Hainesport Township School District
211 Broad Street Hainesport, NJ 08036

Course Title: Math Grade 7
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

This course is designed to expand understanding of integer operations to include all forms of signed, rational numbers while introducing key algebraic concepts such as writing and simplifying expressions, solving equations and inequalities, and using and evaluating formulas. Percents and their applications will be emphasized along with geometry and measurement. Students will continue to explore ratios, rates, unit rates, and proportions and their use in graphs, statistics, and probability. The overall objective is to prepare students to use mathematics effectively in today's world and to promote thinking and learning. Finally, skills are instilled using a variety of teaching strategies and methods including hands-on activities as well as cooperative learning.

By the end of Grade 7, students should be proficient in developing understanding of and applying proportional relationships; developing understanding of operations with rational numbers and working with expressions and linear equations; solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and drawing inferences about populations based on samples.

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
Numbers & Operations	I	5 weeks (23 days)
Ratios & Proportions Percents	II	6 weeks (24 days)
Expressions Equations & Inequalities	III	9 weeks (42.5 days)

Geometry	IV	9 weeks (41 days)
Statistics & Probability	V	5 weeks (25 days)

Math 7 Curriculum **Unit 1 (1 Part)**	
Title: Numbers & Operations	
Subject: Math 7	**Length of Time:** 5 weeks (23 days)
Unit 1 Part 1 Summary: Unit 1 will allow students to further their understanding of the number system. 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 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.
8.1.8.D.4 Tech	Assess the credibility and accuracy of digital content
8.1.8.D.5 Tech	Understand appropriate uses for social media and the negative consequences of misuse.

Unit 1 Part 1 Essential Question:	**Unit 1 Part 1 Enduring Understandings:**
· How do operations affect rational numbers? · How can we use rational numbers to solve real world application problems?	· 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:

- 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:

- Response questions used throughout the unit.
- 6 Quizzes

Summative Assessment:

- Cumulative Assessment

Pacing Guide

Topics	**Timeframe**

Topic #1: Addition, Natural Numbers & Whole Numbers	0.5 day
Topic #2: Addition Subtraction and Integers Lab: RAFT – The Absolutely Valuable Game **Quiz #1**	2.5 days
Topic #3: Addition and Subtraction of Integers (Hands on Lab p. 50, Hands on Lab p. 58, and 2.2 and 2.3 in HM textbook) (Integer Soup - Link below in resources) **Quiz #2**	3.5 days
Topic #4: Multiplication and Division of Integers (Hands on Lab p. 64 and 2.4 in HM textbook) **Quiz #3**	2.5 days
Topic #5: Operations with Rational Numbers	1 day
Topic #6: Addition and Subtraction of Rational Numbers (3.1 and 3.5 in HM textbook) Lab: RAFT – Fraction Action Game	2.5 days
Topic #7: Adding and Subtracting Rational Numbers Review Lab: RAFT – Above and Below Zero Game Lab: RAFT – Graphing Race to the Edge **Quiz #4**	2.5 days
Topic #8: Multiplication and Division of Rational Numbers (3.2, 3.3, 3.6 and 3.7 in HM textbook) **Quiz #5**	2.5 days
Topic #9: Converting Rational Numbers to Decimals (2.6 in HM textbook)	1 day
Topic #10: Exponents (With order of operation 1.1 in HM textbook) **Quiz #6**	2 days
Topic #11: Real Numbers	0.5 day
Review and Cumulative Assessment	2 days

Curriculum Resources - Core Instruction Materials -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)

- Lab Resources Online
- Chapter Project Online
- Powerpoint Presentations/Inspire Notebooks for Promethean Board
- Texas Instruments Graphing Calculator Activities
- 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

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, 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
- Information Literacy
- ICT Literacy

Math 7 Curriculum
Unit 2 (2 Parts)

Title: Ratios & Proportions

Subject: Math 7	**Length of Time:** 6 weeks (24 days)

Unit 2 Summary: Unit 2 Part 1 will give students the opportunity to analyze proportional relationships to solve ratios, proportions, and real-world math problems. Unit 2 Part 2 will introduce students to percents. They will learn the different types of percent problems and how to represent the percent equations algebraically. They will also learn how to solve real world application problems involving percents.

