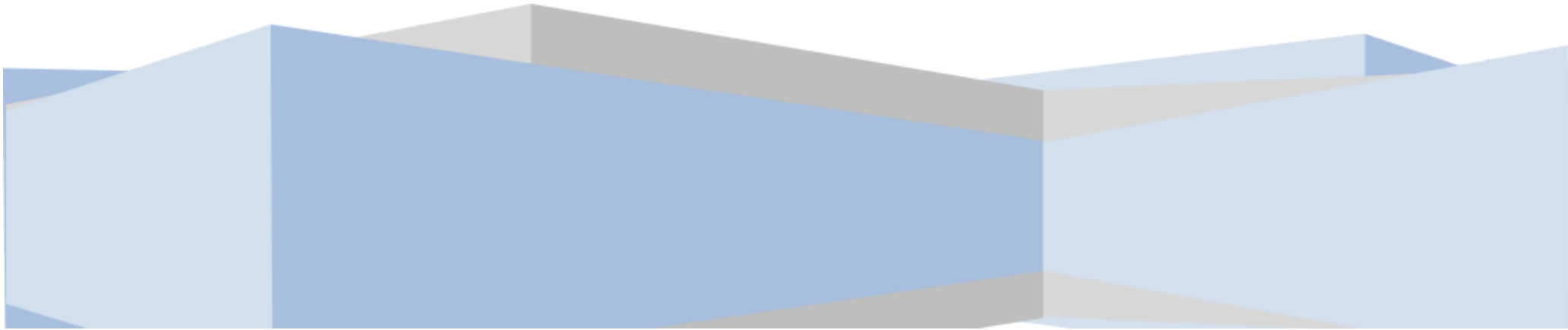
Lebanon Borough School

Mathematics

Curriculum Guide

Math Grade 6



Approved by the Lebanon Borough Board of Education

December 10, 2020/Revised:

Sixth Grade Math At A Glance

TRIMESTER 1	TRIMESTER 2	TRIMESTER 3
MATH	**MATH**	**MATH**
Focus: **Whole Numbers**	Focus: **Ratios**	Focus: **Equations**
Focus: **Rational Numbers**	Focus: **Proportions**	Focus: **Geometry**
Focus: **Fractions**	Focus: **Expressions**	Focus: **Statistics**
Focus: **Decimals**		
Focus: **Ratios**		

Lebanon Borough School
NJSLS Math Unit

Subject	Math	Grade	6	Unit #	1	Pacing	60 days
Unit Name	Number Systems						

Overview

In this unit students will be able to compute with a variety of numbers (whole numbers, rational numbers, fractions and decimals) in a variety of circumstances (number problems, word problems and models) and understand the magnitude of both those numbers and the answers to those problems.

Standard #	Standard			Student Learning Objectives	
6.NS.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 (used in Unit 3)			Find multiples and factors of a number. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two numbers less than or equal to 12.	
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.			Compute quotients of fractions. Construct visual fraction models to represent quotients and explain the relationship between multiplication and division of fractions. Solve real-world problems involving quotients of fractions and interpret the solutions in the context given.	
6.NS.B.2	Fluently divide multi-digit numbers using the standard algorithm.			Solve addition, subtraction, multiplication and division of multi-digit whole numbers using standard algorithms.	
6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.			Solve addition, subtraction, multiplication and division of multi-digit decimals using standard algorithms.	

6.NS.5	Understand that positive and negative numbers are used together to describe quantities having opposite directions or			Apply positive and negative numbers to describe and represent quantities in real-world situations.	

	values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real world contexts, explaining the meaning of 0 in each situation				
6.NS.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. a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite. b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. 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			Locate positive and negative rational numbers on the number line. Apply the meaning of absolute value of a rational number as indicating locations on opposite sides of zero on the number line. Plot ordered pairs in all four quadrants on the coordinate plane and describe their reflections.	

	rational numbers on a coordinate plane.			

