Hainesport Township School District
211 Broad Street Hainesport, NJ 08036

Course Title: Math Grade 6
Board of Education Adoption Date: January, 2017
Board of Education Re-adoption Date: 8/28/2018, 1/2/2024

District Administration

Joseph R. Corn, Superintendent
Ramon W. Santiago, Principal 5-8 & Curriculum and Instruction
Julia B.Wolfrom, Principal PreK-4 & Special Services
Alexander F. Fisher, Assistant Principal
Christopher C. DeSanto, Assistant Principal

Members of the Hainesport Township Board of Education

Larry Brandolph
Jason Cardonick
Melissa Carlton
Bianca Cuniglio
Jeffrey Duda
Kristin Jakubowski
Erin Minero
Jillian Ormsby
Jennifer Weres

Course Description and Concepts

A major goal of sixth grade mathematics is to provide students with a solid foundation for understanding numerical concepts as they move from elementary to middle school. Students in this course will develop both procedural skills and conceptual understanding leading to the application of mathematical concepts. Students will be encouraged to reason and to communicate with each other about skills and ideas in mathematics that lead to conceptual and computational development. Much effort is made to link learning to real life applications and to communicate, both verbally and in writing, about mathematics. Differentiated instruction is provided to meet the needs of all students.

By the end of Grade 6, students should be proficient in, connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; writing, interpreting, and using expressions and equations; and developing understanding of statistical thinking.

New Jersey Student Learning Standards Math

New Jersey Student Learning Standards for Mathematics

NJ Technology Standards

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and create and communicate knowledge.

8.2 Technology Education, Engineering, Design and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

Career Ready Practices

Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

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.

http://www.state.nj.us/education/cccs/2014/career/CareerReadyPractices.pdf

Pacing Guide

Unit Topic	Unit #	APX Unit Length
The Numbers System Numbers and Operations Fraction and Decimal Computation	I	8 weeks (38 days)
Expressions Equations and Inequalities Applications of Equations	II	9 weeks (41 days)

Ratios, Proportional Relationships, and Percents	III	7 weeks (28.5 days)
Graphing and Geometry	IV	5 weeks (23 days)
Statistics, Probability and Data Displays	V	5 weeks (25 days)

Math 6 Curriculum **Unit 1 (3 Parts)**	
Title: The Numbers System	
Subject: Math 6	**Length of Time:** 8 weeks (38 days)
Unit 1 Summary: Unit 1 Part 1 extends previous knowledge of integers students have to the system of rational numbers. Students will be exploring absolute value, comparing and ordering integers, and evaluate exponential form. Unit 1 Part 2 will explore factors and multiples allowing students to solve real world problems using factors and multiples. Unit 1 Part 3 will help students to further their understanding of fractions. They will fully understand the concept of division of fractions. They will model fraction problems and solve problems involving real world situations. Unit 1 Part 3 will also review long division, as well as make sure students have a strong understanding of decimal computation.	
Learning Targets	
PARCC ■ Major Clusters; ◘ Supporting Clusters; ○ Additional Clusters	

Standard #s:	Standards:
6.NS.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.
6.NS.2	Fluently divide multi-digit numbers using the standard algorithm.
6.NS.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
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 the common factor as a multiple of a sum of two whole numbers with no common factor.
6.NS.5	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g. temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
6.NS.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.7	Understand ordering and absolute value of rational numbers.
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 distance between two points with the same first coordinate or the same second coordinate.
Technology	
8.1.8.D.4	Assess the credibility and accuracy of digital content.

8.1.8.D.5	Understand appropriate uses for social media and the negative consequences of misuse.
8.2.8.C.1	Explain how different teams/groups can contribute to the overall design of a product.
Standards for Mathematical Practice	
Standard#:	**Standard:**
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.
Modifications	
Standards-based grading, reassessments, differentiate assignments, scaffold instruction, study guides, peer/teacher tutoring assistance, tiered assignments, modify pace, lesson tutorial videos, performance assessments, modified rubrics, assessment modified for IDEA, add enrichment activities, add extension activities to projects, challenge activities, etc.	
Interdisciplinary Connections	

Science, Social Studies, Language Arts, Art, and Technology
Integration of 21st Century Themes and Skills
21st Century Skills ● Financial, Economic, Business, and Entrepreneurial Literacy **21st Century Themes** ● Critical Thinking and Problem Solving ● Communication and Collaboration ● Life and Career Skills

Math 6 Curriculum **Unit 1 Part 1**	
Title: Numbers and Operations	
Subject: Math 6	**Length of Time:** 3 weeks (14 days)
Unit 1 Part 1 Summary: Unit 1 Part 1 extends previous knowledge of integers students have to the system of rational numbers. Students will be exploring absolute value, comparing and ordering integers, and evaluate exponential form.	
Learning Targets	
PARCC ■ Major Clusters; ▣ Supporting Clusters; ○ Additional Clusters	
Domain: The Number System	
Cluster: Apply and extend previous understandings of numbers to the system of rational numbers.	
Standard #s:	**Standards:**

6.NS.5	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
6.NS.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.7	Understand ordering and absolute value of rational numbers.
Domain: Expressions & Equations	
Cluster: Apply and extend previous understandings of arithmetic to algebraic expressions.	
Standard #s:	**Standards:**
6.EE.1	Write and evaluate numerical expressions involving whole-number exponents.

Unit 1 Part 1 Essential Questions: · How are opposite and negative numbers used in real-world contexts? · What is the difference between an integer and a rational number? · How do powers affect numbers?	**Unit 1 Part Enduring Understandings:** · More than integers are necessary to solve real-world applications. ie. negative, opposite, and rational numbers. · Powers can simplify numbers.

