral Responses ● Topic Assessments ● Topic Center Activities ● Problem solving lessons in units 1-16 Topic Addressing Standards: 16 	<ul style="list-style-type: none"> ● Manipulatives ● Envision Math Program ● Teacher Resource Masters ● Center Materials ● Pearson website Topic Addressing Standards: 16

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MATHEMATICS CURRICULUM
GRADE 5**

NJSLs	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
5.G.A.1 (cont.) 5.G.A.2	far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate). Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	<ul style="list-style-type: none"> ● Use number lines and the coordinate plane to find distances involving positive and negative numbers. ● Find the distance between two points by using ordered pairs. ● Create and interpret a coordinate graph. ● Use coordinate graphs to explore the relationship between two rules. 	<ul style="list-style-type: none"> ● Observation ● Student Guide Pages ● Oral Responses ● Topic Assessments ● Topic Center Activities ● Problem solving lessons in units 1-16 ● Topic Addressing Standards: 16 	<ul style="list-style-type: none"> ● Manipulatives ● Envision Math Program ● Teacher Resource Masters ● Center Materials ● Pearson website ● Topic Addressing Standards: 16
B. Classify two-dimensional figures into categories based on their properties.				
5.G.B.3 5.G.B.4	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles. Classify two-dimensional figures in a hierarchy based on properties.	<ul style="list-style-type: none"> ● Identify and classify polygons. ● Classify two-dimensional shapes into categories based on their properties. ● Sort a variety of quadrilaterals to develop the hierarchy or “family tree” for quadrilaterals. 	<ul style="list-style-type: none"> ● Observation ● Student Guide Pages ● Oral Responses ● Topic Assessments ● Topic Center Activities ● Problem solving lessons in units 1-16 ● Topic Addressing Standards: 15 	<ul style="list-style-type: none"> ● Manipulatives ● Envision Math Program ● Teacher Resource Masters ● Center Materials ● Pearson website ● Topic Addressing Standards: 15

GRADE 6 CURRICULUM MAP FOR MATHEMATICS

	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY
Unit/ Topics	Numbers and Operations	Factors and Multiples	Fraction and Decimal Computation	Ratios, Proportions & Percents	Expressions
Essential Questions	<p>How are opposite and negative numbers used in real-world contexts?</p> <p>What is the difference between an integer and a rational number?</p> <p>How do powers affect numbers?</p>	<p>How do operations affect numbers?</p> <p>How do we solve real world application problems?</p>	<p>How do operations affect numbers?</p> <p>How do we solve real world application problems?</p> <p>What are the standard algorithms for long division and decimal computation?</p>	<p>Is it important to know how to solve for unit rates?</p> <p>What is the connection between a ratio and a fraction/decimal?</p> <p>How are ratios used in the real world?</p> <p>Where can examples of ratios and rates be found?</p> <p>What does a percent represent?</p> <p>How can knowledge about percents aid me in real-world situations?</p>	<p>How do powers affect numbers?</p> <p>How can order of operations, the distributive property, and combining like terms help solve an algebraic equation?</p> <p>How can an algebraic expression help me solve a real-world application problem?</p>
Assessments (Formative, Summative, Benchmark)	<p>Observation</p> <p>SMART Response questions throughout the PMI unit</p> <p>Are You Ready?</p> <p>Write About It</p> <p>Daily Journal</p> <p>Lesson Quizzes</p> <p>Ready to Go On?</p> <p>Multiple Choice Tests (Forms A, B, C)</p> <p>Free Response Tests (Forms A, B, C)</p> <p>Oral Responses</p> <p>Fall MAP Assessment</p>	<p>Observation</p> <p>SMART Response questions throughout the PMI unit</p> <p>Are You Ready?</p> <p>Write About It</p> <p>Daily Journal</p> <p>Lesson Quizzes</p> <p>Ready to Go On?</p> <p>Multiple Choice Tests (Forms A, B, C)</p> <p>Free Response Tests (Forms A, B, C)</p> <p>Oral Responses</p>	<p>Observation</p> <p>SMART Response questions throughout the PMI unit</p> <p>Are You Ready?</p> <p>Write About It</p> <p>Daily Journal</p> <p>Lesson Quizzes</p> <p>Ready to Go On?</p> <p>Multiple Choice Tests (Forms A, B, C)</p> <p>Free Response Tests (Forms A, B, C)</p> <p>Oral Responses</p>	<p>Observation</p> <p>SMART Response questions throughout the PMI unit</p> <p>Are You Ready?</p> <p>Write About It</p> <p>Daily Journal</p> <p>Lesson Quizzes</p> <p>Ready to Go On?</p> <p>Multiple Choice Tests (Forms A, B, C)</p> <p>Free Response Tests (Forms A, B, C)</p> <p>Oral Responses</p>	<p>Observation</p> <p>SMART Response questions throughout the PMI unit</p> <p>Are You Ready?</p> <p>Write About It</p> <p>Daily Journal</p> <p>Lesson Quizzes</p> <p>Ready to Go On?</p> <p>Multiple Choice Tests (Forms A, B, C)</p> <p>Free Response Tests (Forms A, B, C)</p> <p>Oral Responses</p> <p>Winter MAP Assessment</p>
Integration of 21st Century Themes	<p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT Literacy</p> <p>Life and Career Skills</p>	<p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT Literacy</p> <p>Life and Career Skills</p>	<p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT Literacy</p> <p>Life and Career Skills</p>	<p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT Literacy</p> <p>Life and Career Skills</p>	<p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT Literacy</p> <p>Life and Career Skills</p>

& Ski lls					
Ins tru cti on al Ma teri als	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities

GRADE 6 CURRICULUM MAP FOR MATHEMATICS

	FEBRUARY	MARCH	APRIL	MAY	JUNE
Unit/Topics	Equations & Inequalities	Applications of Equations	Graphing and Geometry	Statistical Variability	Data Displays
Essential Questions	How are inequalities different than equality equations? How will inequalities help model real world problems?	How can equations, tables, and graphs be used to represent real-life scenarios?	What is the Cartesian plane and what does an ordered pair represent? How is the area of a figure calculated? How do irregular figures and shaded region affect the area of the figure? What is a 3-Dimensional figure compared to a 2-Dimensional figure? Are surface area and volume the same as area?	What are the ways to organize, measure, and display data?	What are the ways to organize, measure, and display data?
Assessments (Formative, Summative, Benchmark)	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses Spring MAP Assessment	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses
Integration of 21st Century Themes	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills

& Ski lls					
Ins tru cti on al Ma teri als	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities

**TABERNACLE TOWNSHIP PUBLIC SCHOOLS
MATHEMATICS CURRICULUM
GRADE 6**

NJSLs	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
6.RP Ratios and Proportional Relationships				
A. Understand ratio concepts and use ratio reasoning to solve problems.				
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.”	<ul style="list-style-type: none"> ● Students use ratios to describe proportional situations. ● Represent ratios and percents with concrete models, fractions, and decimals. ● Apply knowledge of ratios and proportions to percent problems. ● Make conversions between different measurements and unit ratios. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit 8 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities ● Lab: <i>Salmon You Can Count on</i> ● Lab: <i>Happy Trails Mix</i> ● Lab: <i>Design on a Dime</i> ● Lab: <i>Orange Soda Experiment</i>
6.RP.A.2	Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar.” “We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger.”			
6.RP.A.3				
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.			
6.RP.A.3.b	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.			