Learning Targets	
PARCC ■ Major Clusters; ▣ Supporting Clusters; ○ Additional Clusters	
Standard #:	**Standard:**
7.RP.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.
7.RP.2	Recognize and represent proportional relationships between quantities. a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn*. d. Explain what a point *(x, y)* on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, *r)* where *r* is the unit rate.
7.G.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
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.
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.
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.
8.1.8.E.1 Tech	Effectively use a variety of search tools and filters in professional public databases to find information to solve a real world problem.
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, 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
- Information Literacy
- ICT Literacy

Math 7 Curriculum **Unit 2 Part 1**	
Title: Ratios & Proportions	
Subject: Math 7	**Length of Time:** 3 weeks (15 days)

Unit 2 Part 1 Summary: Unit 2 Part 1 will give students the opportunity to analyze proportional relationships to solve ratios, proportions, and real-world math problems.

Learning Targets

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

Domain: Ratios and Proportional Relationships

Cluster: Analyze proportional relationships and use them to solve real-world and mathematical problems.

Standard #:	**Standard:**
7.RP.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.
7.RP.2	Recognize and represent proportional relationships between quantities. a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn*. d. Explain what a point *(x, y)* on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, *r)* where *r* is the unit rate.

Domain: Geometry

Cluster: Draw, construct, and describe geometrical figures and describe the relationships between them.

Standard #:	**Standard:**
7.G.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

Unit 2 Part 1 Essential Questions:

- How do you recognize and represent proportional relationships between quantities?
- How do you apply proportions?

Unit 2 Part 1 Enduring Understandings:

- Utilize proportional relationships to solve real-world problems.

Unit 2 Part 1 Objectives:

- Students will be able to write ratios for various situations.
- Students will be able to determine if ratios are equivalent as well how to determine and unknown in an equivalent ratio.
- Students will be able to calculate unit rates to solve word problems.
- Students will use proportions to solve problems.

- Students will use proportions to determine the relationship in a table and graph, determine the constant of proportionality, write equations and understand graphs or proportions.
- Students will use proportions to solve problems involving scale drawings and similar figures.

Evidence of Learning

Formative Assessments:

- Response questions used throughout the chapter.
- 7 Quizzes

Summative Assessment:

- Cumulative Assessment

Pacing Guide

Topics	Timeframe
Topic #1: Writing Ratios (4.2 in HM textbook)	0.5 day
Topic #2: Equivalent Ratios (4.2 in HM textbook) **Quiz #1**	0.5 day
Topic #3: Rates (4.1 in HM textbook) **Quiz #2**	1 day
Topic #4: Proportions (4.2 and 4.3 in HM textbook) **Quiz #3**	1 day
Topic #5: Direct & Indirect Relationships in Tables and Graphs (Not in HM textbook)	1 day
Topic #6: Constant of Proportionality (Not in HM textbook) **Quiz #4**	2 days
Topic #7: Writing Equations for Proportions (4.1 - 4.3 in HM textbook) **Quiz #5**	1 days
Topic #8: Understanding Graphs of Proportions (Not in HM textbook)	1 days
Topic #9: Problem Solving	0.5 days
Topic #10: Scale Drawings (4.6 in HM textbook) Lab: RAFT – Planet Beads Lab: RAFT – Sun and Planets to Scale **Quiz #6**	2.5 days
Topic #11: Similar Figures (4.4 and 4.5 in HM textbook) Lab: RAFT – Building it Bigger **Quiz #7**	2 days
Review and Cumulative Assessment	2 days

Curriculum Resources:

- https://njctl.org/courses/math/7th-grade/
- http://www.raftbayarea.org/ideas/Planet%20Beads.pdf
- http://www.raftbayarea.org/ideas/Sun%20and%20Planets%20to%20Scale.pdf
- http://www.raftbayarea.org/ideas/Building%20it%20Bigger.pdf

On Your Mark - mathalicious
Buses - MARS
Developing a Sense of Scale - MARS
Dueling Discounts - mrmyers
Selling Ice Cream - MARS
proportion and non-proportional situations MARS
TIle Pile - desmos

- Lab Resources Online
- Chapter Project Online
- Powerpoint Presentations/Inspire Notebooks for Promethean Board
- Texas Instruments Graphing Calculator Activities
- Algebra Tiles
- 7.EE.B.4b Sports Equipment Set
- 7.RP.A.1 Cooking with the Whole Cup
- 7.RP.A.2 Sore Throats, Variation 1
- 7.RP.A.2 Buying Coffee
- 7.RP.A.2c Gym Membership Plans
- 7.G.A.1 Floor Plan
- 7.G.A.1 Map distance