Unit 1 Part 1 Objectives:

· Students will become secure in the concepts of opposite numbers, negative numbers, and absolute value.

· Students will be able to compare and order integers and rational numbers.

· Students will practice and learn different powers.

Evidence of Learning	
Formative Assessments: · SMART Response questions used throughout the chapter. · 3 Quizzes	
Summative Assessment: · Cumulative Assessment · Engage NY Module Assessment	
Pacing Guide	
Topics	**Timeframe**
Topic #1: Addition, Natural Numbers & Whole Numbers (Not in HM textbook)	1 day
Topic #2 Addition Subtraction and Integers (1.5 Properties, 9.1 - Integers in HM textbook)	2 days
Topic #3: Multiplication, Division and Rational Numbers (1.5 Properties in HM textbook)	2 day
Topic #4: Absolute Value (9.1 in HM textbook) **Quiz #1**	1 day
Topic #5: Comparing Integers (9.2 in HM textbook)	1 day
Topic #6: Comparing and Ordering	2 days

Rational Numbers (9.2 in HM textbook) Lab: RAFT – Hi-Ho, Hi-Low **Quiz #2**	
Topic #7: Exponents (1.3 in HM textbook) **Quiz #3**	2 days
Topic #8: Real Numbers (Lesson 9.2 Lesson Extension introduces rational numbers in HM textbook)	1 day
Review and Assessment	2 days

Curriculum Development Resources:

https://njctl.org/courses/math/6th-grade-math/

http://www.raftbayarea.org/ideas/Hi%20Ho%20Hi%20Low.pdf

Hot Summer, Cold Winter (Yummymath) 6.NS.5, 6.NS.6, 6.NS.7

Which rides can you go on? (Robert)6-NS.7

Smallest & Largest (Fawn)6-NS.2,5,6 HYPERLINK "http://www.raftbayarea.org/ideas/Hi%20Ho%20Hi%20Low.pdf"

Math 6 Curriculum **Unit 1 Part 2**	
Title: Factors and Multiples	
Subject: Math 6	**Length of Time:** 2 weeks (9 days)
Unit 1 Part 2 Summary: Unit 1 Part 2 will explore factors and multiples allowing students to solve real world problems using factors and multiples.	

Learning Targets	
PARCC ■ Major Clusters; ◘ Supporting Clusters; ○ Additional Clusters	
Domain: The Number System	
Cluster: Compute fluently with multi-digit numbers and find common factors and multiples.	
Standard #s:	**Standards:**
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.
Unit 1 Part 2 Essential Question: · How do operations affect numbers? · How do we solve real world application problems?	**Unit 1 Part 2 Enduring Understanding:** · Factors and multiples can be used to solve real world problems.
Unit 1 Part 2 Objectives: · Students will explore even and odd numbers. · Students will review disability rules. · Students will use factors and multiples to find both GCFs and LCMs.	
Evidence of Learning	
Formative Assessments: · SMART Response questions used throughout the chapter. · 2 Quizzes	
Summative Assessment: · Cumulative Assessment	

Pacing Guide	
Topics	**Timeframe**
Topic #1: Even and Odd Numbers (Not in HM textbook)	1 day
Topic #2: Divisibility Rules for 3 and 9 (Not in HM textbook) **Quiz #1**	1 day
Topic #3: Greatest Common Factor (4.2 in HM textbook)	2 days
Topic #4: Least Common Multiple (5.1 in HM textbook)	2 days
Topic #5: GCF and LCM Word Problems (4.2 and 5.1 in HM textbook) **Quiz #2**	1 day
Review and Assessment	2 days
Curriculum Development Resources: · https://njctl.org/courses/math/6th-grade-math/	

Math 6 Curriculum Unit 1 Part 3	
Title: Fraction and Decimal Computation	
Subject: Math 6	**Length of Time:** 3 weeks (15 days)
Unit 1 Part 3 Summary: Unit 1 Part 3 will help students to further their understanding of fractions. They will fully understand the concept of division of fractions. They will model fraction problems and solve problems involving real world situations. Unit 1 Part 3 will also review long division, as well as make	

sure students have a strong understanding of decimal computation.	
Learning Targets	
PARCC ■ Major Clusters; ▣ Supporting Clusters; ○ Additional Clusters	
Domain: The Number System	
Cluster: Apply and extend previous understandings of multiplication and division to divide fractions by fractions	
Standard #:	**Standard:**
6.NS.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.
Cluster: Compute fluently with multi-digit numbers and find common factors and multiples.	
Standard #s:	**Standards:**
6.NS.2	Fluently divide multi-digit numbers using the standard algorithm.
6.NS.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
Unit 1 Part 3 Essential Question: · How do operations affect numbers? · How do we solve real world application problems? · What are the standard algorithms for long division and decimal computation?	**Unit 1 Part 3 Enduring Understanding:** · Decimal computation is necessary to solve real world application problems.
Unit Part 3 Objectives: · Students will model and solve division of fractions.	