	<p>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?</p>			
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MATHEMATICS CURRICULUM
GRADE 6**

NJSLS	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
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6.RP.A.3.c	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.3.d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.			
6.NS The Number System				
A. Apply and extend previous understandings of multiplication and 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, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. (In general, $(a/b) \div (c/d) = ad/bc$.) How much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $3/4$ -cup servings are in $2/3$ of a cup of yogurt? How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square mi?	<ul style="list-style-type: none"> Students become secure in the division of fractions. Solve real world application problems involving fractions. 	<ul style="list-style-type: none"> Observation SMART Response questions used throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses PMI Unit Addressing Standards: Unit 1 	<ul style="list-style-type: none"> PMI online resources Calculators Manipulatives Teacher generated activities George Banks and Hotdog Buns (slide 31) http://www.youtube.com/watch?v=oYIHLUxzRr8 Lab: <i>Price a Piece of Pizza</i> Lab: <i>Hi-Ho, Hi-Low</i>
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.	<ul style="list-style-type: none"> Students practice and learn the standard algorithm for decimal computation. 	<ul style="list-style-type: none"> Observation SMART Response questions used throughout the PMI unit 	<ul style="list-style-type: none"> PMI online resources Calculators
6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	<ul style="list-style-type: none"> Students review long division. 	<ul style="list-style-type: none"> Are You Ready? 	<ul style="list-style-type: none"> Manipulatives Teacher generated activities

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NJSLS	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
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6.NS.B.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express $36 + 8$ as $4(9 + 2)$.	<ul style="list-style-type: none"> ● Use factors and multiples to find both GCFs and LCMs. ● Use the distributive property to solve problems. 	<ul style="list-style-type: none"> ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Units 1 and 2 	<ul style="list-style-type: none"> ● George Banks and Hotdog Buns (slide 31) ● http://www.youtube.com/watch?v=oYIHLUxzRr8 ● Lab: <i>Price a Piece of Pizza</i> ● Lab: <i>Hi-Ho, Hi-Low</i>
C. Apply and extend previous understandings of numbers to the system of rational numbers.				
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.	<ul style="list-style-type: none"> ● Become secure in the concepts of opposite numbers, negative numbers, and absolute value. ● Compare and order integers and rational numbers ● Recognize the different parts of the Cartesian plane. ● Practice and learn how to graph an ordered pair. ● Solve problems involving distance between two points. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit 4 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities ● George Banks and Hotdog Buns (slide 31) ● http://www.youtube.com/watch?v=oYIHLUxzRr8 ● Lab: <i>Price a Piece of Pizza</i> ● Lab: <i>Hi-Ho, Hi-Low</i> ● Lab: <i>Graphing Race to the Edge</i>
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.6.a	Recognize opposite signs of numbers as indicating location 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 signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two			

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GRADE 6**

NJSLs	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
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6.NS.C.6.b (cont.)	ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.	<ul style="list-style-type: none"> ● Become secure in the concepts of opposite numbers, negative numbers, and absolute value. ● Compare and order integers and rational numbers ● Recognize the different parts of the Cartesian plane. ● Practice and learn how to graph an ordered pair. ● Solve problems involving distance between two points. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit 4 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities ● George Banks and Hotdog Buns (slide 31) ● http://www.youtube.com/watch?v=oYIHLUxzRr8 ● Lab: <i>Price a Piece of Pizza</i> ● Lab: <i>Hi-Ho, Hi-Low</i> ● Lab: <i>Graphing Race to the Edge</i>
6.NS.C.6.c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.			
6.NS.C.7	Understand ordering and absolute value of rational numbers.			
6.NS.C.7.a	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	Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write $-3^{\circ}\text{C} > -7^{\circ}\text{C}$ to express the fact that -3°C is warmer than -7°C .			
6.NS.C.7.c	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	Distinguish comparison 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.			

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MATHEMATICS CURRICULUM
GRADE 6**

NJSLS	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
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.			
6.EE Expressions and Equations				
A. Apply and extend previous understandings of arithmetic to algebraic expressions.				
6.EE.A.1	Write and evaluate numerical expressions involving whole-number exponents.	<ul style="list-style-type: none"> ● 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. ● Use the distributive property to combine like terms. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit 5 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities ● Lab: <i>Algebraic Horse</i> ● Lab: <i>Simple Expression Bingo</i> ● Lab: <i>Algebra Rummy</i>
6.EE.A.2	Write, read, and evaluate expressions in which letters stand for numbers.			
6.EE.A.2.a	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	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	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 $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of lengths $s = 1/2$.			

NJSLS	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
6.EE.A.3	Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression $3(2 + x)$ 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 $3y$.	<ul style="list-style-type: none"> 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. Use the distributive property to combine like terms. 	<ul style="list-style-type: none"> Observation SMART Response questions used throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses PMI Unit Addressing Standards: Unit 5 	<ul style="list-style-type: none"> PMI online resources Calculators Manipulatives Teacher generated activities Lab: <i>Algebraic Horse</i> Lab: <i>Simple Expression Bingo</i> Lab: <i>Algebra Rummy</i>
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.			

B. Reason about and solve one-variable equations and inequalities.

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.	<ul style="list-style-type: none"> Determine solutions to different types of equations. Identify and manipulate inverse equations using different operations. Solve one step addition, subtraction, multiplication, and division equations. Write and solve simple inequalities. Develop the knowledge of how to graph solution sets to simple inequalities. 	<ul style="list-style-type: none"> Observation SMART Response questions used throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses PMI Unit Addressing Standards: Units 5 and 6 	<ul style="list-style-type: none"> PMI online resources Calculators Manipulatives Teacher generated activities Lab: <i>Occasions for an Equation</i> Lab: <i>Meet My Function Machine</i>
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 $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.			

