Hainesport Township School District
211 Broad Street Hainesport, NJ 08036

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

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Course Description and Concepts

This course is offered to students who have shown the ability to reason and analyze concepts at a high-level of thinking with more independence. Some concepts taught are: whole numbers, fractions, decimals, percents, estimation, integers, probability, the coordinate system, and problem solving including geometry and reasoning skills. This course will prepare students to apply the concepts to real-world situations and understand abstract ideas.

Advanced Math 6 Placement Criteria

To be considered for advanced math, students must score at least 4 out of 6 possible points based upon the following criteria:

CRITERIA	SCORE RANGE	POINTS EARNED
MATH 5 FINAL GRADE AVERAGE	97-100%	2 points
	93-96%	1 point
	Less than 93%	0 points
MATHEMATICS PARCC SCORE	Level 5	2 points
	Level 4	1 point
	Levels 1 - 3	0 points
MATHEMATICS READINESS ASSESSMENT	90-100%	2 points
	80-89%	1 point
	Less than 80%	0 points

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 Number System	I	9 weeks (41 days)
Ratios, Proportional Relationships, and Percents	II	6 weeks (25.5 days)
Expressions and Equations	III	9 weeks (41 days)
Graphing and Geometry	IV	5 weeks (23 days)
Statistics, Probability and Data Displays	V	5 weeks (25 days)

Advanced Math 6 Curriculum **Unit 1 (3 Parts)**	
Title: The Number System	
Subject: Advanced Math 6 (Combine materials from 6th and 7th Grades)	**Length of Time:** 9 weeks (41 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. They will explore rational numbers and perform numerous operations using them. They will add, subtract, multiply, and divide rational numbers when solving equations. They will also extend their knowledge of rational numbers to decimals and real world applications. 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.
Accelerated 7.NS.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
Accelerated 7.NS.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
Accelerated 7.NS.3	Solve real-world and mathematical problems involving the four operations with rational numbers. Computations with rational numbers extend the rules for manipulating fractions to complex fractions.
Technology 8.1.8.D.1	Understand and model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics including appropriate use of social media.
Technology 8.1.8.D.4	Assess the credibility and accuracy of digital content
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

Advanced Math 6 Curriculum

Unit 1 Part 1	
Title: Numbers and Operations	
Subject: Advanced Math 6 (Combine resources from 6th and 7th grades.)	**Length of Time:** 5 weeks (23 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. They will explore rational numbers and perform numerous operations using them. They will add, subtract, multiply, and divide rational numbers when solving equations. They will also extend their knowledge of rational numbers to decimals and real world applications.	
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.
Domain: The Number System	
Cluster: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers	
Standard #s:	**Standards:**
7.NS.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
7.NS.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
7.NS.3	Solve real-world and mathematical problems involving the four operations with rational numbers. Computations with rational numbers extend the rules for manipulating fractions to complex fractions.

Unit 1 Part 1 Essential Questions (from 6th):

- 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 1 Essential Question (from 7th):

- How do operations affect rational numbers?
- How can we use rational numbers to solve real world application problems?

Unit 1 Part Enduring Understandings (from 6th):

- More than integers are necessary to solve real-world applications. ie. negative, opposite, and rational numbers.
- Powers can simplify numbers.

Unit 1 Part 1 Enduring Understandings (from 7th):

- Previous understanding of operations of numbers can be directly applied to rational numbers.
- Rational numbers can be used to solve real word problems.

Unit 1 Part 1 Objectives (from 6th):

- 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.

Unit 1 Part 1 Objectives (from 7th):

- Students will be applying their prior knowledge of the number system to problems involving rational numbers.
- Students will be able to add, subtract, multiply and divide rational numbers.

- Students will transform rational numbers into decimals.
- Students will solve real world problems using rational numbers.