· Students will review long division. · Students will practice and learn the standard algorithms for decimal computation. · Students will solve real world application problems with decimals.
Evidence of Learning
Formative Assessments: · SMART Response questions used throughout the chapter. · 5 Quizzes
Summative Assessment: · Cumulative Assessment

Pacing Guide

Topics	Timeframe
Topic #1: Fraction Division (Hands on Lab p. 216 and 218, 5.6 in HM textbook) **Quiz #1**	3 days
Topic #2: Long Division Review (1.2 in HM textbook) **Quiz #2**	2 days
Topic #3: Adding Decimals (3.3 in HM textbook)	1 day
Topic #4: Subtracting Decimals (3.3 in HM textbook) **Quiz #3**	1 day
Topic #5: Distributive Property & Product of Decimals (1.5 in HM textbook)	1 day
Topic #6: Multiplying Decimals (3.4 in HM textbook)	2 days

Lab: RAFT – Dizzy Decimals & More **Quiz #4**	
Topic #7: Dividing Decimals (Terminating) (3.5 and 3.6 dividing decimals, terminating decimals 4.4 in HM textbook)	1 day
Topic #8: Dividing Decimals (Repeating) (3.5 and 3.6 dividing decimals, repeating decimals 4.4 in HM textbook) **Quiz #5**	1 day
Lab: RAFT – The Money You Will Save	1 day
Review and Cumulative Assessment	2 days
Curriculum Development Resources: https://njctl.org/courses/math/6th-grade-math/ http://www.raftbayarea.org/ideas/Dizzy%20Decimals%20and%20More.pdf http://www.raftbayarea.org/ideas/Money%20You%20Will%20Save.pdf How tall is Mini-me? (Robert Kaplinsky) 6.NS.1, 6.NS.3 Pennies to Heaven (Illustrative Mathematics) 6.NS.3	

Math 6 Curriculum **Unit 2 (3 Parts)**	
Title: Expressions and Equations	
Subject: Math 6	**Length of Time:** 9 weeks (41 days)
Unit 2 Summary: Unit 2 Part 1 will introduce students to the concepts of powers and order of operations. Students will explore algebraic expressions, as well the use of the distributive property and to combine like terms. Unit 2 Part 2 will allow students to learn about inequalities. They will solve inequalities and	

equations using different operations. They will discover how to write, solve, and graph simple inequalities themselves. Unit 2 Part 3 focuses on number fluency and facility with what numbers represent. Students will explore how numbers are related to each other and how each can best be used to describe a particular situation.

Learning Targets

PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters

Standard #s:	**Standards:**
6.EE.1	Write and evaluate numerical expressions involving whole-number exponents.
6.EE.2	Write, read, and evaluate expressions in which letters stand for numbers.
6.EE.2a	Write expressions that record operations with numbers and with letter standing for numbers.
6.EE.2b	Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient; view one or more parts of an expression as a single entity.
6.EE.2c	Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there is no parenthesis to specify a particular order (Order of Operations).
6.EE.3	Apply the properties of operations to generate equivalent expressions.
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).
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 determine whether a given number is 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.
6.EE.7	Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for classes in which p, q and x are all nonnegative 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 of such inequalities on number line diagrams.
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.
Standards for Math Practice	
Standard#:	**Standard:**
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.
Modifications	
Standards-based grading, reassessments, differentiate assignments, scaffold instruction, study guides, peer/teacher tutoring assistance, tiered assignments, student choice, modify pace, lesson tutorial videos, performance assessments, modified rubrics, assessment modified for IDEA, add enrichment activities, add extension activities to projects, challenge activities	

Interdisciplinary Connections
Science, Language Arts, and Technology
Integration of 21st Century Themes and Skills
21st Century Skills · Financial, Economic, Business, and Entrepreneurial Literacy **21st Century Themes** · Critical Thinking and Problem Solving · Communication and Collaboration · Life and Career Skills

Math 6 Curriculum **Unit 2 Part 1**	
Title: Expressions	
Subject: Math 6	**Length of Time:** 3 weeks (13 days)
Unit 3 Part 1 Summary: Unit 3 Part 1 will introduce students to the concepts of powers and order of operations. Students will explore algebraic expressions, as well the use of the distributive property and to combine like terms.	
Learning Targets	
PARCC ■ Major Clusters; ◘ Supporting Clusters; ○ Additional Clusters	
Domain: Expressions & Equations	
Cluster: Apply and extend previous understandings of arithmetic to algebraic expressions.	
Standard #s:	**Standards:**
6.EE.1	Write and evaluate numerical expressions involving whole-number exponents.

6.EE.2	Write, read, and evaluate expressions in which letters stand for numbers.
6.EE.3	Apply the properties of operations to generate equivalent expressions.
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).
Cluster:	**Reason about and solve one-variable equations and inequalities.**
Standard #:	**Standard:**
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.

Unit 3 Part 1 Essential Question: · How do powers affect numbers? · How can order of operations, the distributive property, and combining like terms help solve an algebraic equation? · How can an algebraic expression help me solve a real-world application problem?	**Unit 3 Part 1 Enduring Understanding:** · Powers can simplify computation. · Algebraic expressions and equations can help solve real-world application problems.

Unit 3 Part 1 Objectives:

· Students will practice and learn different powers.
· Students will solve problems using order of operations.
· Students will differentiate between an algebraic expression and equation.
· Students will translate between words and expressions.
· Students will be able to evaluate expressions.
· Students will use the distributive property to combine like terms.