**TABERNACLE TOWNSHIP PUBLIC SCHOOLS
MATHEMATICS CURRICULUM
GRADE 6**

NJSLS	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
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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.			
C. Represent and analyze quantitative relationships between dependent and independent variables.				
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 at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.	<ul style="list-style-type: none"> • Differentiate between dependent and independent variables. • Represent the relationship between dependent and independent variables, found in real-life scenarios, with equations, tables, and graphs. 	<ul style="list-style-type: none"> • Observation • SMART Response questions used throughout the PMI unit • Are You Ready? • Write About It • Daily Journal • Lesson Quizzes • Ready to Go On? • Multiple Choice Tests (Forms A, B, C) • Free Response Tests (Forms A, B, C) • Oral Responses • PMI Unit Addressing Standards: Unit 9 	<ul style="list-style-type: none"> • PMI online resources • Calculators • Manipulatives • Teacher generated activities • Lab: <i>Algebraic Horse</i> • Lab: <i>Simple Expression Bingo</i> • Lab: <i>Algebra Rummy</i> • Lab: <i>Occasions for an Equation</i> • Lab: <i>Meet My Function Machine</i>
6.G Geometry				
A. Solve real-world and mathematical problems involving area, surface area, and volume.				
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.	<ul style="list-style-type: none"> • Calculate the area of rectangles, parallelograms, triangles, and trapezoids. • Solve for the area of irregular figures and shaded regions. • Students are introduced to 3-Dimensional solids 	<ul style="list-style-type: none"> • Observation • SMART Response questions used throughout the PMI unit • Are You Ready? • Write About It • Daily Journal 	<ul style="list-style-type: none"> • PMI online resources • Calculators • Manipulatives • Teacher generated activities

**TABERNACLE TOWNSHIP PUBLIC SCHOOLS
MATHEMATICS CURRICULUM
GRADE 6**

NJSLs	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
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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 $V = l w h$ 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.	<ul style="list-style-type: none"> Determine the surface area and volume of different solids. Examine polygons in the coordinate plane. 	<ul style="list-style-type: none"> Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses PMI Unit Addressing Standards: Unit 7 	<ul style="list-style-type: none"> PMI online resources Calculators Manipulatives Teacher generated activities Mathematics reference sheet (slide 53) Lab: <i>Polygon Pursuit</i> Lab: <i>Shape Skeletons</i> Lab: <i>Chewed Food</i>
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 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.			

6.SP Statistics and Probability

A. Develop understanding of statistical variability.

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.	<ul style="list-style-type: none"> Review the vocabulary for measurements of data. Practice and strengthen the understanding of measurements of center by working through application problems. 	<ul style="list-style-type: none"> Observation SMART Response questions used throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) 	<ul style="list-style-type: none"> PMI online resources Calculators Manipulatives Teacher generated activities Activity (slide 8) Lab: <i>Medi, Meany, Midi, Mode</i> Lab: <i>Who is the Outlier?</i>
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.			

**TABERNAACLE TOWNSHIP PUBLIC SCHOOLS
MATHEMATICS CURRICULUM
GRADE 6**

NJSLs	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
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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.		<ul style="list-style-type: none"> ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit 3 	
B. Summarize and describe distributions.				
6.SP.B.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	<ul style="list-style-type: none"> ● Review vocabulary for measurements of variation such as min/max, range, quartiles, outliers, and mean absolute deviation. ● Explore and understand the different ways to display data. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit 3 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities ● Activity (slide 8) ● Lab: <i>Medi, Meany, Midi, Mode</i> ● Lab: <i>Who is the Outlier?</i>
6.SP.B.5	Summarize numerical data sets in relation to their context, such as by:			
6.SP.B.5.a	Reporting the number of observations.			
6.SP.B.5.b	Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.			
6.SP.B.5.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 reference to the context in which the data were gathered.			
6.SP.B.5.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.			

GRADE 7 CURRICULUM MAP FOR MATHEMATICS

	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY
Unit/ Topic s	Numbers and Operations	Expressions	Equations & Inequalities	Equations & Inequalities	Ratios & Proportions
Essential Questions	<p>How do operations affect rational numbers?</p> <p>How can we use rational numbers to solve real world application problems?</p>	<p>What is a numeric expression & how is it evaluated?</p> <p>What is an algebraic expression & how is it simplified?</p> <p>How is an algebraic expression evaluated?</p>	<p>How are equations solved?</p> <p>What are different properties of equations and how can they help solve them?</p> <p>What happens when two sides of an equation are not equal</p>	<p>How are equations solved?</p> <p>What are different properties of equations and how can they help solve them?</p> <p>What happens when two sides of an equation are not equal</p>	<p>How do you recognize and represent proportional relationships between quantities?</p> <p>How do you apply proportions?</p>
Assessments (Formative, Summative, Benchmark)	<p>Observation</p> <p>SMART Response questions throughout the PMI unit</p> <p>Are You Ready?</p> <p>Write About It</p> <p>Daily Journal</p> <p>Lesson Quizzes</p> <p>Ready to Go On?</p> <p>Multiple Choice Tests (Forms A, B, C)</p> <p>Free Response Tests (Forms A, B, C)</p> <p>Oral Responses</p> <p>Fall MAP Assessment</p>	<p>Observation</p> <p>SMART Response questions throughout the PMI unit</p> <p>Are You Ready?</p> <p>Write About It</p> <p>Daily Journal</p> <p>Lesson Quizzes</p> <p>Ready to Go On?</p> <p>Multiple Choice Tests (Forms A, B, C)</p> <p>Free Response Tests (Forms A, B, C)</p> <p>Oral Responses</p>	<p>Observation</p> <p>SMART Response questions throughout the PMI unit</p> <p>Are You Ready?</p> <p>Write About It</p> <p>Daily Journal</p> <p>Lesson Quizzes</p> <p>Ready to Go On?</p> <p>Multiple Choice Tests (Forms A, B, C)</p> <p>Free Response Tests (Forms A, B, C)</p> <p>Oral Responses</p>	<p>Observation</p> <p>SMART Response questions throughout the PMI unit</p> <p>Are You Ready?</p> <p>Write About It</p> <p>Daily Journal</p> <p>Lesson Quizzes</p> <p>Ready to Go On?</p> <p>Multiple Choice Tests (Forms A, B, C)</p> <p>Free Response Tests (Forms A, B, C)</p> <p>Oral Responses</p> <p>Winter MAP Assessment</p>	<p>Observation</p> <p>SMART Response questions throughout the PMI unit</p> <p>Are You Ready?</p> <p>Write About It</p> <p>Daily Journal</p> <p>Lesson Quizzes</p> <p>Ready to Go On?</p> <p>Multiple Choice Tests (Forms A, B, C)</p> <p>Free Response Tests (Forms A, B, C)</p> <p>Oral Responses</p> <p>Winter MAP Assessment</p>
Integration of 21st Century Themes & Skills	<p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT Literacy</p> <p>Life and Career Skills</p>	<p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT Literacy</p> <p>Life and Career Skills</p>	<p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT Literacy</p> <p>Life and Career Skills</p>	<p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT Literacy</p> <p>Life and Career Skills</p>	<p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT Literacy</p> <p>Life and Career Skills</p>

Ins tru cti on al Ma teri als	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities
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GRADE 7 CURRICULUM MAP FOR MATHEMATICS