Evidence of Learning

Formative Assessments:

- Questioning strategies used throughout the unit.
- 7 Quizzes

Summative Assessment:

- Cumulative Assessment
- Engage NY Module Assessment

Pacing Guide

Topics	Timeframe
Topic #1: Addition, Natural Numbers & Whole Numbers (Not in 6th HM textbook)	1 day
Topic #4: Absolute Value (9.1 in 6th HM textbook)	1 day
From 7th: Topic #2: Addition Subtraction and Integers Lab: RAFT – The Absolutely Valuable Game **Absolute Value, Opposites, and Integers Quiz**	2 days
Topic #2 Addition Subtraction and Integers (1.5 Properties, 9.1 - Integers in 6th HM textbook)	2 days
From 7th: Topic #3: Addition and Subtraction of Integers (Hands on Lab p. 50, Hands on Lab p. 58, and 2.2 and 2.3 in 7th HM textbook) (Integer Soup - Link below in resources) **Addition and Subtraction of Integers Quiz**	2 days
From 7th:	2 days

Topic #4: Multiplication and Division of Integers (Hands on Lab p. 64 and 2.4 in 7th HM textbook) **Multiplication and Division of Integers Quiz**	
From 7th: Topic #7: Adding and Subtracting Rational Numbers Review Lab: RAFT – Above and Below Zero Game Lab: RAFT – Graphing Race to the Edge **Adding and Subtracting Rational Numbers (Decimals) Quiz** **Adding and Subtracting Rational Numbers (Fractions) Quiz**	2 days
Topic #3: Multiplication, Division and Rational Numbers (1.5 Properties in 6th HM textbook) **Multiplying and Dividing Rational Numbers (Decimals) Quiz** **Multiplying and Dividing Rational Numbers (Fractions) Quiz**	2 days
Topic #5: Comparing Integers (9.2 in 6th HM textbook)	1 day
Topic #6: Comparing and Ordering Rational Numbers (9.2 in 6th HM textbook) Lab: RAFT – Hi-Ho, Hi-Low **Comparing and Ordering Rational Numbers Quiz**	3 days
Topic #7: Exponents (1.3 in 6th HM textbook) **Exponents Quiz**	2 days
Topic #8: Real Numbers (Lesson 9.2 Lesson Extension introduces rational numbers in 6th HM textbook) **Real Numbers Quiz**	1 day
Review and Assessment	2 days
Curriculum Development Resources (from 6th): https://njctl.org/courses/math/6th-grade-math/ EngageNY Module 3 https://www.engageny.org/resource/grade-6-mathematics-module-3 (Higgins) 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

Curriculum Development Resources (from 7th):

- https://njctl.org/courses/math/7th-grade/
- http://www.raftbayarea.org/ideas/Fraction%20Action%20Game.pdf
- http://www.raftbayarea.org/ideas/Absolutely%20Valuable%20Game.pdf
- http://www.raftbayarea.org/ideas/Above%20and%20Below%20Zero%20Game.pdf
- http://www.raftbayarea.org/ideas/Graphing%20Race%20to%20the%20Edge.pdf
- https://www.teachingchannel.org/videos/teaching-subtracting-integers
- Integer Soup (youtube video)
- Integer Operations with Algebra Tiles
- Life on the Number Line
- Using Positive and Negative Numbers in Context (MARS)
- Division (MARS)
- Is this a leap year? (yummy math)
- A Day Out (MARS)
- Taxi Cabs (MARS)
- Algebra Tiles
- 7.NS.A.1 Comparing Freezing Points
- 7.NS.A.1b-c Differences of Integers
- 7.NS.A.2 Why is a Negative Times a Negative Always Positive HYPERLINK "http://www.raftbayarea.org/ideas/Hi%20Ho%20Hi%20Low.pdf"

Advanced Math 6 Curriculum **Unit 1 Part 2**	
Title: Factors and Multiples	
Subject: Advanced Math 6	**Length of Time:** 1 week (5 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:

· Questioning strategies used throughout the unit.
· 2 Quizzes

Summative Assessment:

· Cumulative Assessment

Pacing Guide

Topics	Timeframe

Topic #1: Even and Odd Numbers (Not in 6th HM textbook)	0.5 day
Topic #2: Divisibility Rules for 3 and 9 (Not in 6th HM textbook) **Even Numbers, Odd Numbers, and Divisibility Rules Quiz**	0.5 day
Topic #3: Greatest Common Factor (4.2 in 6th HM textbook)	1 day
Topic #4: Least Common Multiple (5.1 in 6th HM textbook)	1 day
Topic #5: GCF and LCM Word Problems (4.2 and 5.1 in 6th HM textbook) **GCF and LCM Quiz**	1 day
Review and Assessment	1 day
Curriculum Development Resources: · HYPERLINK "https://njctl.org/courses/math/6th-grade-math/" https://njctl.org/courses/math/6th-grade-math/	

Title: Fraction and Decimal Computation	
Subject: Accelerated Math 6	**Length of Time:** 3 weeks (13 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:	**Unit 1 Part 3 Enduring Understanding:**
· How do operations affect numbers? · How do we solve real world application problems? · What are the standard algorithms for long division and decimal computation?	· 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.
· Students will transform rational numbers into decimals.