6.NS.7	Understand ordering and absolute value of rational numbers. 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.* b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write –3 ^{o}C > –7 ^{o}C to express the fact that –3 ^{o}C is warmer than –7 ^{o}C.* 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.* d. Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.*			Write and compare rational numbers using inequality signs. Create and explain inequality statements of order for rational numbers in real-world contexts. Interpret and apply absolute value as magnitude for a positive or negative quantity in a real-world situation. Understand and apply absolute value of rational numbers and its distance from 0.	
6.NS.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			Solve real world problems mathematically by graphing ordered points in any quadrant. Determine the distance between two coordinate points aligned vertically and horizontally.	

	coordinate or the				

	same second coordinate.			Apply absolute value to find the distance between two coordinates and recognize absolute value as a way to account for directions when determining distances.	

Big Ideas:

1. Numeric reasoning involves fluency and facility with numbers
2. Calculate, compare and change forms of a variety of types of numbers

Essential Questions:

1. How can a number be broken down into its smallest factors or built up to its multiples?
2. How do number properties assist in computation?
3. How can you use models, words and expanded formats to order and compare numbers?
4. How do you compute with numbers less than one?
5. What is the value of numbers both greater than and less that zero?
6. Where are numbers (integers and rational numbers) located on the coordinate plane and number lines?

Assessments:

1. Formal and informal formative and summative assessments as determined by the teacher
2. Common Benchmark as per district schedule

Key Vocabulary

Rational number, Absolute value, Integer, Factors, Multiples, Coordinate Plane

Suggested Resources

Go Math Resources

- Animated Math Models
- iTools
- Student Workbooks
- Mega Math
- Grab and Go Differentiated Center Kit
- Math Concept Readers
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- Enrichment Lessons- as needed
- Reteach Lessons- as needed
- Computer lessons
- Real world videos

DIFFERENTIATION

Special Education	ELL	I&RS	ENRICHMENT
• Provide modifications & accommodations as listed in the student's IEP • Position student near helping peer or have quick access to teacher • Modify or reduce assignments/tests • Reduce length of assignment for different mode of delivery • Increase one-to-one time • Utilize working contract between you and student at risk • Prioritize tasks • Provide manipulatives • Use graphic organizers • Use interactive math journals • Use online resources for skill building • Provide teacher notes • Use collaborative grouping strategies such small groups • NJDOE resources	• Use Spanish Resources • Provide text to speech for math problems • Use of translation dictionary or software • Implement strategy groups • Confer frequently • Provide graphic organizers • Modification plan • NJDOE resources • Adapt a Strategy-Adjusting strategies for ESL students	• Tiered Interventions following I&RS framework • Soar to success math • I&RS Intervention Bank • NJDOE resources • Math Lab • Utilize online resources such as www.tenmarks.com www.khanacademy.org	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher grade concepts • Contents should be modified: abstraction, complexity, variety, organization • Products should be modified: real world problems, audiences, deadlines, evaluation, transformations • Learning environment should be modified: student-centered learning, independence, openness, complexity, groups varied • Use of web based resources such as www.tenmarks.com www.khanacademy.org • NJDOE resources

CROSS CURRICULUR RESOURCES

Literacy in Mathematics: http://www.readwritethink.org/search/?resource_type=6&q=math&sort_order=relevance
NASA STEM Resources: http://www.nasa.gov/audience/foreducators/expeditions/stem/stem-math-index.html#.VFEILvTF-RM
K-12 STEM Educator and Career Resource: http://www.egfi-k12.org/

ALIGNMENT TO 21st CENTURY SKILLS AND TECHNOLOGY

21st Century/ Interdisciplinary Themes: Bold all that apply	21st Century Skills: Bold all that apply
Global Awareness **Financial, Economic, Business and Entrepreneurial Literacy** Civic Literacy Health Literacy Environmental Literacy	Creativity & Innovation **Critical Thinking & Problem Solving** Communication & Collaboration Media Literacy Information Literacy **Information, Communication & Technology Life & Career Skills**

Technology Infusion

National Library of Virtual Manipulatives http://nlvm.usu.edu/en/nav/vlibrary.html
Math Resources for Technology https://drive.google.com/file/d/0B4Zh_BcwMUEMOFRfSXZpdW9Yams/view?usp=sharing
Smart Board Applications
Video podcasts
Carmen Sandiego
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Evidence of Student Learning

- Common benchmark
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- Running records
- Performance Tasks
- Unit tests
- Quizzes
- Classwork
- Homework

CRP Standards

CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills.
CRP3. Attend to personal health and financial well-being.
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.
CRP10. Plan education and career paths aligned to personal goals.
CRP11. Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

Lebanon Borough School
NJSLS Math Unit

Subject	Math	Grade	6	Unit #	2	Pacing	60 days
Unit Name	RATIOS AND PROPORTIONAL RELATIONSHIPS						

Overview

Throughout this unit, students will learn about ratio concepts and use ratio reasoning to solve real-world and mathematical problems, such as recipes, unit rate, converting measurement units, equivalent ratios, proportions and percents. Throughout this unit, students will also analyze relationships between variables using equations, tables, and graphs.