	FEBRUARY	MARCH	APRIL	MAY	JUNE
Unit/Topics	Percents	Statistics & Probability	Drawing Geometric Figures	2D Geometry	3D Geometry
Essential Questions	<p>How are percents used to help solve real world application problems?</p> <p>What are the different ways percent problems are represented?</p>	<p>How does probability relate to real world application problems?</p> <p>How can measures of center and variation be used to compare two sets of data?</p> <p>How are different events classified and what can I use to solve them?</p>	<p>Can we determine if three side lengths would create a triangle?</p>	<p>What is difference between area and perimeter?</p>	<p>How are 3D figures different from 2D figures?</p> <p>What is a cross section of a figure and how will that help compute properties of the figure?</p> <p>How are surface area and volume found for a 3D figure?</p>
Assessments (Formative, Summative, Benchmark)	<p>Observation</p> <p>SMART Response questions throughout the PMI unit</p> <p>Are You Ready?</p> <p>Write About It</p> <p>Daily Journal</p> <p>Lesson Quizzes</p> <p>Ready to Go On?</p> <p>Multiple Choice Tests (Forms A, B, C)</p> <p>Free Response Tests (Forms A, B, C)</p> <p>Oral Responses</p>	<p>Observation</p> <p>SMART Response questions throughout the PMI unit</p> <p>Are You Ready?</p> <p>Write About It</p> <p>Daily Journal</p> <p>Lesson Quizzes</p> <p>Ready to Go On?</p> <p>Multiple Choice Tests (Forms A, B, C)</p> <p>Free Response Tests (Forms A, B, C)</p> <p>Oral Responses</p>	<p>Observation</p> <p>SMART Response questions throughout the PMI unit</p> <p>Are You Ready?</p> <p>Write About It</p> <p>Daily Journal</p> <p>Lesson Quizzes</p> <p>Ready to Go On?</p> <p>Multiple Choice Tests (Forms A, B, C)</p> <p>Free Response Tests (Forms A, B, C)</p> <p>Oral Responses</p>	<p>Observation</p> <p>SMART Response questions throughout the PMI unit</p> <p>Are You Ready?</p> <p>Write About It</p> <p>Daily Journal</p> <p>Lesson Quizzes</p> <p>Ready to Go On?</p> <p>Multiple Choice Tests (Forms A, B, C)</p> <p>Free Response Tests (Forms A, B, C)</p> <p>Oral Responses</p> <p>Spring MAP Assessment</p>	<p>Observation</p> <p>SMART Response questions throughout the PMI unit</p> <p>Are You Ready?</p> <p>Write About It</p> <p>Daily Journal</p> <p>Lesson Quizzes</p> <p>Ready to Go On?</p> <p>Multiple Choice Tests (Forms A, B, C)</p> <p>Free Response Tests (Forms A, B, C)</p> <p>Oral Responses</p>
Integration of 21st Century Themes & Skills	<p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT Literacy</p> <p>Life and Career Skills</p>	<p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT Literacy</p> <p>Life and Career Skills</p>	<p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT Literacy</p> <p>Life and Career Skills</p>	<p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT Literacy</p> <p>Life and Career Skills</p>	<p>Financial, Economic, Business, and Entrepreneurial Literacy</p> <p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT Literacy</p> <p>Life and Career Skills</p>

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NJSLS	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
7.RP Ratios and Proportional Relationships				
A. Analyze proportional relationships and use them to solve real-world mathematical problems.				
7.RP.A.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $\frac{\frac{1}{2}}{\frac{1}{4}}$ miles per hour, equivalently 2 miles per hour.	<ul style="list-style-type: none"> ● Write ratios for various situations. ● Determine if ratios are equivalent as well as how to determine an unknown in an equivalent ratio. ● Calculate unit rates to solve word problems. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities
7.RP.A.2	Recognize and represent proportional relationships between quantities.	<ul style="list-style-type: none"> ● Use proportions to solve problems. 	<ul style="list-style-type: none"> ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) 	<ul style="list-style-type: none"> ● https://njctl.org/courses/math/7th-grade/ ● http://www.raftbayarea.org/ideas/Planet%20Beads.pdf
7.RP.A.2.a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	<ul style="list-style-type: none"> ● Use proportions to determine the relationship in a table and graph, determine the constant of proportionality, write equations and understand graphs or proportions. 	<ul style="list-style-type: none"> ● Free Response Tests (Forms A, B, C) ● Oral Responses 	<ul style="list-style-type: none"> ● http://www.raftbayarea.org/ideas/Sun%20and%20Planets%20to%20Scale.pdf
7.RP.A.2.b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	<ul style="list-style-type: none"> ● Relate fractions, decimals, and percents to each other. ● Solve three different types of percent problems. 	<ul style="list-style-type: none"> ● PMI Unit Addressing Standards: Unit – <i>Ratios and Proportions and Percents</i> 	<ul style="list-style-type: none"> ● http://www.raftbayarea.org/ideas/Building%20it%20Bigger.pdf
7.RP.A.2.c	Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p , the relationship between the total cost and the number of items can be expressed as $t = pn$.	<ul style="list-style-type: none"> ● Represent percent equations in an algebraic context. ● Apply percent of increase and percent of decrease when solving problems. 		
7.RP.A.2.d	Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.			

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NJSLS	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.			
7.NS The Number System				
A. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.				
7.NS.A.1 7.NS.A.1.a 7.NS.A.1.b 7.NS.A.1.c 7.NS.A.1.d 7.NS.A.2	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. Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged. 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. 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. Apply properties of operations as strategies to add and subtract rational numbers. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	<ul style="list-style-type: none"> ● Apply knowledge of the number system to problems involving rational numbers. ● Add, subtract, multiply, and divide rational numbers. ● Transform rational numbers into decimals. ● Solve real world problems using rational numbers. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit - <i>Numbers and Operations</i> 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities ● Lab: <i>The Absolutely Valuable Game</i> ● Lab: <i>Fraction Action Game</i> ● Lab: <i>Above and Below Zero Game</i> ● Lab: <i>Graphing Race to the Edge</i> ● Online Resources: <ul style="list-style-type: none"> · https://njctl.org/courses/math/7th-grade/ · http://www.raftbayare.org/ideas/Fraction%20Action%20Game.pdf · http://www.raftbayare.org/ideas/Absolutely%20Valuable%20Game.pdf · http://www.raftbayare.org/ideas/Above%20and%20Below%20Zero%20Game.pdf

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NJSLS	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
7.NS.A.2.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.	<ul style="list-style-type: none"> ● Apply knowledge of the number system to problems involving rational numbers. ● Add, subtract, multiply, and divide rational numbers. ● Transform rational numbers into decimals. ● Solve real world problems using rational numbers. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit - <i>Numbers and Operations</i> 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities ● Lab: <i>The Absolutely Valuable Game</i> ● Lab: <i>Fraction Action Game</i> ● Lab: <i>Above and Below Zero Game</i> ● Lab: <i>Graphing Race to the Edge</i> ● Online Resources:
7.NS.A.2.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. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.			
7.NS.A.2.c	Apply properties of operations as strategies to multiply and divide rational numbers.			
7.NS.A.2.d	Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.			
7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.			