Evidence of Learning

Formative Assessments:

- Questioning strategies used throughout the unit.
- 5 Quizzes

Summative Assessment:

- Cumulative Assessment

Pacing Guide	
Topics	**Timeframe**
Topic #1: Fraction Division (Hands on Lab p. 216 and 218, 5.6 in 6th HM textbook) **Dividing Fractions Quiz**	2 days
Topic #2: Long Division Review (1.2 in 6th HM textbook) **Long Division Quiz**	2 days
From 7th: Topic #9: Converting Rational Numbers to Decimals (4.4 in 6th HM textbook and 2.6 in 7th HM textbook) **Converting Rational Numbers to Decimals Quiz (7th Numbers and Operations)**	1 day
Topic #3: Adding Decimals (3.3 in 6th HM textbook)	0.5 day
Topic #4: Subtracting Decimals (3.3 in 6th HM textbook) **Adding and Subtracting Decimals Quiz**	0.5 day
Topic #5: Distributive Property & Product of Decimals (1.5 in 6th HM textbook)	1 day
Topic #6: Multiplying Decimals (3.4 in 6th HM textbook)	1 day

Lab: RAFT – Dizzy Decimals & More **Multiplying Decimals Quiz**	
Topic #7: Dividing Decimals (Terminating) (3.5 and 3.6 dividing decimals, terminating decimals 4.4 in 6th HM textbook)	1 day
Topic #8: Dividing Decimals (Repeating) (3.5 and 3.6 dividing decimals, repeating decimals 4.4 in 6th HM textbook) **Dividing Decimals Quiz**	1 day
Lab: RAFT – The Money You Will Save (from 6th)	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

HYPERLINK "http://www.raftbayarea.org/ideas/Money%20You%20Will%20Save.pdf"

Advanced Math 6 Curriculum **Unit 1 Part 3**	
Title: Fraction and Decimal Computation	
Subject: Advanced Math 6	**Length of Time:** 3 weeks (13 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.
- Students will transform rational numbers into decimals.

Evidence of Learning

Formative Assessments:

- Questioning strategies used throughout the unit.
- 5 Quizzes

Summative Assessment:

- Cumulative Assessment

Pacing Guide

Topics	Timeframe
Topic #1: Fraction Division (Hands on Lab p. 216 and 218, 5.6 in 6th HM textbook) **Dividing Fractions Quiz**	2 days
Topic #2: Long Division Review (1.2 in 6th HM textbook) **Long Division Quiz**	2 days
From 7th: Topic #9: Converting Rational Numbers to Decimals (4.4 in 6th HM textbook and 2.6 in 7th HM textbook)	1 day

Converting Rational Numbers to Decimals Quiz (7th Numbers and Operations)	
Topic #3: Adding Decimals (3.3 in 6th HM textbook)	0.5 day
Topic #4: Subtracting Decimals (3.3 in 6th HM textbook) **Adding and Subtracting Decimals Quiz**	0.5 day
Topic #5: Distributive Property & Product of Decimals (1.5 in 6th HM textbook)	1 day
Topic #6: Multiplying Decimals (3.4 in 6th HM textbook) Lab: RAFT – Dizzy Decimals & More **Multiplying Decimals Quiz**	1 day
Topic #7: Dividing Decimals (Terminating) (3.5 and 3.6 dividing decimals, terminating decimals 4.4 in 6th HM textbook)	1 day
Topic #8: Dividing Decimals (Repeating) (3.5 and 3.6 dividing decimals, repeating decimals 4.4 in 6th HM textbook) **Dividing Decimals Quiz**	1 day
Lab: RAFT – The Money You Will Save (from 6th)	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	

HYPERLINK "http://www.raftbayarea.org/ideas/Money%20You%20Will%20Save.pdf"

Advanced Math 6 Curriculum Unit 2 (1 Part)	
Title: Ratios, Proportional Relationships, and Percents	
Subject: Advanced Math 6	**Length of Time:** 6 weeks (25.5 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 learn the different types of percent problems and how to solve real world application problems 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
Domain: Ratios and Proportional Relationships	
Cluster: Analyze proportional relationships and use them to solve real-world and mathematical problems.	
Standard #:	**Standard:**
7.RP.3	Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.
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 (from 6th):

- 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 Essential Questions (from 7th):

- How are percents used to help solve real world application problems?
- What are the different ways percent problems are represented?