Standard #	Standard		SLO #	Student Learning Objectives	Depth of Knowledge
6.RP.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.			• Apply concept of a ratio by describing ratio relationships and creating ratios to compare two quantities.	
6.RP.2	Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship.			• Write, calculate, and understand rates and unit rate using the rate language.	
6.RP.3	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.			• Apply ratio reasoning to solve real-world and mathematical problems, such as recipes, and unit rate. • Use tape diagrams, double number line diagrams, or equations to solve real world ratio problems. • Write a proportion to solve a problem.	
6.RP.3.a	Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.			• Make tables of equivalent ratios, relate the quantities with whole number measurement and find missing values in the tables. • Represent collections of equivalent ratios by plotting the pairs of values on the coordinate plane.	
6.RP.3.b	Solve unit rate problems including those involving unit pricing and constant speed.			• Solve unit rate problems including those that involving unit pricing and constant speed.	
6.RP.3.c	Find a percent of a quantity as a rate per 100; solve problems involving finding the whole, given a part and the percent.			• Find percent of a quantity as a rate per 100 and use ratio relationships to determine percent, part, or whole given in others.	

6.RP.3.d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.			• Apply ratio reasoning when converting units of measurements.	
6.EE.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.			• Use variables to represent two quantities that change in relationship to one another in a real world problem and write an equation to express the dependent variable, in terms of the independent variable. • Analyze the relationship between the dependent and independent variables in an equation using graphs and tables.	
Mathematical Practice #	Selected Opportunities for Connections to Mathematical Practices				
MP1- Make sense of problems and persevere in solving them.	1. Make sense of problems and persevere in solving them. SLO #3 Relating ratios to real world context. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. SLO #11 and 12 Use graphs and tables to represent a dependent/independent relationship. 5. Use appropriate tools strategically. 6. Attend to precision. SLO #10 Converting measures. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning. *All of the content presented at this grade level has connections to the standards for mathematical practices.*				

MP2- Reason abstractly and quantitatively	● Especially in unit conversion (6.RP.3.d)-creating a symbolic representations of the problem and contextualizing the result of calculations back to the problem. SLO #10
MP4- Modeling with mathematics	● Students are able to identify important quantities in a practical situation and map their relationship using diagrams, two way tables, and graphs and use this information to derive an answer. SLO #4, 6, and 7

Big Ideas

- To write a ratio to compare two objects using ratio language.
- Write and calculate rates and unit rates.
- Create tables and graphs to represent ratios.
- Write ratios and decimals as percents, and write percents and ratios as decimals.
- To express parts of a whole as percents.
- To write a proportion to solve a problem.
- To find the percent of a number.
- Convert between measurement systems.
- Create a table of two variables that represent a real-world situation in which one quantity will change in relation to the other.
- Explain the difference between the independent and dependent variable and give examples of both.
- Determine the independent and dependent variable in a relationship.
- Write an algebraic equation that represents the relationship between two variables.
- Create a graph by plotting the variables on the correct axis of a coordinate plane.
- Analyze the relationship between the dependent and independent variables by comparing the table, graph, and equation

Essential Questions

- How is a ratio or a rate used to compare two quantities?
- Where can examples of ratios and rates be found?
- How can I model and represent rates, ratios, and proportions?
- What is a proportion?
- How are cross products and unit rates helpful in determining whether two ratios are equivalent?
- How can you determine if a variable is independent or dependent?
- How can an equation be used to represent a situation or data table

Assessments

- Common Benchmark as per district schedule
- Supporting and additional content standard SLOs are measured throughout the unit in a variety of ways (quizzes, exit tickets, check for understanding, journal entries, etc.)