Evidence of Learning

Formative Assessments:

· Questioning strategies used throughout the unit.
· 5 Quizzes

Summative Assessment:

· Cumulative Assessment

Pacing Guide	
Topics	**Timeframe**
Topic #1: Mathematical Expressions (2.1 in HM textbook)	1 day
Topic #2: Order of Operations (1.4 in HM textbook) Lab: RAFT – Algebraic Horse **Quiz #1**	2 days
Topic #3: The Distributive Property (1.5 in HM textbook) Lab: RAFT – Simple Expressions Bingo	2 days
Topic #4: Combining Like Terms (SB9 in HM textbook) Lab: RAFT – Algebra Rummy **Quiz #2**	2 days
Topic #5: Translating between Words and Expressions (2.2 in HM textbook) **Quiz #3**	2 days
Topic #6: Evaluating Expressions **Quiz #4**	2 days
Review and Cumulative Assessment	2 days
Curriculum Development Resources: · https://njctl.org/courses/math/6th-grade-math/ · http://www.raftbayarea.org/ideas/Algebraic%20Horse.pdf · http://www.raftbayarea.org/ideas/Simple%20Expressions%20Bingo.pdf · HYPERLINK "http://www.raftbayarea.org/ideas/Algebra%20Rummy.pdf" http://www.raftbayarea.org/ideas/Algebra%20Rummy.pdf	

Title: Applications of Equations	
Subject: Math 6	**Length of Time:** 3 weeks (13 days)
Unit 3 Part 3 Summary: Unit 3 Part 3 focuses on number fluency and facility with what numbers represent. Students will explore how numbers are related to each other and how each can best be used to describe a particular situation.	

Learning Targets	
PARCC ■ Major Clusters; ◘ Supporting Clusters; ○ Additional Clusters	
Domain: The Number System	
Cluster: Represent and analyze quantitative relationships between dependent and independent variables.	
Standard #:	**Standard:**
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.
Unit 3 Part 3 Essential Questions: · How can How can equations, tables, and graphs be used to represent real-life scenarios?	**Unit 3 Part 3 Enduring Understandings:** · When the value of one variable depends on the value of another, it is called a dependent variable; when the value of one variable does not depend on the value of the other, it is called an independent variable. · A table can show the relationship between a dependent and independent variable.
Unit 3 Part 3 Objectives: · Students will differentiate between dependent and independent variables. · Students will represent the relationship between dependent and independent variables, found in real-life scenarios, with equations, tables, and graphs.	
Evidence of Learning	
Formative Assessments: · Questioning strategies used throughout the unit. · 3 Quizzes	
Summative Assessment: · Cumulative Assessment	

Pacing Guide	
Topics	**Timeframe**
Topic #1: Translating to Equations (10.1 in HM textbook) Lab: RAFT – Meet my Function Machine	1 day
Topic #2: Dependent and Independent Variables (10.1 in HM textbook) **Quiz #1**	4 days
Topic #3: Equations and Tables (10.1 in HM textbook) **Quiz #2**	3 days
Topic #4: Graphing Equations (10.2 in HM textbook) **Quiz #3**	3 days
Review and Cumulative Assessment	2 days
Curriculum Development Resources: · https://njctl.org/courses/math/6th-grade-math/ · HYPERLINK "http://www.raftbayarea.org/ideas/Meet%20My%20Function%20Machine.pdf" http://www.raftbayarea.org/ideas/Meet%20My%20Function%20Machine.pdf	

Math 6 Curriculum Unit 2 Part 2	
Title: Equations and Inequalities	
Subject: Math 6	**Length of Time:** 3 weeks (15 days)
Unit 3 Part 2 Summary: Unit 3 Part 2 will allow students to learn about inequalities. They will solve inequalities and equations using different operations. They will discover how to write, solve, and graph simple inequalities themselves.	

Learning Targets	
PARCC ■ Major Clusters; ◘ Supporting Clusters; ○ Additional Clusters	
Domain: Expressions & Equations	
Cluster: Reason about and solve one-variable equations and inequalities.	
Standard #s:	**Standards:**
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 determine whether a given number in a specified set makes an equation or inequality true.
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.
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.

Unit 3 Part 2 Essential Question:	**Unit 3 Part 2 Enduring Understanding:**
· How are inequalities different than equality equations? · How will inequalities help model real world problems?	· Inequalities are used in real world problems. · Inequalities can be modeled using number lines and solved using different operations · Inequalities are manipulated similarly to equality equations.

Unit 3 Part 2 Objectives:

- Students will be able to determine solutions to different types of equations.
- Students will identify and manipulate inverse equations using different operations.
- Students will solve one step addition, subtraction, multiplication, and division equations.
- Students will write and solve simple inequalities.
- Students will develop the knowledge of how to graph solution sets to simple inequalities.

Evidence of Learning
Formative Assessments:

· Questioning strategies used throughout the unit. · 6 Quizzes
Summative Assessment: · Cumulative Assessment

Pacing Guide	
Topics	**Timeframe**
Topic #1: Equations and Identities (2.4 in HM textbook)	0.25 day
Topic #2: Tables (2.3 in HM textbook)	0.25 day
Topic #3: Determining Solutions to Equations (2.4 in HM textbook)	0.5 day
Topic #4: Inverse Operations **Quiz #1**	2 days
Topic #5: Solving One Step Addition & Subtraction Equations (2.5 and 2.6 in HM textbook) **Quiz #2**	2 days
Topic #6: Solving One Step Multiplication & Division Equations (2.7 and 2.8 in HM textbook) Lab: RAFT – Occasions for an Equation **Quiz #3**	2 days
Topic #7: Writing Equations (Builds off of 2.2 in HW textbook) **Quiz #4**	2 days
Topic #8: Writing Simple Inequalities (10.4 in HW textbook)	1 day
Topic #9: Solutions to Simple Inequalities (10.4 in HW textbook) **Quiz #5**	1 days
Topic #10: Graphing Solution Sets to Simple Inequalities (10.4 in HW textbook)	2 days