Unit 2 Enduring Understanding (from 6th):

- 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 Enduring Understandings (from 7th):

- Percents are used in real world problems.
- Percents can be applied to problems in different ways.

Unit 2 Objectives (from 6th):

- 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.

Unit 2 Part 1 Objectives (from 7th):

- Students will be able to relate fractions, decimals, and percents to each other.
- Students will solve three different types of percent problems.

- Students will represent percent equations in an algebraic context.
- Students will apply percent of increase and percent of decrease when solving problems.
- Students will use their knowledge of percents to help them solve real world problems.

Evidence of Learning

Formative Assessments:

- Response questions used throughout the unit.
- Quizzes

Summative Assessment:

- Cumulative Assessment

Pacing Guide

Topics	Timeframe
Topic #1: Writing Ratios Lab: RAFT – Salmon You Can Count On (7.1 in 6th HM textbook)	1 day
Topic #2: Equivalent Ratios (7.2 in 6th HM textbook) **Quiz #1**	2 days
Topic #3: Rates & Unit Rates Lab: RAFT – Happy Trails Mix (7.1 in 6th HM textbook)	1 day
Lab: Design on a Dime Project (Uses Surface Area)	1.5 days
Topic #4: Using Ratios to Convert Measurements (8.1 and 8.2 in 6th HM textbook) **Quiz #2**	2 days
Topic #5: Converting Unit Ratios (8.1 and 8.2 in 6th HM textbook) **Quiz #3**	2 days
Topic #6: Percents & Fractions (7.5 and 7.6 in 6th HM textbook)	2 days
Topic #7: Percents & Decimals (7.5 and 7.6 in 6th HM textbook) **Quiz #4**	2 days
Topic #8: Using Percents (7.5 and 7.6 in 6th HM textbook) **Quiz #5**	2 days
From 7th: Lesson #1:Relating Fractions, Decimals and Percents (6.1 in 7th HM textbook) **Quiz #1**	1 days
From 7th: Lesson #2: Three Types of Percent Problems (Little bit of 6.2 in 7th HM textbook)	2 days

From 7th: Lesson #3: Percent of Change (6.4 in 7th HM textbook) **Quiz #2**	1 days
From 7th: Lesson #5: Applied Percent of Decrease (6.5 in 7th HM textbook)	1 day
From 7th: Lesson #6: Applied Percent of Increase (6.5 in 7th HM textbook)	1 day
From 7th: Lesson #7: Real-life Application Problems (6.5 in 7th 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/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

Curriculum Resources:

- https://njctl.org/courses/math/7th-grade/
- Dueling Discounts - mrmyers
- Selling Ice Cream - MARS

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"

Advanced Math 6 Curriculum
Unit 3 (3 Parts)

Title: Expressions and Equations	
Subject: Advanced Math 6	**Length of Time:** 9 weeks (41 days)
Unit 3 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. 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. 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. Students will create and analyze function tables.	

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 det, 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.
7.NS.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. d. Apply properties of operations as strategies to add and subtract rational numbers.
7.NS.2	Apply and extend previous understandings of multiplication and division to multiply and divide rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers
7.NS.3	Solve real-world and mathematical problems involving the four operations with rational numbers.
7.EE.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
7.EE.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*
7.EE.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.
7.EE.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

	a. Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? b. Solve word problems leading to inequalities of the form px + q > r or px + q < r, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions
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

Advanced Math 6 Curriculum **Unit 3 Part 1**	
Title: Expressions	
Subject: Advanced 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.
Domain: Number System	
Cluster: Apply and extend previous understandings of operations with fractions.	
Standard #:	**Standard:**
7.NS.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. d. Apply properties of operations as strategies to add and subtract rational numbers.
7.NS.2	Apply and extend previous understandings of multiplication and division to multiply and divide rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers
7.NS.3	Solve real-world and mathematical problems involving the four operations with rational numbers.
Cluster: Use properties of operations to generate equivalent expressions	
Standard #:	**Standard:**
7.EE.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

7.EE.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*
Cluster: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	
Standard #s:	**Standards:**
7.EE.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.