Key Vocabulary

- Ratio

- Proportion
- Rate
- Unit Rate
- Equivalent ratios
- Conversion factors
- Metric and US customary measurement
- Percent
- Tape diagram
- Independent and dependent variables
- Equation
- Double number line

Suggested Resources (list specific chapters and or page numbers from existing text that correspond to the SLOs and Standards)

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Evidence of Student Learning

- Common benchmark
- Observation
- Evaluation rubrics
- Self-reflections
- Teacher-student conferences
- Running records
- Performance Tasks
- Unit tests
- Quizzes

Lebanon Borough School

NJSLS Math Unit

Subject	Math	Grade	6	Unit #	3	Pacing	30 days
Unit Name	Expressions and Equations						

Overview

- In this unit, students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operation such as the distribution to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as $3x = y$) to describe relationships between quantities and inequalities.

Standard #	Standard	MC, SC, or AC	SLO #	Student Learning Objectives	Depth of Knowledge
6.EE.1	Write and evaluate numerical expressions involving whole-number exponents.			• Write and evaluate numerical expressions involving whole number exponents.	.

6.EE.2	Write, read, and evaluate expressions in Which letters stand for numbers. 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.* 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.* c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform			● Read, write, and evaluate expressions in which letters stand for numbers (Including exponents and formulas that arise from real-world contexts). ● Use mathematical language to identify parts of an expression.	

	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 $A = 6 s^2$ to find the volume and surface area of a cube with sides of length s = 1/2.*				
6.EE.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.*			● Apply the properties of operations to generate equivalent expressions and emphasis on applying the distributed property to evaluate expressions.	
6.NS.4	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).*			● Apply the properties of operations to generate equivalent expressions (Including the distributive property; for example, *express 36 + 8 as 4(9 + 2) and y + y + y = 3y*.	
6.EE.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.*			● Identify when two expressions are equivalent; for example, *Are the two expressions equal? 81 + 18 and 9(9 + 2).*	
6.EE.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			● Understand what values make an equation or inequality true. ● Use substitution to determine whether a number is a solution of an equation or an inequality.	

	determine whether a given number in a specified set makes an equation or inequality true.				
6.EE.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.			• Use variables to represent numbers and write expressions when solving real world or mathematical problems with single solution or a solution set.	
6.EE.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.			• Write and solve one-step equations that represent real world or mathematical problems involving rational numbers.	
6.EE.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.			• Write an inequality of the form x > c or x < c to represent a constraint or condition in a real world or mathematical problem and represent them on a number line diagram. • Understand that inequalities have infinite solutions.	
Mathematical Practice #	Selected Opportunities for Connections to Mathematical Practices				
1.Make sense of problems and persevere in solving them.	Solving real world problems by writing and solving equations is new at Grade 6 and requires students' perseverance and careful analysis of the given information **(MP.1)**.				
2.Reason abstractly and quantitatively	As students apply properties of operations to generate equivalent expressions or identify when two expressions are equivalent, they must reason abstractly and computationally **(MP.2)** while looking for and making use of structure **(MP.7)**.				

3. Construct viable arguments	As students construct and critique arguments **(MP.3)** related to whether or nota given set of expressions is equivalent, they deepen their conceptual understanding and fluency with this content.

and critique the reasoning of others.	
4. Model with mathematics.	Students look for and express regularity in repeated reasoning **(MP.8)** as they generate algebraic models **(MP.4)** to represent relationships.
7. Look for and make use of structure.	Students reason about and solve one---variable equations and inequalities, they reason abstractly and computationally **(MP.2)** while looking for and making use of structure **(MP.7)**—for example, recognizing that solving the equation 5 + x = 10 is the same thing as x = 10 —5
8. Look for and express regularity in repeated reasoning.	Working with exponents and the coefficients of variable are both tools for expressing regularity in repeated reasoning **(MP.8)**.