Unit 2 (Part 2)

Unit 2 (Part 2)	
Title: Percents	
Subject: Math 7	**Length of Time:** 3 weeks (9 days)
Unit 2 Part 2: Unit 2 Part 2 will introduce students to percents. They will learn the different types of percent problems and how to represent the percent equations algebraically. They will also learn how to solve real world application problems involving percents.	
Learning Targets	
PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters	

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.
Domain: Expressions and Equations	
Cluster: Use properties of operations to generate equivalent expressions	
Standard # :	**Standard:**
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.
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.

Unit 2 Part 2 Essential Question: · How are percents used to help solve real world application problems? · What are the different ways percent problems are represented?	**Unit 2 Part 2 Enduring Understandings:** · Percents are used in real world problems. · Percents can be applied to problems in different ways.

Unit 2 Part 2 Objectives:

- 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 chapter.
- 3 Quizzes

Summative Assessment:

· Cumulative Assessment

Pacing Guide	
Topics	**Timeframe**
Lesson #1:Relating Fractions, Decimals and Percents (6.1 in HM textbook) **Quiz #1**	1 days
Lesson #2: Three Types of Percent Problems (Little bit of 6.2 in HM textbook)	2 days
Lesson #3: Percent of Change (6.4 in HM textbook) **Quiz #2**	1 days
Lesson #4: Representing Percent Equations Algebraically (Part of section is 6.5 and 6.6 6 in HM textbook. Does not cover all)	1 days
Lesson #5: Applied Percent of Decrease (6.5 in HM textbook)	0.5 day
Lesson #6: Applied Percent of Increase (6.5 in HM textbook)	0.5 day
Lesson #7: Real-life Application Problems (6.5 in HM textbook) **Quiz #3**	1 day
Review and Cumulative Assessment	2 days

Curriculum Resources:

- https://njctl.org/courses/math/7th-grade/
- Increasing and Decreasing Percents - MARS
- Gas Cost (Percent cash back) - Kaplinsky

Math 7 Curriculum Unit 3 (2 Parts)
Title: Expressions
Subject: Math 7
Unit 3 Summary: Unit 3 Part 1 will introduce students to different properties expressions can have. They will be able to combine like terms, write expressions when given a verbal phrase, and evaluate both numeric and algebraic expressions. Unit 3 Part 2 will introduce students to different properties equations can have.

They will be able to combine like terms, solve multi-step equations, and deal with inequalities. Also, they will identify the associative, commutative, and distributive properties.

Learning Targets	
PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters	
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.
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 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, 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
- Information Literacy
- ICT Literacy

Math 7 Curriculum **Unit 3 Part 1**	
Title: Expressions	
Subject: Math 7	**Length of Time:** 4 weeks (19.5 days)

Unit 3 Part 1 Summary: Unit 3 Part 1 will introduce students to different properties expressions can have. They will be able to combine like terms, write expressions when given a verbal phrase, and evaluate both numeric and algebraic expressions.	
Learning Targets	
PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters	
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 Questions:	**Unit 3 Part 1 Enduring Understandings:**

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

- 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:

- Response questions used throughout the chapter.
- 3 Quizzes

Summative Assessment:

- Cumulative Assessment

Lesson Plan

Topics	Timeframe
Topic #1: Mathematical Expressions (1.3 in HM textbook)	1 day
Topic #2: Order of Operations (1.1 in HM textbook) **Quiz #1**	3 days
Topic #3: The Distributive Property (1.2 in HM textbook)	3 days
Lab – Comparing Cards Topic #4: Like Terms (1.5 in HM textbook) Lab – Ordering Combo Meals **Quiz #2**	4 days
Topic #5: Translating Words into Expressions (1.4 in HM textbook)	3 days

Topic #6: Evaluating Expressions (1.5 in HM textbook) **#Quiz 3**	3 days
Review and Cumulative Assessment	2.5 days

Curriculum Resources - Core Instructional Materials:

- 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
- Lab Resources Online
- Chapter Project Online
- Powerpoint Presentations/Inspire Notebooks for Promethean Board
- Texas Instruments Graphing Calculator Activities
- Algebra Tiles