Unit 3 Part 1 Essential Question (from 6th):

- How do powers affect numbers?
- How can order of operations, the distributive property, and combing like terms help solve an algebraic equation?
- How can an algebraic expression help me solve a real-world application problem?

Unit 3 Part 1 Essential Questions (from 7th):

- What is a numeric expression & how is it evaluated?
- What is an algebraic expression & how is it simplified?
- How is an algebraic expression evaluated?

Unit 3 Part 1 Enduring Understanding (from 6th):

- Algebraic expressions and equations can help solve real-world application problems.

Unit 3 Part 1 Enduring Understandings (from 7th):

- A numeric expression is an expression of numbers and operations. When evaluating them, there is a specific order, called the order of operations.
- An algebraic expression is an expression that contains both numbers and variables that is simplified using the distributive property and combining like terms.
- An algebraic expression is evaluated using substitution followed by the order of operations.

Unit 3 Part 1 Objectives (from 6th):

- 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.

Unit 3 Part 1 Objectives (from 7th):

- Students will identify constants, coefficients, and variables in an algebraic expression.
- Students will evaluate a numerical expression using the correct order of operations.

- Students will use the distributive property to simplify algebraic expressions.
- Students will learn to simplify algebraic expressions by combine like terms.
- Students will translate verbal phrases into mathematical and algebraic expressions.
- Students will evaluate algebraic expressions when each variable is assigned a value using substitution and the order of operations.

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 (Use 7th NJCTL Resources. 7th includes integer operations with negative numbers and fractions.) (2.1 in 6th HM textbook) (1.3 in 7th HM textbook)	1 day
Topic #2: Order of Operations (Use 7th NJCTL Resources. 7th includes integer operations with negative numbers and fractions.) Lab: RAFT – Algebraic Horse (from 6th NJCTL) **Quiz #1** **Quiz #1** (1.4 in 6th HM textbook) (1.1 in 7th HM textbook)	2 days
Topic #3: The Distributive Property (Use 7th NJCTL Resources. 7th includes integer operations with negative numbers and fractions.)	2 days

Lab: RAFT – Simple Expressions Bingo (from 6th NJCTL) (1.5 in 6th HM textbook) (1.2 in 7th HM textbook)	
Topic #4: Combining Like Terms (Use 7th NJCTL Resources. 7th includes integer operations with negative numbers and fractions.) Lab: RAFT – Algebra Rummy (from 6th NJCTL) Lab – Comparing Cards (from 7th NJCTL) Lab – Ordering Combo Meals (from 7th NJCTL) **Quiz #2** (SB9 in 6th HM textbook) (1.5 in 7th HM textbook)	2 days
Topic #5: Translating between Words and Expressions (Use 7th NJCTL Resources. 7th includes integer operations with negative numbers and fractions.) **Quiz #3** (6th NJCTL) (2.2 in 6th HM textbook) (1.4 in 7th HM textbook)	2 days
Topic #6: Evaluating Expressions (Use 7th NJCTL Resources. 7th includes integer operations with negative numbers and fractions.) **Quiz #4** (1.5 in 7th HM textbook)	2 days
Review and Cumulative Assessment	2 days
Curriculum Development Resources (from 6th): · 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 · http://www.raftbayarea.org/ideas/Algebra%20Rummy.pdf	

Curriculum Resources (from 7th)

- https://njctl.org/courses/math/7th-grade/
- Equivalent Expressions (Illustrative Math)
- Words into Math
- Mad Libs and Variables
- Combining Like Terms Activity Bundle
- Interactive Algebra tiles HYPERLINK "http://www.raftbayarea.org/ideas/Algebra%20Rummy.pdf"

Advanced Math 6 Curriculum **Unit 3 Part 2**	
Title: Equations and Inequalities	
Subject: Advanced Math 6	**Length of Time:** 4 weeks (19 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.
Domain: Expressions and Equations	
Cluster: Use properties of operations to generate equivalent expressions	
Standard #:	**Standard:**
7.EE.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
7.EE.2	Understand that rewriting an expression in different forms in a problem context can shed light o problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*
Cluster: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	
Standard #s:	**Standards:**
7.EE.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.
7.EE.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? b. Solve word problems leading to inequalities of the form px + q > r or px + q < r, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions

Unit 3 Part 2 Essential Question (from 6th): · How are inequalities different than equality equations? · How will inequalities help model real world problems?	**Unit 3 Part 2 Enduring Understanding (from 6th):** · Inequalities are used in real world problems. · Inequalities can be modeled using number lines and solved using different operations

Unit 3 Part 2 Essential Questions (from 7th): · How are equations solved? · What are different properties of equations and how can they help solve them? · What happens when two sides of an equation are not equal?	· Inequalities are manipulated similarly to equality equations. **Unit 3 Part 2 Enduring Understandings (from 7th):** · Equations can be solved using different properties. · Sometimes there is more than one step to solve in an equation. · Inequalities are used when solving for real life application problems.