Big Ideas

- An equation is a statement that two expressions are equal.
- When you substitute the solution for the variable and simplify the equation, both sides will be equal.
- Inverse operations are used to solve equations: addition and subtraction are inverse and multiplication and division are inverse.
- Solutions of two variable equations are pairs of values that satisfy the rules of the equation.
- The solution of a one variable inequality consists of all values for the variable that make the inequality a true statement. This solution can be graphed.
- Unit Objectives:
  1. To use substitution to determine whether a number is a solution of an equation or an inequality.
  2. To write expressions to represent real world or mathematical problems.
  3. To use knowledge of operations to solve equations.
  4. To understand that an inequality has many solutions and the solutions can be graphed on a number line.
  5. To write inequalities to represent real world situations.
  6. To analyze relationships between two variables and write equations into variables to represent real world problems.
- Common misconceptions:
  1. Instead of using the exponent to determine how many times to multiply the base number by itself, students will multiply the base number and the exponent.
  2. Students will confuse how to translate 5 less than *y*. Many will write it as 5 – *y*.
  3. When using the distributive property, students will often multiply the first term, but forget to do the same to the second term.
  4. When combining like terms, students will often forget to pay attention to subtraction signs.
  5. Students will assume if there is not a coefficient in front of a variable, there is not actually a number there. They do not see that *y* = 1*y.*
  6. When solving equations and inequalities, they may use the inverse operation on only one side and not the other or they may use the same operation rather than the inverse.

Essential Questions

- How can expressions with exponents be simplified? Why does this strategy work?
- What does it mean for expressions with variables to be equivalent?
- How can you determine if two or more expressions are equivalent? How can you generate equivalent expressions?

- What does it mean to find the solution to an equation?
- How can you use equations, tables and graphs to represent relationships between two variables?
- How can you represent solutions to inequalities?

Assessments

- Supporting and additional content standard SLOs are measured throughout the unit in a variety of ways (quizzes, exit tickets, check for understanding, journal entries, etc.)
- Common Benchmark as per district schedule

Key Vocabulary

- Algebraic expression
- Evaluate
- Expression
- Variable
- Formula
- Simplify
- Equivalent
- Inequality
- Inverse operations
- Distributive Property

Suggested Resources (list specific chapters and or page numbers from existing text that correspond to the SLOs and Standards)

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21st Century/ Interdisciplinary Themes: Bold all that apply	**21st Century Skills:** Bold all that apply

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Real world videos
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Online Assessments

Evidence of Student Learning

- Common benchmark
- Observation
- Evaluation rubrics
- Self-reflections
- Teacher-student conferences
- Running records
- Performance Tasks
- Unit tests
- Quizzes
- Homework
- Classwork

CRP Standards

CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills.
CRP3. Attend to personal health and financial well-being.
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.
CRP10. Plan education and career paths aligned to personal goals.
CRP11. Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

Lebanon Borough School
NJSLS Math Unit

Subject	Math	Grade	6	Unit #	4	Pacing	30 days
Unit Name	Geometry and Statistics						

Overview

Increase geometry knowledge by finding the area, perimeter, surface area and volume of a variety of shapes using many different methods in both real world and math contexts. Increase statistical knowledge by finding and analyzing the measures of central tendency and also by creating and analyzing a variety of graphs.

Standard #	Standard			Student Learning Objectives	
6.G.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.			Find the area of right triangles, other triangles, special quadrilaterals and polygons Use this knowledge to solve real world or mathematical problems.	
6.G.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.			Find the volume of a right rectangular prism with fractional edge lengths.	

6.G.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			Draw polygons in the coordinate plane given the coordinates of the vertices and use the coordinates to solve real world distance, perimeter, and area problems.	

	context of solving real-world and mathematical problems.				
6.G.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.			Represent three-dimensional figures using nets made of rectangles and triangles, and use the nets to find the surface area of the figures in the context of solving real world and mathematical problems.	
6.SP.1	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers			Calculate, compare, and interpret measures of center and variability in a data set to answer a statistical question. (Including median, mean, interquartile range, mean absolute deviation and overall pattern).	
6.SP.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.			(included in 6.SP.1 above)	
6.SP.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.			(included in 6.SP.1 above)	
6.SP.4	Display numerical data in plots on a Number line, including dot plots histograms, and box plots.			Display numerical data in plots on the number line (including dot plots, histograms, and box plots) and summarize in relation to their context.	

Science & Engineering	
4.1	Represent data in tables and/or various graphical displays (bar graphs, pictographs, and/or pie charts) to reveal patterns that indicate relationships.
4.2	Analyze and interpret data to make sense of phenomena, using logical reasoning and/or computation.