- <https://njctl.org/courses/math/7th-grade/>
- <http://www.raftbayarea.org/ideas/Fraction%20Action%20Game.pdf>

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7.EE Expressions and Equations				
A. Use properties of operations to generate equivalent expressions.				
7.EE.A.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	<ul style="list-style-type: none"> ● Identify constants, and variables in an algebraic expression. 	<ul style="list-style-type: none"> ● Observation 	<ul style="list-style-type: none"> ● PMI online resources
7.EE.A.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”	<ul style="list-style-type: none"> ● Evaluate a numerical expression using the correct order of operations. ● Use the distributive property to simplify algebraic expressions. ● Simplify algebraic expressions by combining like terms. ● Translate verbal phrases into mathematical and algebraic expressions. ● Evaluate algebraic expressions when each variable is assigned a value using substitution and the order of operations. ● Represent percent equations in an algebraic context. 	<ul style="list-style-type: none"> ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit - <i>Expressions</i> 	<ul style="list-style-type: none"> ● Calculators ● Manipulatives ● Teacher generated activities ● Lab: <i>Comparing Cards</i> ● Online Resources: <ul style="list-style-type: none"> · https://njctl.org/courses/math/7th-grade/ · PhET Expressions Exchange Simulation · PhET Expression Exchange Activity Sheets

**MATHEMATICS CURRICULUM
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B. Solve real-life and mathematical problems using numerical and algebraic expressions and equations.				
7.EE.B.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.	<ul style="list-style-type: none"> ● Examine commutative and associative properties of different equations. ● Combine like terms within an equation and learn to use the distributive property to solve equations. ● Solve multi-step equations involving different techniques. ● Graph and solve inequalities involving addition, subtraction, multiplication, and division. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit – <i>Equations & Inequalities</i> 	<ul style="list-style-type: none"> ● Lab: <i>Shape up with Algebra</i> ● Lab: <i>Modeling Simple Equations</i> ● Lab: <i>Dive into Square Pools</i> ● https://njctl.org/courses/math/7th-grade/ ● http://www.raftbayarea.org/ideas/Shape%20Up%20with%20Algebra.pdf ● http://www.raftbayarea.org/ideas/Modeling%20Simple%20Equations.pdf ● http://www.raftbayarea.org/ideas/Dive%20into%20Square%20Pools.pdf
7.EE.B.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.			
7.EE.B.4.a	Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?			

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MATHEMATICS CURRICULUM
GRADE 7**

NJSLs	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
7.EE.B.4.b	Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions.			
7.G Geometry				
A. Draw, construct, and describe geometrical figures and describe the relationships between them.				
7.G.A.1 7.G.A.2 7.G.A.3	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	<ul style="list-style-type: none"> ● Use proportions to solve problems involving scale drawings and similar figures. ● Determine if a triangle is possible. ● Draw triangles freehand, with ruler and protractor and with technology. ● Students will be introduced to 3D solids and cross sections of 3D figures. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Units – <i>Drawing Geometric Figures</i>, <i>2D Geometry</i>, and <i>3D Geometry</i> 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities ● Lab: <i>Planet Beads</i> ● Lab: <i>Sun and Planets to Scale</i> ● Lab: <i>Building it Bigger</i> ● Lab: <i>Making 3D Shapes</i> ● Online Resources: ● https://njctl.org/courses/math/7th-grade/ ● http://www.raftbayarea.org/ideas/Planet%20Beads.pdf

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MATHEMATICS CURRICULUM
GRADE 7**

NJSLs	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
				<ul style="list-style-type: none"> ● http://www.raftbayarea.org/ideas/Building%20it%20Bigger.pdf ● http://www.raftbayarea.org/ideas/Making%203D%20Shapes.pdf
B. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume				
<p>7.G.B.4</p> <p>7.G.B.5</p>	<p>Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.</p> <p>Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.</p>	<ul style="list-style-type: none"> ● Calculate the perimeter of different 2D geometrical figures. ● Calculate the circumference and area of different circles. ● Determine whether a triangle is possible or not. ● Discover special pairs of triangles and the relationships they yield. ● Calculate the area of rectangles, parallelograms, triangles and trapezoids. ● Use previous knowledge of area formulas to calculate the area of irregular and shaded figures. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Units – <i>2D Geometry</i>, and <i>3D Geometry</i> 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities ● Lab: <i>Finding Pi</i> ● Online Resources: ● https://njctl.org/courses/math/7th-grade/ ● http://www.raftbayarea.org/ideas/Finding%20Pi.pdf

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NJSLS	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
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.	<ul style="list-style-type: none"> ● Compute the volume of different 3D figures. ● Compute surface area of different 3D figures. 		<ul style="list-style-type: none"> ● Lab: <i>The Long and the Short of It</i> ● Lab: <i>Surface Area Activity</i> ● Online Resources: ● http://www.raftbayarea.org/ideas/Long%20and%20Short%20of%20t.pdf
7.SP Statistics and Probability				
A. Use random sampling to draw inferences about a population.				
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.	<ul style="list-style-type: none"> ● Introduce the concept of sampling. ● Draw inferences about a population based off a sample 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit – <i>Statistics and Probability</i> 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities
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. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.			

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NJSLs	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
B. Draw informal comparative inferences about two populations.				
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. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.	<ul style="list-style-type: none"> ● Compare two populations and solve real world application problems with them. ● Measure the difference between the centers by expressing it as a multiple of a measure of variability. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit - <i>Statistics and Probability</i> 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities
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. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.			

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C. Investigate chance processes and develop, use, and evaluate probability models				
7.SP.C.5	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	<ul style="list-style-type: none"> • Students will be able to measure the difference between the centers by expressing it as a multiple of a measure of variability. • Students will understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. • Students will be able to use experimental and theoretical probability to determine the likelihood of an event occurring. • Students will use the fundamental counting principle to solve problems. • Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit - <i>Statistics and Probability</i> 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities ● Lab: <i>Ample Samples</i> ● Lab: <i>Adventures in Probability</i> ● Lab: <i>Monty Hall Makes a Deal</i> ● Online Resources: ● https://njctl.org/courses/math/7th-grade/ ● http://www.raftbayarea.org/ideas/Ample%20Samples.pdf ● http://www.raftbayarea.org/ideas/Adventures%20in%20Probability.pdf ● http://www.raftbayarea.org/ideas/Monty%20Hall%20Makes%20a%20Deal.pdf
7.SP.C.6	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.			