Unit 3 Part 2 Objectives (from 6th):

· 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.

Unit 3 Part 2 Objectives (from 7th):

· Students will examine commutative and associative properties of different equations.
· Students will combine like terms within an equation and learn to use the distributive property to solve equations.
· Students will solve multi-step equations involving different techniques.
· Students will graph and solve inequalities involving addition, subtraction, multiplication, and division.

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 (Combine 6th and 7th NJCTL resources.) (2.4 in 6th HM textbook)	0.25 day

Topic #2: Tables (Use examples from 7th NJCTL as well as additional resources.) (2.3 in 6th HM textbook)	0.25 day
Topic #3: Determining Solutions to Equations (Use 6th NJCTL for substitution from a set.) (2.4 in 6th HM textbook)	0.5 day
Topic #4: Inverse Operations (Combine 6th and 7th NJCTL materials.) **Quiz #1**	1 day
From 7th: Topic #2: Solving an Equation for a Variable **Quiz #1**	1 day
Topic #5: Solving One Step Addition & Subtraction Equations **Quiz #2** (2.5 and 2.6 in 6th HM textbook)	0.5 day
Topic #6: Solving One Step Multiplication & Division Equations Lab: RAFT – Occasions for an Equation **Quiz #3** (2.7 and 2.8 in 6th HM textbook)	0.5 day
From 7th: Topic #3: One Step Equations (2.5, 3.4 and 3.8 in 7th HM textbook)	1 day
From 7th: Topic #4: Two Step Equations Lab: RAFT – Shape up with Algebra **Quiz #2** (11.1 in 7th HM textbook)	1 day
From 7th: Topic #5: Multi-Step Equations Lab: RAFT – Modeling Simple Equations (11.2 in 7th HM textbook)	1 day
From 7th: Topic #6: Distributing Fractions in Equations	2 days

Quiz #3	
Topic #7: Writing Equations **Quiz #4** (Builds off of 2.2 in 6th HW textbook)	1 day
From 7th: Topic #7: Writing & Solving Algebraic Equations Lab: RAFT – Dive into Square Pools **Quiz #4**	1 day
Topic #8: Writing Simple Inequalities (10.4 in 6th HW textbook)	1 day
Topic #9: Solutions to Simple Inequalities **Quiz #5** (10.4 in 6th HW textbook)	1 days
From 7th: (Use 7th NJCTL Resources) Topic #9: Graphing & Writing Inequalities with One Variable **Quiz #5 (from 7th)** **Quiz #6 (from 6th)** (10.4 in 6th HW textbook) (11.4 in 7th HM textbook)	1 days
Fomt 7th: Topic #10: Simple Inequalities Involving Addition & Subtraction (11.5 in 7th HM textbook)	1 day
From 7th: Topic #11: Simple Inequalities involving Multiplication & Division (11.6 in 7th HM textbook) Lab: Multiplying or Dividing by a Negative Number **Quiz #6**	2 days
Review and Cumulative Assessment	2 days
Curriculum Development Resources (from 6th): 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
Curriculum Resources - Suggested Learning Materials (from 7th):

- https://njctl.org/courses/math/7th-grade/
- http://www.raftbayarea.org/ideas/Shape%20Up%20with%20Algebra.pdf
- http://www.raftbayarea.org/ideas/Modeling%20Simple%20Equations.pdf
- http://www.raftbayarea.org/ideas/Dive%20into%20Square%20Pools.pdf
- Equivalent Expressions (Illustrative Math)
- Guess My Number? (Illustrative Math)
- Steps to Solving Equations (MARS)
- Visual Patterns (FAWN)
- Fencing - MARS (challenge)
- Video download - yummy math
- Shopping Season (Project - yummy math) HYPERLINK "http://www.raftbayarea.org/ideas/Occasions%20for%20an%20Equation.pdf"