Math 7 Curriculum **Unit 3 Part 2**	
Title: Equations & Inequalities	
Subject: Math 7	**Length of Time:** 5 weeks (23 days)
Unit 3 Part 2 Summary: Unit 3 Part 2 will introduce students to different properties equations can have. They will be able to combine like terms, solve multi-step equations, and deal with inequalities. Also, they will identify the associative, commutative, and distributive properties.	
Learning Targets	
PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters	
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 Questions:	**Unit 3 Part 2 Enduring Understandings:**
· 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?	· 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:

- 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:

- Response questions used throughout the chapter.
- 6 Quizzes

Summative Assessment:

- Cumulative Assessment

Pacing Guide

Topics	Timeframe
Topic #1: Equations & Identities	1 day
Topic #2: Solving an Equation for a Variable **Quiz #1**	1 days
Topic #3: One Step Equations (2.5, 3.4 and 3.8 in HM textbook)	2 days
Topic #4: Two Step Equations (11.1 in HM textbook) Lab: RAFT – Shape up with Algebra **Quiz #2**	2 days
Topic #5: Multi-Step Equations (11.2 in HM textbook) Lab: RAFT – Modeling Simple Equations	2 days
Topic #6: Distributing Fractions in Equations **Quiz #3**	3 days
Topic #7: Writing & Solving Algebraic Equations Lab: RAFT – Dive into Square Pools **Quiz #4**	3 days
Topic #9: Graphing & Writing Inequalities with One Variable (11.4 in HM textbook) **Quiz #5**	3 days
Topic #10: Simple Inequalities Involving Addition & Subtraction (11.5 in HM textbook)	2 day
Topic #11: Simple Inequalities involving Multiplication & Division (11.6 in HM textbook)	2 days

Lab: Multiplying or Dividing by a Negative Number **Quiz #6**	
Review and Cumulative Assessment	2 days

Curriculum Resources - Suggested Learning Materials:

- 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)

Math 7 Curriculum **Unit 4 (3 Parts)**	
Title: Geometry	
Subject: Math 7	**Length of Time:** 9 weeks (41 days)

Unit 4 Summary: Unit 4 Part 1 will have students determining if a triangle can be created using the given conditions. Students will also create some simple geometric constructions. Unit 4 Part 2 will allow students to solve for area and perimeter of different 2D geometrical shapes. They will calculate the area of rectangles, parallelograms, triangles, trapezoids, circles, irregular figures, and shaded figures. They will also explore special pairs of angles and the relationships they hold. Unit 4 Part 3 will introduce students to different properties of 3D figures. They will be able to compute the surface area of 3D figures, as well as their volume. Unit 4 Part 3 also includes problems about 3D figures in everyday life.	
Learning Targets	
PARCC ■ Major Clusters; ◘ Supporting Clusters; ○ Additional Clusters	
Standard #s:	**Standards:**
7.G.2	Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
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.
7.G.3	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.
8.2.8.A.4 Tech	Redesign an existing product that impacts the environment to lessen its impact (s) on the environment.
8.2.8.A.5 Tech	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 Tech	Create a technical sketch of a product with materials and measurements labeled.
8.2.8.C.8 Tech	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 Tech	Design and create a product that addresses a real world problem using a design process under specific constraints.

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, 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
- Information Literacy
- ICT Literacy

Math 7 Curriculum
Unit 4 Part 1

Title: Drawing Geometric Figures

Subject: Math 7 | **Length of Time:** 1 week (4 days)

Unit 4 Part 1 Summary: Unit 4 Part 1 will have students determining if a triangle can be created using the given conditions. Students will also create some simple geometric constructions.

Learning Targets

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

Domain: Geometry

Cluster: Draw, construct, and describe geometrical figures and describe the relationships between them.

Standard #s:	**Standards:**
7.G.2	Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

Unit 4 Part 1 Essential Questions:

- Can we determine if three side lengths would create a triangle?

Unit 4 Part 1 Enduring Understandings:

- Geometric figures can be drawn based on given conditions.

Unit 4 Part 1 Objectives:

- Students will be able to determine is a triangle is possible.
- Students will be able to draw triangles freehand, with ruler and protractor and with technology.