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GRADE 7**

NJSLS	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
7.SP.C.7	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.	<ul style="list-style-type: none"> • Students will be able to measure the difference between the centers by expressing it as a multiple of a measure of variability. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities
7.SP.C.7.a	Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.	<ul style="list-style-type: none"> • Students will understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. 	<ul style="list-style-type: none"> ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) 	<ul style="list-style-type: none"> ● Lab: <i>Ample Samples</i> ● Lab: <i>Adventures in Probability</i> ● Lab: <i>Monty Hall Makes a Deal</i>
7.SP.C.7.b	Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?	<ul style="list-style-type: none"> • Students will be able to use experimental and theoretical probability to determine the likelihood of an event occurring. • Students will use the fundamental counting principle to solve problems. 	<ul style="list-style-type: none"> ● PMI Unit Addressing Standards: Unit - <i>Statistics and Probability</i> 	<ul style="list-style-type: none"> ● Online Resources: ● https://njctl.org/courses/math/7th-grade/ ● http://www.raftbayarea.org/ideas/Ample%20Samples.pdf
7.SP.C.8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	<ul style="list-style-type: none"> • Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. 		<ul style="list-style-type: none"> ● http://www.raftbayarea.org/ideas/Monty%20Hall%20Makes%20a%20Deal.pdf
7.SP.C.8.a	Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.			
7.SP.C.8.b	Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.			

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NJSLS	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
7.SP.C.8.c	Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question : If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?			

MATHEMATICS (PRE-ALGEBRA) GRADE 8 CURRICULUM MAP

	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY
Unit /Chapter Name or Theme	Numbers and Operations	2D Geometry and Equations with Roots and Radicals	Pythagorean Theorem, Distance & Midpoint	Scientific Notation	Solving Equations and Graphing Linear Equations
Essential Questions	What is the difference between rational and irrational numbers?	How can you use models of one and two-dimensional figures to show congruent figures? How can you use models of one and two-dimensional figures to show similar figures? How do radicals and squares help solve real world problems? How are radicals and squares useful for solving equations and manipulating numbers?	How does the Pythagorean Theorem help solve real world problems? How do we compute the distance and midpoint within problems?	How will scientific notation help when writing numbers and equations? How is scientific notation used in real world application problems? How numbers are compared and manipulated using scientific notation?	How can the value of an unknown variable be found? What is meant by the slope of a line, and how can knowing a line's slope help to graph a line and find parallel and perpendicular lines? How can real world situations be modeled by proportional relationships? How can solutions be found within an equation?
Assessments (Formative, Summative, Benchmark)	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses Fall MAP Assessment	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses Winter MAP Assessment
Integration of 21st Century Themes & Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills

Inst ruct iona l Mat erial s	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities
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MATHEMATICS (PRE-ALGEBRA) GRADE 8 CURRICULUM MAP

	FEBRUARY	MARCH	APRIL	MAY	JUNE
Unit/Chapter Name or Theme	Systems of Linear Equations	Modeling Relationships	Functions	Data	3D Geometry
Essential Questions	How can real world situations be modeled by systems? How can solutions be found to a system?	What is a function? Are properties of functions and graphs the same for all functions?	What is a function? How are functions represented? What can a relationship between numbers tell about a problem?	How can information from a problem be represented in a way to see a pattern or a frequency? What is a line of best fit and how can it simply a conclusion? Are interpretation and predication an accurate conclusion for a problem?	What is a 3-dimensional figure? How can I find the volume of a 3-dimensional figure? How can the volume of a 3-dimensional figure help me solve real world problems?
Assessments (Formative, Summative, Benchmark)	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses Spring MAP Assessment	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses
Integration of 21st Century Themes & Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills
Instructional Materials	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities

MATHEMATICS (ALGEBRA 1) GRADE 8 CURRICULUM MAP

	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY
Unit /Chapter Name or Theme	Basic Skills Review ~ No calculators Chapter 13 Probability and Data Analysis 13-1, 13-6 thru 13-8 (9/19) Chapter 1 Expressions, Equations, and Functions 1-1 thru 1-7 Begin Chapter 2 Properties of Real Numbers	End Chapter 2 10/8 Chapter 3 Solving Linear Equations 3-1 thru 3-8 end 10/29 Start Chapter 4 Graphing Linear Equations and Functions. 4-1 thru 4-7	Chapter 4 Graphing Linear Equations and Functions. 4.1 thru 4.7 End 11/26 Begin Chapter 5 Writing Linear Equations	Chapter 5 Writing Linear Equations 5-1 thru 5-7	Conclude Chapter 5 Begin Chapter 6 Solving and Graphing Linear Inequalities 6-1 thru 6-9 Mid-term end of January
Essential Questions	How do mathematical ideas interconnect and build on one another to produce a coherent whole? How can counting, measuring, or labeling help to make sense of the world around us? What makes a computational strategy both effective and efficient? How can we decide when to use an exact answer and when to use an estimate? How can the collection, organization, interpretation, and display of data be used to answer questions? How can experimental and theoretical probabilities be used to make predictions or draw conclusions? What is the best way to solve this? What counting strategy works best here?	How do mathematical ideas interconnect and build on one another to produce a coherent whole? How can we compare and contrast numbers? How can counting, measuring, or labeling help to make sense of the world around us? What makes a computational strategy both effective and efficient? How do operations affect numbers? How do mathematical representations reflect the needs of society across cultures?	How can geometric/algebraic relationships best be represented and verified? How are patterns of change related to the behavior of functions? How can mathematical models be used to describe physical relationships? How physical models be used to clarify mathematical relationships?	How can measurements be used to solve problems? How can the collections, organization, interpretation, and display of data be used to answer questions?	How can we decide when to use an exact answer and when to use an estimate? How can geometric/algebraic relationships best be represented and verified? How can measurements be used to solve problems? How can change be best represented mathematically? How can patterns, relations, and functions be used as tools to best describe and help explain real-life situations? How are patterns of change related to the behavior of functions?
Assessments (Formative, Summative, Benchmark)	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses Fall MAP Assessment	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C)	Observation SMART Response questions throughout the PMI unit Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Winter MAP Assessment
Integration of 21st Century Themes &	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills

Skill s					
Inst ruct iona l Mat erial s	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities

MATHEMATICS (ALGEBRA 1) GRADE 8 CURRICULUM MAP

	FEBRUARY	MARCH	APRIL	MAY	JUNE
Unit /Chapter Name or Theme	Chapter 6 Solving and Graphing Linear Inequalities 6-1 through 6-7 ~ end 2/10 Begin chapter 7 Systems of Equations and Inequalities	End Chapter 7 3/5 Begin /Chapter 8 Exponents and Exponential Functions. End 3/26 Begin Chapter 9 Polynomials and Factoring. (9.1 & 9.2)	Continue Chapter 9 ½ before Spring break up to 9.5 by 4/9 PARCC review Include sections for Chapter 11 Radicals and Geometry Connections	PARCC review Test Finish Chapter 9 5/13 Begin Chapter 12 Rational Equations and Functions 12.3-12.5	Conclude Chapter 12 6/5 2.6 - 12.7 Final exam review and exam administered
Essential Questions	How can attributes be used to classify data/objects? What is the best way to solve this?	Process Standards 4.5 imbedded in content “While no additional big ideas, essential questions, or enduring understandings are listed for this standard, the mathematical processes are imbedded in the content-specific ideas, questions, and understandings delineated for the first four strands.” NJDOE	How do we compare and contrast numbers? How do mathematical ideas interconnect and build on one another to produce a coherent whole? How do operations affect numbers? What makes a computational strategy both effective and efficient? How can spatial relationships be described by careful use of geometric language? What situations can be analyzed using transformations and symmetries?	Process Standards 4.5 imbedded in content “While no additional big ideas, essential questions, or enduring understandings are listed for this standard, the mathematical processes are imbedded in the content-specific ideas, questions, and understandings delineated for the first four strands.” NJDOE	Process Standards 4.5 imbedded in content “While no additional big ideas, essential questions, or enduring understandings are listed for this standard, the mathematical processes are imbedded in the content-specific ideas, questions, and understandings delineated for the first four strands.” NJDOE
Assessments (Formative, Summative, Benchmark)	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C)	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses	Observation SMART Response questions throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C)