6.SP.5	Summarize numerical data sets in relation To their context, such as by: a. Reporting the number of observations. b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered			Describe and summarize numerical data. For example: the number of observations, how the attribute was measured, measures of central and the measures of variability.	

Big Ideas

- Finding volume, surface area, area and perimeter
- Comparing/contrasting shapes and they measurements/characteristics
- Finding measures of center and variability
- Creating shapes from other shapes and three dimensional shapes from two dimensional shapes
- Creating graphs from data
- Drawing shapes on the coordinate plane

Essential Questions

- How do I find and how can I use measurements in shapes both in math class and in the real world?
- How are shapes related?
- How can three dimensional shapes be made from two dimensional nets?
- What do the measures of central and variability tell me? How are they useful?

- How can I represent data in a variety of graphs?
- Why is data collected and analyzed? How can you make predictions based on data?

Assessments

- Common Benchmark as per district schedule

Key Vocabulary

Volume
Surface
Area Net
Interquartil
e Box Plot
Histogram
Mean
Median
Mode
Range
Line plot
Area
perimete
r

Suggested Resources (list specific chapters and or page numbers from existing text that correspond to the SLOs and Standards)

Go Math Resources

- Animated Math Models
- iTools
- Student Workbooks
- Mega Math
- Grab and Go Differentiated Center Kit
- Math Concept Readers
- ELL Lessons- as needed
- Enrichment Lessons- as needed
- Reteach Lessons- as needed
- Computer lessons
- Real world videos

DIFFERENTIATION			
Special Education	**ELL**	**I&RS**	**Enrichment**
• Provide modifications & accommodations as listed in the student's IEP • Position student near helping peer or have quick access to teacher • Modify or reduce assignments/tests • Reduce length of assignment for different mode of delivery • Increase one-to-one time • Utilize working contract between you and student at risk • Prioritize tasks • Provide manipulatives • Use graphic organizers • Use interactive math journals • Use online resources for skill building • Provide teacher notes • Use collaborative grouping strategies such small groups • NJDOE resources	• Use Spanish Resources • Provide text to speech for math problems • Use of translation dictionary or software • Implement strategy groups • Confer frequently • Provide graphic organizers • Modification plan • NJDOE resources • Adapt a Strategy-Adjusting strategies for ESL students	• Tiered Interventions following I&RS framework • I&RS Intervention Bank • Soar to success math • NJDOE resources • Math Lab • Utilize online resources such as www.tenmarks.com www.khanacademy.org	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher grade concepts • Contents should be modified: abstraction, complexity, variety, organization • Products should be modified: real world problems, audiences, deadlines, evaluation, transformations • Learning environment should be modified: student-centered learning, independence, openness, complexity, groups varied • Use of web based resources such as www.tenmarks.com www.khanacademy.org • NJDOE resources

CROSS CURRICULUR RESOURCES
Literacy in Mathematics: http://www.readwritethink.org/search/?resource_type=6&q=math&sort_order=relevance
NASA STEM Resources: http://www.nasa.gov/audience/foreducators/expeditions/stem/stem-math-index.html#.VFEILvTF-RM
K-12 STEM Educator and Career Resource: http://www.egfi-k12.org/

ALIGNMENT TO 21st CENTURY SKILLS AND TECHNOLOGY	
21st Century/ Interdisciplinary Themes: Bold all that apply	**21st Century Skills:** Bold all that apply

Global Awareness **Financial, Economic, Business and Entrepreneurial Literacy** Civic Literacy Health Literacy Environmental Literacy	Creativity & Innovation **Critical Thinking & Problem Solving** Communication & Collaboration Media Literacy Information Literacy **Information, Communication & Technology Life & Career Skills**

Technology Infusion

National Library of Virtual Manipulatives http://nlvm.usu.edu/en/nav/vlibrary.html
Math Resources for Technology https://drive.google.com/file/d/0B4Zh_BcwMUEMOFRfSXZpdW9Yams/view?usp=sharing
Smart Board Applications
Video podcasts
Carmen Sandiego
Real world videos
Animated math models
iTools
Multimedia eGlossary
Online Assessments

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