Evidence of Learning

Formative Assessments:

- Response questions used throughout the unit.
- 1 Quiz

Summative Assessment:

- 1 Quiz

Pacing Guide

Topics	Timeframe
Topic #1: Determining if a Triangle is Possible (Hands on Lab p. 334 in HM textbook)	2 days
Topic #2: Geometric Constructions: The Basics (Hands on Lab p. 326 in HM textbook) **Quiz #1**	2 days

Curriculum Resources:

- https://njctl.org/courses/math/7th-grade/

Roman Mosaic - MARS
Glowing - yummymath
Drawing MARS

Math 7 Curriculum **Unit 4 Part 2**	
Title: 2D Geometry	
Subject: Math 7	**Length of Time:** 3 weeks (14 days)
Unit 4 Part 2 Summary: Unit 4 Part 2 will allow students to solve for area and perimeter of different 2D geometrical shapes. They will calculate the area of rectangles, parallelograms, triangles, trapezoids, circles, irregular figures, and shaded figures. They will also explore special pairs of angles and the relationships they hold.	
Learning Targets	
PARCC ■ Major Clusters; ▣ Supporting Clusters; ○ Additional Clusters	
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:	**Unit 4 Part 2 Enduring Understandings:**
· What is difference between area and perimeter?	· Formulas can be determined and used to calculate the area of both regular and irregular shapes.

Unit 4 Part 2 Objectives:

- 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:

- Response questions used throughout the unit.
- 5 Quizzes

Summative Assessment:

- Cumulative Assessment

Pacing Guide

Topics	Timeframe
Topic #1: Special Pairs of Angles (8.2 and 8.3 in HM textbook) **Quiz #1**	2 days
Topic #2: Perimeter & Circumference (9.1 in HM textbook) Lab: RAFT – Finding Pi **Quiz #2**	2 days
Topic #3: Area of Rectangles (Not in HM textbook)	1 day
Topic #4: Area of Parallelograms (Not in HM textbook) **Quiz #3**	1 day
Topic #5: Area of Triangles (Not in HM textbook)	1 day

Topic #6: Area of Trapezoids (Not in HM textbook)	1 day
Topic #7: Area of Circles (9.2 in HM textbook) **Quiz #4**	2 days
Topic #8: Mixed Review	1 day
Topic #9: Area of Irregular Figures (9.3 in HM textbook)	0.5 day
Topic #10: Area of Shaded Regions (Not in HM textbook) **Quiz #5**	0.5 day
Review and Cumulative Assessment	2 days

Curriculum Resources:

- 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

Math 7 Curriculum **Unit 4 Part 3**	
Title: 3-D Geometry	
Subject: 7th Grade	**Length of Time:** 5 weeks (23 days)
Unit 4 Part 3 Summary: Unit 4 Part 3 will introduce students to different properties of 3D figures. They will be able to compute the surface area of 3D figures, as well as their volume. Unit 4 Part 3 also includes problems about 3D figures in everyday life.	
Learning Targets	
PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters	
Domain: Geometry	
Cluster: Draw, construct, and describe geometrical figures and describe the relationships between them.	
Standard #:	**Standard:**

7.G.3	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.
Cluster: Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	
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.	
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.

Unit 4 Part 3 Essential Questions:	**Unit 4 Part 3 Enduring Understandings:**
· How are 3D figures different from 2D figures? · What is a cross section of a figure and how will that help compute properties of the figure? · How are surface area and volume found for a 3D figure?	· 3D figures have unique characteristics and properties. · Perimeter and area of 2D figures are useful when finding volume and surface area of 3D figures.

Unit 4 Part 3 Objectives:

- Students will be introduced to 3D solids and cross sections of 3D figures.
- Students will learn how to compute the volume of different 3D figures.
- Students will compute surface area of different 3D figures.