Quiz #6	
Review and Cumulative Assessment	2 days
Curriculum Development Resources: https://njctl.org/courses/math/6th-grade-math/ http://www.raftbayarea.org/ideas/Occasions%20for%20an%20Equation.pdf Edges, Faces, and Vertices (Avery)6-EE.2, 5,6,7 Log Ride (Illustrative Mathematics)6-EE.5 Firefighter Allocation (Illustrative Mathematics)6-EE.6,7 Morning Walk (Illustrative Mathematics)6-EE.7 Fishing Adventures (Illustrative Mathematics)6-EE.8 HYPERLINK "http://www.raftbayarea.org/ideas/Occasions%20for%20an%20Equation.pdf"	

Math 6 Curriculum **Unit 2 Part 3**	
Title: Applications of Equations	
Subject: Math 6	**Length of Time:** 3 weeks (13 days)
Unit 3 Part 3 Summary: Unit 3 Part 3 focuses on number fluency and facility with what numbers represent. Students will explore how numbers are related to each other and how each can best be used to describe a particular situation.	
Learning Targets	
PARCC ■ Major Clusters; ▣ Supporting Clusters; ○ Additional Clusters	
Domain: The Number System	
Cluster: Represent and analyze quantitative relationships between dependent and independent variables.	
Standard #:	**Standard:**
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.

Unit 3 Part 3 Essential Questions: · How can How can equations, tables, and graphs be used to represent real-life scenarios?	**Unit 3 Part 3 Enduring Understandings:** · When the value of one variable depends on the value of another, it is called a dependent variable; when the value of one variable does not depend on the value of the other, it is called an independent variable. · A table can show the relationship between a dependent and independent variable.

Unit 3 Part 3 Objectives:

· Students will differentiate between dependent and independent variables.

· Students will represent the relationship between dependent and independent variables, found in real-life scenarios, with equations, tables, and graphs.

Evidence of Learning

Formative Assessments:

· Questioning strategies used throughout the unit.

· 3 Quizzes

Summative Assessment:

· Cumulative Assessment

Pacing Guide

Topics	Timeframe
Topic #1: Translating to Equations (10.1 in HM textbook) Lab: RAFT – Meet my Function Machine	1 day
Topic #2: Dependent and Independent Variables (10.1 in HM textbook) **Quiz #1**	4 days

Topic #3: Equations and Tables (10.1 in HM textbook) **Quiz #2**	3 days
Topic #4: Graphing Equations (10.2 in HM textbook) **Quiz #3**	3 days
Review and Cumulative Assessment	2 days

Curriculum Development Resources:

- https://njctl.org/courses/math/6th-grade-math/
- HYPERLINK "http://www.raftbayarea.org/ideas/Meet%20My%20Function%20Machine.pdf" http://www.raftbayarea.org/ideas/Meet%20My%20Function%20Machine.pdf

Math 6 Curriculum
Unit 3 (1 Part)

Title: Ratios, Proportional Relationships, and Percents	
Subject: Math 6	**Length of Time:** 7 weeks (28.5 days)
Unit 2 Summary: Unit 2 will formally introduce the concepts of ratios, proportions, and percent problems. Students will review the definitions about ratios, develop a sense of converting between different measurements, and work with unit rate problems. They will then be able to solve problems involving percents and use that knowledge in real-world situations involving percents.	
Learning Targets	
PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters	
Domain: Ratios and Proportional Relationships	
Cluster: Understand ratio concepts and use ratio reasoning to solve problems.	
Standard #s:	**Standards:**
6.RP.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."
6.RP.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. 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.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.

6.RP.3a	Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
6.RP.3b	Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?
6.RP.3c	Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
6.RP.3d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities
Standards for Mathematical Practice	
Standard#:	**Standard:**
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.

Unit 2 Essential Question: ● Is it important to know how to solve for unit rates? ● What is the connection between a ratio and a fraction/decimal? ● How are ratios used in the real world? ● Where can examples of ratios and rates be found? ● What does a percent represent? ● How can knowledge about percents aid me in real-world situations?	**Unit 2 Enduring Understanding:** ● Reasoning about ratios and proportions will help solve real-world situations. ● The relationships between fractions, decimals, and percents are critical and needed to solve problems.

Unit 2 Objectives:

- Students will be able to use ratios to describe proportional situations.
- Students will be able to represent ratios and percents with concrete models, fractions, and decimals.
- Students will be able to apply their knowledge of rations and proportions to percent problems.
- Students will be able to solve problems involving percents.
- Students will be able to make conversions between different measurements and unit ratios.

Evidence of Learning

Formative Assessments:

- Response questions used throughout the chapter.
- Quizzes

Summative Assessment:

- Cumulative Assessment

Pacing Guide

Topics	Timeframe
Topic #1: Writing Ratios Lab: RAFT – Salmon You Can Count On (7.1 in HM textbook)	2 days
Topic #2: Equivalent Ratios (7.2 in HM textbook) **Quiz #1**	3 days
Topic #3: Rates & Unit Rates Lab: RAFT – Happy Trails Mix (7.1 in HM textbook)	3 days
Lab: Design on a Dime Project	2.5 days
Topic #4: Using Ratios to Convert Measurements (8.1 and 8.2 in HM textbook) **Quiz #2**	3 days

Topic #5: Converting Unit Ratios (8.1 and 8.2 in HM textbook) **Quiz #3**	3 days
Topic #6: Percents & Fractions (7.5 and 7.6 in HM textbook)	3 days
Topic #7: Percents & Decimals (7.5 and 7.6 in HM textbook) **Quiz #4**	2 days
Topic #8: Using Percents (7.5 and 7.6 in HM textbook) **Quiz #5**	3 days
Lab: Orange Soda Experiment	3 days
Review and Cumulative Assessment	2 days

Curriculum Development Resources:

- https://njctl.org/courses/math/6th-grade-math/
- http://www.raftbayarea.org/ideas/Salmon%20You%20Can%20Count%20On.pdf
- http://www.raftbayarea.org/ideas/Happy%20Trails%20Mix.pdf
- Partial Product (Dan)6-RP.2
- The Bone Collector (Dan)6-RP.2
- Amazon Percent Discount (Dan)6-RP.3
- Super Bear (Dan)6-RP.3
- Sugar Packets (Dan) 6-RP.3
- Which carrots should you buy? (Robert)6-RP.2,3
- Coke v. Sprite (Dan)6-RP.3
- Nana's Chocolate Milk (Dan) 6-RP.3
- Finals Week (Dan)6-RP.2
- The Pluto Files (Geoff) 6-RP.2,3
- Bolt (Dan)6-RP.3
- Shower v. Bath (Dan)6-RP.
- Speed of Light (Dan)6-RP.3
- New-Tritional Info (Mathalicious) 6.RP.2, 6.NS.3

Modifications

Standards-based grading, reassessments, differentiate assignments, scaffold instruction, study guides, peer/teacher tutoring assistance, tiered assignments, modify pace, lesson tutorial videos, performance assessments, modified rubrics, assessment modified for IDEA, add enrichment activities, add extension activities to projects, challenge activities, etc.

Interdisciplinary Connections

Science, Social Studies, Language Arts, and Technology
Integration of 21st Century Themes and Skills
21st Century Skills ● Financial, Economic, Business, and Entrepreneurial Literacy **21st Century Themes** ● Critical Thinking and Problem Solving ● Communication and Collaboration ● Life and Career Skills HYPERLINK "http://www.raftbayarea.org/ideas/Graphing%20Race%20to%20the%20Edge.pdf"

Math 6 Curriculum **Unit 4 (2 Parts)**	
Title: Graphing and Geometry	
Subject: Math 6	**Length of Time:** 5 weeks (23 days)
Unit 4 Summary: Unit 4 Part 1 introduces all four quadrants of the Cartesian plane and ordered pairs. Polygons will also be displayed on coordinate planes. Unit 4 Part 2 will allow students to explore how to find the area of different figures. They will be introduced to 3-Dimensional figures, as well as learn to calculate their surface area and volume. Polygons will also be displayed on coordinate planes and irregular figures will be examined.	
Learning Targets	
PARCC ■ Major Clusters; ◘ Supporting Clusters; ○ Additional Clusters	

Domain: Geometry	
Cluster: Solve real-world and mathematical problems involving area, surface area, and volume.	
Standard #s:	**Standards:**
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.
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.
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 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.
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 coordinate or the same second coordinate.
Technology	
8.2.8.A.4	Redesign an existing product that impacts the environment to lessen its impact (s) on the environment.
8.2.8.A.5	Describe how resources such as material, energy, information, time, tools, people, and capital contribute to a technological product or system.
8.2.8.C.5.a	Create a technical sketch of a product with materials and measurements labeled.
8.2.8.C.8	Develop a proposal for a chosen solution that include models (physical, graphical, or mathematical) to communicate the solution to peers.
8.2.8.D.1	Design and create a product that addresses a real world problem using a design process under specific constraints.
Standards for Math Practice	
Standard#:	**Standard:**

MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.

Modifications

Standards-based grading, reassessments, differentiate assignments, scaffold instruction, study guides, peer/teacher tutoring assistance, tiered assignments, student choice, modify pace, lesson tutorial videos, performance assessments, modified rubrics, assessment modified for IDEA, add enrichment activities, add extension activities to projects, challenge activities

Interdisciplinary Connections

Science, Social Studies, Art, Language Arts, and Technology

Integration of 21st Century Themes and Skills

21st Century Skills

- Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Themes

- Critical Thinking and Problem Solving
- Communication and Collaboration

· Life and Career Skills

Math 6 Curriculum **Unit 4 Part 1**	
Title: Graphing	
Subject: Math 6	**Length of Time:** 1 week (5 days)
Unit 4 Part 1 Summary: Unit 4 Part 1 introduces all four quadrants of the Cartesian plane and ordered pairs. Polygons will also be displayed on coordinate planes.	
Learning Targets	
PARCC ■ Major Clusters; ◘ Supporting Clusters; ○ Additional Clusters	
Domain: The Number System	
Cluster: Apply and extend previous understandings of numbers to the system of rational numbers.	
Standard #s:	**Standards:**
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 coordinate or the same second coordinate.
Domain: Geometry	
Cluster: Solve real-world and mathematical problems involving area, surface area, and volume.	
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 context of solving real-world and mathematical problems.
Unit 4 Part 1 Essential Question: · What is the Cartesian plane and what does an ordered pair represent?	**Unit 4 Part 1 Enduring Understanding:** · The Cartesian plane and ordered pairs can be utilized to represent real world application problems.
Unit 4 Part 1 Objectives: · Students will recognize the different parts of the Cartesian plane.	

- Students will practice and learn how to graph an ordered pair.
- Students will examine polygons in the coordinate plane.
- Students will solve problems involving distance between two points.