chmark)		Oral Responses		Spring MAP Assessment	Oral Responses
Integration of 21st Century Themes & Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills	Financial, Economic, Business, and Entrepreneurial Literacy Critical Thinking and Problem Solving Communication and Collaboration ICT Literacy Life and Career Skills
Instructional Materials	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities	PMI online math resources Use of calculators Internet resources Manipulatives Powerpoint Presentations Teacher-generated activities Labs and Unit Activities

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MATHEMATICS CURRICULUM
GRADE 8**

NJSLS	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
8.NS	The Number System			
	A. Know that there are numbers that are not rational, and approximate them by rational numbers.			

8.NS.A.1	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	<ul style="list-style-type: none"> Find the squares and square roots of both rational and irrational numbers. Know perfect squares. Simplify perfect square radical expressions as well as non-perfect square radicands. Use the perfect squares to approximate square roots. 	<ul style="list-style-type: none"> Observation SMART Response questions used throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses PMI Unit Addressing Standards: Unit – <i>Numbers and Operations</i> 	<ul style="list-style-type: none"> PMI online resources Calculators Manipulatives Teacher generated activities Activity: <i>A Penny for Your Thoughts</i> Activity: <i>Root Race</i> Activity: <i>Laws of Exponents</i> Activity: <i>Radical</i>
8.NS.A.2	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.			

8.EE Expressions and Equations

A. Work with radicals and integer exponents.

8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.	<ul style="list-style-type: none"> Understand the properties of exponents and use them to solve equations with perfect square and cube roots. Use an understanding of square roots to simplify roots of variables. Evaluate square and cube roots of perfect square and cubes to solve equations. 	<ul style="list-style-type: none"> Observation SMART Response questions used throughout the PMI unit Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses PMI Unit Addressing Standards: Unit – <i>Numbers and Operations</i> 	<ul style="list-style-type: none"> PMI online resources Calculators Manipulatives Teacher generated activities Activity: <i>A Penny for Your Thoughts</i> Activity: <i>Laws of Exponents</i> Activity: <i>Radical Makeover</i> http://njctl.org/courses/math/8th-grade-math/
8.EE.A.2	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.			

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NJSLS	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
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8.EE.A.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9 , and determine that the world population is more than 20 times larger.	<ul style="list-style-type: none"> Express numbers using scientific notation. Recognize the difference between scientific notation and standard form. Distinguish the difference between different numbers written in scientific notation. Solve equations with addition, subtraction, multiplication, and division using numbers in scientific notation. 	<ul style="list-style-type: none"> Free Response Tests (Forms A, B, C) Oral Responses PMI Unit Addressing Standards: Unit – <i>Equations with Roots and Radicals and Scientific Notation</i> 	<ul style="list-style-type: none"> PMI online resources Calculators Manipulatives Teacher generated activities Lab: <i>One in a Million</i> https://njctl.org/courses/math/8th-grade-math/ http://www.raftbayar.org/ideas/One%20in%20a%20Million.pdf
8.EE.A.4	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.			

B. Understand the connections between proportional relationships, lines, and linear equations.

8.EE.B.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	<ul style="list-style-type: none"> Identify a point on a line given its equation. Graph a line given different forms of the equation. Describe how slope relates to horizontal and vertical lines. Relate similar triangles to slope. 	<ul style="list-style-type: none"> Observation SMART Response questions used throughout the PMI unit Are You Ready? Write About It Daily Journal Lesson Quizzes Ready to Go On? Multiple Choice Tests (Forms A, B, C) Free Response Tests (Forms A, B, C) Oral Responses 	<ul style="list-style-type: none"> PMI online resources Calculators Manipulatives Teacher generated activities Lab: <i>Connect Three</i> Lab: <i>Slippery Slopes</i> Lab: <i>Marble Masters</i>
8.EE.B.6	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .			

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NJSLS	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
C. Analyze and solve linear equations and pairs of simultaneous linear equations.				

<p>8.EE.C.7</p> <p>8.EE.C.7.a</p> <p>8.EE.C.7.b</p> <p>8.EE.C.8</p> <p>8.EE.C.8.a</p> <p>8.EE.C.8.b</p> <p>8.EE.C.8.c</p>	<p>Solve linear equations in one variable.</p> <p>Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).</p> <p>Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.</p> <p>Analyze and solve pairs of simultaneous linear equations.</p> <p>Understand that solutions to a system of two linear equations in two variables correspond to point of intersection of their graphs, because points of intersection satisfy both equations simultaneously.</p> <p>Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot be simultaneously be 5 and 6.</p> <p>Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.</p>	<ul style="list-style-type: none"> ● Solve two-step equations. ● Solve multiple-step equations. ● Solve equations that contain fractions. ● Solve equations that contain the same variable on both sides of the equation. ● Simplify and compare algebraic expressions that contain the same variable. ● Translate word problems into equations and solve them. ● Graph systems of linear equations to find a solution. ● Solve a system of equations by using substitution and elimination. ● Translate real world problems into a system. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit – <i>Solving Equations, Graphing Linear Equations and Systems of Equations</i> 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities ● Lab: <i>Occasions for an Equation</i> ● Lab: <i>Exploring Systems of Linear Equations</i> ● https://phet.colorado.edu/en/contribution/view/4072 ● https://phet.colorado.edu/en/simulation/graphing-slope-intercept ● https://njctl.org/courses/math/8th-grade-math/ ● http://www.raftbayar.org/ideas/Occasions%20for%20an%20Equation.pdf
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NJSLs	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
8.F	Functions			