Advanced Math 6 Curriculum **Unit 3 Part 3**	
Title: Applications of Equations	
Subject: Advanced Math 6	**Length of Time:** 2 weeks (9 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. Students will create and analyze function tables.	
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 6th HM textbook) Lab: RAFT – Meet my Function Machine	1 day
Topic #2: Dependent and Independent Variables (10.1 in 6th HM textbook) **Quiz #1**	2 days
Topic #3: Equations and Tables (10.1 in 6th HM textbook) **Quiz #2**	2 days
Topic #4: Graphing Equations (10.2 in 6th HM textbook) **Quiz #3**	2 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

Advanced Math 6 Curriculum Unit 4 (2 Parts)	
Title: Graphing and Geometry	
Subject: Advanced 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 including circles. They will be introduced to 3-Dimensional figures, as well as learn to calculate their surface area and volume. Irregular figures and shaded regions will also 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.
7.G.4	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
7.G.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.
7.G.6	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
7.EE.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.
7.EE.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
Technology 8.2.8.A.4	Redesign an existing product that impacts the environment to lessen its impact (s) on the environment.
Technology 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.
Technology 8.2.8.C.5.a	Create a technical sketch of a product with materials and measurements labeled.
Technology 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.
Technology 8.2.8.D.1	Design and create a product that addresses a real world problem using a design process under specific constraints.
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

Advanced Math 6 Curriculum
Unit 4 Part 1

Title: Graphing	
Subject: Advanced 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 6th HM textbook)	1 day
Topic #2: Graphing Ordered Pairs Lab: RAFT – Graphing Race to the Edge **Quiz #1** (9.3 in 6th HM textbook)	1 days
Topic #3: Polygons in the Coordinate Plane (9.4 in 6th HM textbook)	1 day
Topic #4: Cartesian Plane Applications **Quiz #2** (9.3 in 6th HM textbook)	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	

Advanced Math 6 Curriculum Unit 4 Part 2

Title: Geometry	
Subject: Advanced 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 including circles. They will be introduced to 3-Dimensional figures, as well as learn to calculate their surface area and volume. Irregular figures and shaded regions will also 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.
Domain: Geometry	
Cluster: Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	
Standard #s:	**Standards:**

7.G.4	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
7.G.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.
7.G.6	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
Domain: Expressions and Equations	
Cluster: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	
Standard # :	**Standard:**
7.EE.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.
7.EE.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

Unit 4 Part 2 Essential Question (from 6th): · How is the area of a figure calculated? · How do irregular figures and shaded region affect the area of the figure? · What is a 3-Dimensional figure compared to a 2-Dimensional figure? · Are surface area and volume the same as area? **Unit 4 Part 2 Essential Question (from 7th):** · What is difference between area and perimeter?	**Unit 4 Part 2 Enduring Understanding (from 6th):** · The area of different figures can be calculated using different, yet similar 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 Enduring Understandings (from 7th):** · Formulas can be determined and used to calculate the area of both regular and irregular shapes.

Unit 4 Part 2 Objectives (from 6th):

· 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 .

Unit 4 Part 2 Objectives (from 7th):

- Students will calculate the perimeter of different 2D geometrical figures.
- Students will calculate the circumference and area of different circles.
- Students will be able to determine whether a triangle is possible or not.
- Students will discover special pairs of triangles and the relationships they yield.
- Students will calculate the area of rectangles, parallelograms, triangles and trapezoids.
- Students will use previous knowledge of area formulas to calculate the area of irregular and shaded figures.

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 (Use 6th NJCTL Resource) Lab (to review): RAFT – Polygon Pursuit (8.3 in 6th HM textbook)	1 day
Topic #2: Area of Parallelograms (Use 6th NJCTL Resources.) **Quiz #1** (8.3 in 6th HM textbook)	1 day
Topic #3: Area of Right Triangles Lab: Area of Right Triangles Exploratory Challenge (8.4 in 6th HM textbook)	1 day
Topic #4: Area of Acute and Obtuse Triangles Lab: Area of Acute and Obtuse Exploratory Challenge (8.4 in 6th HM textbook)	1 day