Evidence of Learning

Formative Assessments:

- Questioning strategies used throughout the unit.
- 2 Quizzes

Summative Assessment:

- Cumulative Assessment

Pacing Guide

Topics	Timeframe
Topic #1: Cartesian Plane (9.3 in HM textbook)	0.5 day
Topic #2: Graphing Ordered Pairs (9.3 in HM textbook) Lab: RAFT – Graphing Race to the Edge **Quiz #1**	1.5 days
Topic #3: Polygons in the Coordinate Plane (9.4 in HM textbook)	1 day
Topic #4: Cartesian Plane Applications (9.3 in HM textbook) **Quiz #2**	1 day
Review and Cumulative Assessment	1 day

Curriculum Development Resources:

- https://njctl.org/courses/math/6th-grade-math/
- HYPERLINK "http://www.raftbayarea.org/ideas/Graphing%20Race%20to%20the%20Edge.pdf"

http://www.raftbayarea.org/ideas/Graphing%20Race%20to%20the%20Edge.pdf

Math 6 Curriculum
Unit 4 (Part 2)

Title: Geometry	
Subject: Math 6	**Length of Time:** 4 weeks (18 days)
Unit 4 Part 2 Summary: Unit 4 Part 2 will allow students to explore how to find the area of different figures. They will be introduced to 3-Dimensional figures, as well as learn to calculate their surface area and volume. Polygons will also be displayed on coordinate planes and irregular figures will be examined.	
Learning Targets	
PARCC ■ Major Clusters; ◘ Supporting Clusters; ○ Additional Clusters	
Domain: Geometry	
Cluster: Solve real-world and mathematical problems involving area, surface area, and volume.	

Standard #s:	**Standards:**
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.
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.
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 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.

Unit 4 Part 2 Essential Question: · How is the area of a figure calculated?	**Unit 4 Part 2 Enduring Understanding:** · The area of different figures can be calculated using different, yet similar

· 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?	formulas. · 3-Dimensional solids have unique properties and characteristics. · Surface area and volume can be calculated using formulas. · Polygons can be represented in a coordinate plane.

Unit 4 Part 2 Objectives:

· Students will calculate the area of rectangles, parallelograms, triangles, and trapezoids.
· Students will solve for the area of irregular figures and shaded regions.
· Students will be introduced to 3-Dimensional solids.
· Students will determine the surface area and volume of different solids.
· Students will examine polygons in the coordinate plane .

Evidence of Learning

Formative Assessments:

· Questioning strategies used throughout the unit.
· 8 Quizzes

Summative Assessment:

· Cumulative Assessment

Pacing Guide

Topics	Timeframe
Topic #1: Area of Rectangles (8.3 in HM textbook) Lab (to review): RAFT – Polygon Pursuit	0.5 day
Topic #2: Area of Parallelograms (8.3 in HM textbook) **Quiz #1**	0.5 day
Topic #3: Area of Right Triangles (8.4 in HM textbook) Lab: Area of Right Triangles Exploratory Challenge	1 day

Topic #4: Area of Acute and Obtuse Triangles (8.4 in HM textbook) Lab: Area of Acute and Obtuse Exploratory Challenge	1 day
Topic #4: Area of Trapezoids (8.4 in HM textbook)	1 day
Topic #5 Mixed Review: Area **Quiz #2**	1 day
Topic #6: Area of Irregular Figures (8.5 in HM textbook)	1 day
Topic #7: Area of Shaded Regions (Not in HM textbook) **Quiz #3**	1 day
Topic #8: 3-Dimensional Solids Lab: RAFT – Shape Skeletons **Quiz #4**	1 day
Topic #9: Nets (Hands on Lab p. 372 and 8.7 in HM textbook) Lab: Nets Exploratory Challenge Lab	1 day
Topic #10: Surface Area (8.7 in HM textbook) **Quiz #5**	2 days
Topic #11: Volume (Hands on Lab p. 366 and 8.6 in HM textbook) Lab: RAFT – Chewed Food **Quiz #6**	1 day
Topic #12: Surface Area & Volume Application Problems **Quiz #7**	2 days
Topic #13: More Polygons in the Coordinate Plane **Quiz #8**	2 days
Review and Cumulative Assessment	2 days
Curriculum Development Resources:	

- https://njctl.org/courses/math/6th-grade-math/
- http://www.raftbayarea.org/ideas/Polygon%20Pursuit.pdf
- http://www.raftbayarea.org/ideas/Shape%20Skeletons.pdf
- http://www.raftbayarea.org/ideas/Chewed%20Food.pdf
- http://www.engageny.org/sites/default/files/resource/attachments/math-g6-m5-teacher-materials.pdf
- Hexagon Heirarchy (Christopher)6.G.1,3
- Burn Area and Perimeter (Firefighter Math)6.G.1,3
- anana Bread (Illustrative Mathematics)6.G.2
- Dollar Wall (6.G.1Dan)
- Irregular Shape Math Hunt (Julie)6.G.1
- Fruit Boxes (MARS) 6.G.2,4
- Smoothie Box (MARS) 6.G.2,4
- Candle Boxes (MARS) 6.G.2,4
- Bubble Wrap (Dan)6.G.1
- Designing: Candy Cartons (MARS).G.1,4
- California Wildfires (Yummymath) 5.NF, 6.RP.3, 6.G.1, 7.RP.3, 7.G.1 *Project HYPERLINK "http://www.engageny.org/sites/default/files/resource/attachments/math-g6-m5-teacher-materials.pdf"

Math 6 Curriculum
Unit 5 (2 Parts)

Title: Statistics, Probability and Data Displays	
Subject: Math 6	**Length of Time:** 5 weeks (25 days)
Unit 5 Summary: In this chapter the students will explore and understand mean, median, and mode. The students will then strengthen their understanding by working through some application problems. Then students will review the vocabulary dealing with measurements of variation such as, max, min, range and quartiles.	
Learning Targets	
PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters	
Standard #s:	**Standards:**
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. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.
6.SP.2	Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
6.SP.3	Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
6.SP.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
6.SP.5	Summarize numerical data sets in relation to their context, such as by:
6. SP.5a	Reporting the number of observations.
6.SP.5b	Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.