A. Define, evaluate, and compare functions.

8.F.A.1	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	<ul style="list-style-type: none"> ● Identify a linear function from a table. 	<ul style="list-style-type: none"> ● Observation 	<ul style="list-style-type: none"> ● PMI online resources
8.F.A.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.	<ul style="list-style-type: none"> ● Construct a function and determine the rate of change and initial value. 	<ul style="list-style-type: none"> ● SMART Response questions used throughout the PMI unit 	<ul style="list-style-type: none"> ● Calculators
8.F.A.3	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.	<ul style="list-style-type: none"> ● Describe a functional relationship by examining a graph. ● Understand what a function is and its corresponding graph. ● Compare properties of different functions and relate the information to real world situations. ● Graph slope-intercept form of a line 	<ul style="list-style-type: none"> ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit – <i>Graphing Linear Equations, Modeling Relationships and Functions</i> 	<ul style="list-style-type: none"> ● Manipulatives ● Teacher generated activities ● Lab: <i>Connect Three</i> ● Lab: <i>Slippery Slopes</i> ● Lab: <i>Marble Masters</i> ● Lab: <i>Funky Functions</i> ● Lab: <i>Functions in Action</i> ● https://njctl.org/courses/math/8th-grade-math/ ● http://www.raftbayar.com/ideas/Connect%20Three.pdf ● http://www.raftbayar.com/ideas/Slippery%20Slopes.pdf ● http://www.raftbayar.com/ideas/Marble%20Masters.pdf ● https://phet.colorado.edu/en/simulation/function-builder-basics ● https://phet.colorado.edu/en/contributions/view/4444

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B. Use functions to model relationships between quantities.

8.F.B.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	<ul style="list-style-type: none"> ● Use proportional relationships to solve real world problems. ● Solve linear equations for desired variables and values. ● Construct a function and determine the rate of change and initial value. ● Describe a functional relationship by examining a graph. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit – <i>Graphing Linear Equations</i> and <i>Modeling Relationships</i> 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities ● Lab: <i>Proportional Relationships</i>
8.F.B.5	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.			

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NJSLs	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
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8.G Geometry				
A. Understand congruence and similarity using physical models, transparencies, or geometry software.				
8.G.A.1	Verify experimentally the properties of rotations, reflections, and translations:	<ul style="list-style-type: none"> ● Transform figures on a coordinate plane. ● Use knowledge of angle relationships to find unknown angles. ● Describe a sequence of transformations that will result in congruent figures. ● Describe a sequence of transformations and dilations that will result in similar figures. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit – <i>2D Geometry and Functions</i> 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities ● Lab: <i>Translations</i> ● https://njctl.org/courses/math/8th-grade-math/ ● https://www.engage-ny.org/resource/grade-8-mathematics-module-2-topic-overview
8.G.A.1.a	Lines are taken to lines, and line segments to line segments of the same length.			
8.G.A.1.b	Angles are taken to angles of the same measure.			
8.G.A.1.c	Parallel lines are taken to parallel lines.			
8.G.A.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.			
8.G.A.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.			
8.G.A.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.			

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8.G.A.5	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.			
B. Understand and apply the Pythagorean Theorem.				
8.G.B.6	Explain a proof of the Pythagorean Theorem and its converse.	<ul style="list-style-type: none"> ● Explain the proof of the Pythagorean Theorem. ● Find unknown side lengths using the Pythagorean Theorem. ● Use the Pythagorean Theorem to solve problems involving distance and midpoints. ● Solve real world application problems using the Pythagorean Theorem. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● PMI Unit Addressing Standards: Unit – <i>Pythagorean Theorem, Distance and Midpoints</i> 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities ● Lab: <i>Introduction to Proofs</i>
8.G.B.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.			
8.G.B.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.			
C. Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.				
8.G.C.9	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	<ul style="list-style-type: none"> ● Identify what a 3-dimensional figure is. ● Use a formula to find the volume of a prism and cylinder. ● Use a formula to find the volume of pyramids, cones & spheres. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Form 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities ● Lab: <i>Volume Activity</i> ● Lab: <i>Volume</i>

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NJSLS	CONTENT	BENCHMARKS/CPI	● ASSESSMENT	● RESOURCES
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			<ul style="list-style-type: none"> • A, B, C) • Free Response Tests (Forms A, B, C) • Oral Responses • PMI Unit Addressing Standards: Unit – <i>3D Geometry</i> 	<ul style="list-style-type: none"> • <i>Verification</i> • https://njctl.org/courses/math/8th-grade-math/ • http://www.njctl.org/courses/math/8th-grade-math/3d-geometry/volume-activity/ • http://www.raftbayar.com/ideas/Volume%20Verification.pdf
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8.SP Statistics and Probability

A. Investigate patterns of association in bivariate data.

8.SP.A.1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	<ul style="list-style-type: none"> • Graph scatter plots. • Interpret and examine data to come to a conclusion. • Know about line of best fit and two variable data relationships. • Understand patterns of association in bivariate categorical data. • Use frequency to solve real life problems and make predictions for future ones. 	<ul style="list-style-type: none"> • Observation • SMART Response questions used throughout the PMI unit • Are You Ready? • Write About It • Daily Journal • Lesson Quizzes • Ready to Go On? • Multiple Choice Tests (Forms A, B, C) • Free Response Tests (Forms A, B, C) • Oral Responses • PMI Unit Addressing Standards: Unit - <i>Data</i> 	<ul style="list-style-type: none"> • PMI online resources • Calculators • Manipulatives • Teacher generated activities • Lab: <i>Stars on the HR Diagram</i> • Lab: <i>Illustrative Mathematics – Bird Eggs</i> • https://njctl.org/courses/math/8th-grade-math/ • http://www.raftbayar.com/ideas/Stars%20on%20the%20HR%20Diagram.pdf • http://www.illustrativemathematics.org/illustrations/41
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NJSLS	CONTENT	BENCHMARKS/CPI	ASSESSMENT	RESOURCES
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8.SP.A.2	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data point to the line.	<ul style="list-style-type: none"> ● Graph scatter plots. ● Interpret and examine data to come to a conclusion. ● Know about line of best fit and two variable data relationships. ● Understand patterns of association in bivariate categorical data. 	<ul style="list-style-type: none"> ● Observation ● SMART Response questions used throughout the PMI unit ● Are You Ready? ● Write About It ● Daily Journal ● Lesson Quizzes ● Ready to Go On? ● Multiple Choice Tests (Forms A, B, C) ● Free Response Tests (Forms A, B, C) ● Oral Responses ● PMI Unit Addressing Standards: Unit - <i>Data</i> 	<ul style="list-style-type: none"> ● PMI online resources ● Calculators ● Manipulatives ● Teacher generated activities
8.SP.A.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.	<ul style="list-style-type: none"> ● Use frequency to solve real life problems and make predictions for future ones. 		<ul style="list-style-type: none"> ● Lab: <i>Stars on the HR Diagram</i> ● Lab: <i>Illustrative Mathematics – Bird Eggs</i> ● https://njctl.org/courses/math/8th-grade-math/
8.SP.A.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from student sin your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?			<ul style="list-style-type: none"> ● http://www.raftbayar.ca.org/ideas/Stars%20on%20the%20HR%20Diagram.pdf ● http://www.illustrativemathematics.org/illustrations/41