Topic #4: Area of Trapezoids (8.4 in 6th HM textbook)	1 day
From 7th: Topic #2: Perimeter & Circumference (9.1 in 7th HM textbook) Lab: RAFT – Finding Pi **Quiz #2**	1 day
From 7th: Topic #7: Area of Circles (9.2 in 7th HM textbook) **Quiz #4**	2 days
Topic #5 Mixed Review: Area **Quiz #2**	0.5 days
From 7th: Topic #8: Mixed Review: Area, Perimeter, and Circumference	0.5 day
Topic #6: Area of Irregular Figures (8.5 in 6th HM textbook)	0.5 day
From 7th: Topic #9: Area of Irregular Figures (9.3 in 7th HM textbook)	0.5 day
Topic #7: Area of Shaded Regions **Quiz #3** (Not in 6th HM textbook)	0.5 day
From 7th: Topic #10: Area of Shaded Regions (Not in 7th HM textbook) **Quiz #5**	0.5 day
Topic #8: 3-Dimensional Solids Lab: RAFT – Shape Skeletons **Quiz #4**	1 day
Topic #9: Nets Lab: Nets Exploratory Challenge Lab (Hands on Lab p. 372 and 8.7 in 6th HM textbook)	1 day
Topic #10: Surface Area **Quiz #5** (8.7 in 6th HM textbook)	1 day

Topic #11: Volume Lab: RAFT – Chewed Food **Quiz #6** (Hands on Lab p. 366 and 8.6 in 6th HM textbook)	1 day
Topic #12: Surface Area & Volume Application Problems **Quiz #7**	1 days
Review and Cumulative Assessment	2 days

Curriculum Development Resources (from 6th):

- 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

Curriculum Resources (from 7th):

- https://njctl.org/courses/math/7th-grade/
- http://www.raftbayarea.org/ideas/Finding%20Pi.pdf
- Angle Theorem - MARS
- Coin Carper - dan myer
- Area of a Circle - illustrative math
- 8 Circles - illustrative math
- Historic Bicylcle - MARS

- Pizza Doubler - dan myers HYPERLINK "http://www.engageny.org/sites/default/files/resource/attachments/math-g6-m5-teacher-materials.pdf"

Advanced Math 6 Curriculum **Unit 5 (2 Parts)**	
Title: Statistics, Probability and Data Displays	
Subject: Advanced 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.
7.SP.1	Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences
7.SP.2	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.
Technology 8.1.8.A.4	Graph and calculate data within a spreadsheet and present a summary of the results

Technology 8.1.8.A.5	Create a database query, sort and create a report and describe the process, and explain the report results
Technology 8.1.8.E.1	Effectively use a variety of search tools and filters in professional public databases to find information to solve real world problems
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

Advanced Math 6 Curriculum Unit 5 Part 1	
Title: Statistical Variability	
Subject: Advanced 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.
Domain: Statistics and Probability	
Cluster: Use random sampling to draw inferences about a population.	
Standard #s:	**Standards:**
7.SP.1	Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences
7.SP.2	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.

Unit 5 Part 1 Essential Question (from 6th): · What are the ways to organize, measure, and display data?	**Unit 5 Part 1 Enduring Understanding (from 6th):** · Measurements of center and variation are essential to analyze data.
Unit 5 Part 1 Objectives (from 6th):	

- 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?	0.5 day
Topic #1: Measures of Center (Mean, Median, Mode) (6.1 in 6th HM textbook) **Quiz #1**	1.5 days
Topic #2: Central Tendency Application Problems (6.1 and 6.2 in 6th HM textbook) **Quiz #2**	2 day
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**	3 days
From 7th: Topic #6: Measures of Center (7.1 in 7th HM textbook)	2 days

Quiz #5	
From 7th: Topic #7: Measures of Variation (7.2 in 7th HM textbook) **Quiz #6**	2 days
From 7th: Topic #8: Mean Absolute Deviation (Not in 7th HM textbook) **Quiz #7**	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

Advanced Math 6 Curriculum Unit 5 Part 2	
Title: Data Displays	
Subject: Advanced 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	0.5 day
Topic #2: Frequency Tables and Histograms (6.4 Histograms and extension p. 264 in 6th HM textbook) **Quiz #1**	1.5 days
Topic #3: Box-and-Whisker Plots (6.3 in 6th HM textbook) **Quiz #2**	2 days
Topic #4: Dot Plots (6.4 in 6th HM textbook)	2 days

Topic #5: Analyzing Data Displays (6.5 in 6th 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