Evidence of Learning

Formative Assessments:

- Response questions used throughout the unit.
- 3 Quizzes

Summative Assessment:

- Cumulative Assessment

Pacing Guide

Topics	Timeframe
Topic #1: 3D Solids (9.4 in HM textbook) Lab: RAFT – Making 3D Shapes	2 days
Topic #2: Cross Sections of 3D Figures (Extension p. 378) **Quiz #1**	2 days
Topic #3: Volume: Prisms & Cylinders (9.5 in HM textbook) Lab: Volume Activity Lab: RAFT – The Long and the Short of It	3 days
Topic #4: Volume: Pyramids, Cones & Spheres (Not in HM textbook) **Quiz #2**	2 days
Topic #5: Surface Area – Prisms (9.6 in HM textbook) Lab: Surface Area Activity	3 days
Topic #6: Surface Area – Pyramids (Not in HM textbook)	2 days
Topic #7: Surface Area – Cylinders (9.6 in HM textbook)	2 days
Topic #8: Surface Area – Spheres (Not in HM textbook) **Quiz #3**	2 days
Topic #9: More Practice	3 days
Topic #10: Review and Cumulative	2 days
Curriculum Resources: · https://njctl.org/courses/math/7th-grade/ · http://www.raftbayarea.org/ideas/Making%203D%20Shapes.pdf · http://www.raftbayarea.org/ideas/Long%20and%20Short%20of%20It.pdf Popcorn picker Dan Meyer Trashketball cylidner Maximizing Area - MARS Buckets	

Math 7 Curriculum

Unit 5 (1 Part)	
Title: Statistics & Probability	
Subject: Math 7	**Length of Time:** 5 weeks (25 days)
Unit 5 Part 1 Summary: Unit 5 Part 1 will introduce students to the concept of solving problems that involve different types of events. They will examine sampling, compare two populations, and distinguish properties of events. Permutations, combinations, and probability will be learned to help solve problems. The fundamental counting principle will also be utilized throughout the chapter. Students will also work with statistical measures.	
Learning Targets	
PARCC ■ Major Clusters; ▣ Supporting Clusters; ○ Additional Clusters	
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.
Cluster: Draw informal comparative inferences about two populations.	
7.SP.3	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.
7.SP.4	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book
Cluster: Investigate chance processes and develop, use, and evaluate probability models.	
7.SP.5	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

7.SP.6	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.
7.SP.7	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected. b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?
7.SP.8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event. c. Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?
8.1.8.A.4 Tech	Graph and Calculate data within a spreadsheet and present a summary of the results
8.1.8.E.1 Tech	Effectively use a variety of search tools and filters in professional public databases to find information to solve a real world problem.
8.1.8.F.1 Tech	Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision.

Unit 5 Part 1 Essential Questions: · How does probability relate to real world application problems? · How can measures of center and variation be used to compare two sets of data? · How are different events classified and what can I use to solve them?	**Unit 5 Part 1 Enduring Understandings:** · Events are classified into different types. This determines the route to solving the problem. · Probability, measures of center, and measures of variation all are used to help solve real world application problems.

Unit 5 Part 1 Objectives:

· Students will be introduced to the concept of sampling.
· Students will be able to draw inferences about a population based off a sample.
· Students will be able to compare two populations and solve real world application problems with them.

- Students will be able to measure the difference between the centers by expressing it as a multiple of a measure of variability.
- Students will understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring.
- Students will be able to use experimental and theoretical probability to determine the likelihood of an event occurring.
- Students will use the fundamental counting principle to solve problems.
- Students will find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

Evidence of Learning

Formative Assessments:

- Response questions used throughout the unit.
- 7 Quizzes

Summative Assessment:

- Cumulative Assessment

Curriculum Resources:

- https://njctl.org/courses/math/7th-grade/
- http://www.raftbayarea.org/ideas/Ample%20Samples.pdf
- Carnival Project

Pacing Guide

Topics	Timeframe
Topic #1:Introduction to Probability (10.1 in HM textbook)	1 day
Topic #2:Experimental and Theoretical (10.2 and 10.4 in HM textbook) **Quiz #1**	4 days
Topic #3:Sampling (7.3 in HM textbook) Lab: RAFT – Ample Samples **Quiz #2**	3 days
Add Simulations	1 day
Topic #4:Word Problems **Quiz #3**	3 days
Topic #5:Probability of Compound Events (10.6 in HM textbook) Lab: RAFT – Adventures in Probability Lab: RAFT – Monty Hall Makes a Deal **Quiz #4**	4 days
Topic #6:Measures of Center (7.1 in HM textbook) **Quiz #5**	2 days
Topic #7:Measures of Variation (7.2 in HM textbook) **Quiz #6**	2 days

Topic #8:Mean Absolute Deviation (Not in HM textbook) **Quiz #7**	2 days
Review and Cumulative Assessment	3 days

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, 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
- Information Literacy

- ICT Literacy