6.SP.5c	Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
6.SP.5d	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.
Technology	
8.1.8.A.4	Graph and calculate data within a spreadsheet and present a summary of the results
8.1.8.A.5	Create a database query, sort and create a report and describe the process, and explain the report results.
Standards for Math Practice	
Standard#:	**Standard:**
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.
Modifications	

Standards-based grading, reassessments, differentiate assignments, scaffold instruction, study guides, peer/teacher tutoring assistance, tiered assignments, student choice, modify pace, lesson tutorial videos, performance assessments, modified rubrics, assessment modified for IDEA, add enrichment activities, add extension activities to projects, challenge activities

Interdisciplinary Connections

Science, Social Studies, Art, Language Arts, and Technology

Integration of 21st Century Themes and Skills

21st Century Skills

Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Themes

Critical Thinking and Problem Solving

Communication and Collaboration

Life and Career Skills

Math 6 Curriculum
Unit 5 Part 1

Title: Statistical Variability

Subjectl: Math 6 | **Length of Time:** 3 weeks (15 days)

Unit 5 Part 1 Summary: In Unit 5 Part 1 the students will explore and understand mean, median, and mode. The students will then strengthen their understanding by working through some application problems. Then students will review the vocabulary dealing with measurements of variation such as, max, min, range and quartiles. In Unit 5 Part 2 chapter students will explore the different ways to display data, through plots, graphs, and charts.

Learning Targets

PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters

Domain: Statistics and Probability

Cluster: Develop understanding of statistical variability	
Standard #s:	**Standards:**
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. For example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical question because one anticipates variability in students’ ages.
6.SP.2	Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape
6.SP.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.
Cluster: Summarize and describe distributions.	
Standards #s:	**Standards:**
6.SP.5	Summarize numerical data sets in relation to their context, such as by: 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.

Unit 5 Part 1 Essential Question:	**Unit 5 Part 1 Enduring Understanding:**
· What are the ways to organize, measure, and display data?	· Measurements of center and variation are essential to analyze data.

Unit 5 Part 1 Objectives:

· Students will review the vocabulary for measurements of center.

· Students will practice and strengthen their understanding of measurements of center by working through application problems

· Students will review vocabulary for measurements of variation such as min/max, range, quartiles, outliers, and mean absolute deviation.
Evidence of Learning
Formative Assessments: · Questioning strategies used throughout the unit. · 3 Quizzes
Summative Assessment: · Cumulative Assessment

Pacing Guide

Topics	Timeframe
Unit Intro: What is Statistics?	1 day
Topic #1: Measures of Center (Mean, Median, Mode) (6.1 in HM textbook) **Quiz #1**	3 days
Topic #2: Central Tendency Application Problems (6.1 and 6.2 in HM textbook) **Quiz #2**	4 days
Topic #3: Measures of Variation (Min-Max, Range, Quartiles, Outliers, Mean Absolute Deviation) (6.3 in HM textbook) Lab: RAFT – Medi, Meany, Midi, Mode Lab: RAFT – Who is the Outlier **Quiz #3**	5 days
Review and Cumulative Assessment	2 days

Curriculum Development Resources:

· https://njctl.org/courses/math/6th-grade-math/
· http://www.raftbayarea.org/ideas/Medi%20Meany%20Midi%20Mode.pdf
· HYPERLINK "http://www.raftbayarea.org/ideas/Who%20is%20The%20Outlier.pdf" http://www.raftbayarea.org/ideas/Who%20is%20The%20Outlier.pdf

Math 6 Curriculum Unit 5 Part 2	
Title: Data Displays	
Subject: Math 6	**Length of Time:** 2 weeks (10 days)
Unit 5 Part 2 Summary: In Unit 5 Part 2 chapter students will explore the different ways to display data, through plots, graphs, and charts.	
Learning Targets	
PARCC ■ Major Clusters; ▣ Supporting Clusters; ○ Additional Clusters	
Domain: Statistics and Probability	
Cluster: Summarize and describe distributions.	
Standards #s:	**Standards:**
6.SP.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
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.
Unit 5 Part 2 Essential Question: · What are the ways to organize, measure, and display data?	**Unit 5 Part 2 Enduring Understanding:** · Measurements of center and variation are Data displays are essential in organizing data.
Unit 5 Part 2 Objectives: · Students will practice and strengthen their understanding of measurements of center by working through application problems · Students will explore and understand the different ways to display data	

Evidence of Learning	
Formative Assessments: · Questioning strategies used throughout the unit. · 3 Quizzes	
Summative Assessment: · Cumulative Assessment	
Lesson Plan	
Topics	**Timeframe**
Topic #1: Data Displays	1 day
Topic #2: Frequency Tables and Histograms (6.4 Histograms and extension p. 264 in HM textbook) **Quiz #1**	2 days
Topic #3: Box-and-Whisker Plots (6.3 in HM textbook) **Quiz #2**	2 days
Topic #4: Dot Plots (6.4 in HM textbook)	1 days
Topic #5: Analyzing Data Displays (6.5 in HM textbook) **Quiz #3**	2 days
Review and Cumulative Assessment	2 days
Curriculum Development Resources: · https://njctl.org/courses/math/6th-grade-math/ · http://www.raftbayarea.org/ideas/Medi%20Meany%20Midi%20Mode.pdf · HYPERLINK "http://www.raftbayarea.org/ideas/Who%20is%20The%20Outlier.pdf" http://www.raftbayarea.org/ideas/Who%20is%20The%20Outlier.pdf	