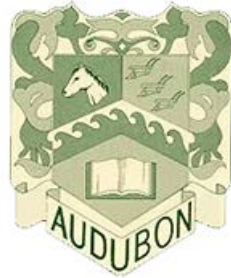


Audubon Public Schools



Grade 7: Math
Curriculum Guide

Developed by:
Mrs. Virginia Tappin

June 20, 2019

Table of Contents

Cover Page	Page 1
Table of Contents	Page 2
Course Description	Page 3
Overview / Progressions	Page 4
Unit 1	Page 7
Unit 2	Page 15
Unit 3	Page 21
Unit 4	Page 27
Unit 5	Page 34
Appendix A: Previous Curriculum Documents	page 46



Course Description

Grade 7: Math

This course focuses on problem solving techniques and analysis. Among the units covered are: operations with rational numbers, ratio & proportional relationships, expressions & equations, geometry, statistics, and probability. This course is designed to help students develop an ever increasing proficiency in the application of mathematics and prepare them for success in both 8th Grade Math and Algebra.

Overview / Progressions

Overview	Standards for Mathematical Content	Unit Focus	Standards for Mathematical Practice
Unit 1	<ul style="list-style-type: none"> ● 7.NS.A.1 ● 7.NS.A.2 ● 7.NS.A.3 ● 7.NS.B.3 ● 7.EE.B.4 	<ul style="list-style-type: none"> ● Add and subtract rational numbers ● Multiply and divide rational numbers ● Convert rational numbers to decimals ● Recognize terminating and repeating decimals ● Convert between fractions, decimals and percents ● Solve real world applications involving the 4 operations ● Write and solve 1 step Algebra equations. 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p>
Unit 2	<ul style="list-style-type: none"> ● 7.RP.A.1 ● 7.RP.A.2 ● 7.RP.A.3 ● 7.7.G.A.1 	<ul style="list-style-type: none"> ● Compute rates and unit rates with ratios measured in like and unlike quantities 	

	<ul style="list-style-type: none"> ● 7.NS.A.3 	<ul style="list-style-type: none"> ● Recognize whether 2 quantities are in a proportional relationship in tables, graphs and equations. ● Identify the constant of proportionality (unit rate) in a proportional relationship ● Solve applications involving scale factor ● Understand and apply the percent equation to solve applications ● Solve simple and compound interest applications by applying formulas 	
Unit 3	<ul style="list-style-type: none"> ● 7.EE.A1 ● 7.EE.A.2 ● 7.EE.B.3 ● 7.EE.B.4 	<ul style="list-style-type: none"> ● Apply properties to add, subtract, expand and factor expressions ● Write and solve up to 3 step equations and inequalities ● Solve real world applications by writing and solving linear equations and inequalities 	

<p>Unit 4</p>	<ul style="list-style-type: none"> ● 7.EE.A.1 ● 7.G.A.2 ● 7.G.A.3 ● 7.G.B.4 ● 7.G.B.5 ● 7.G.B.6 	<ul style="list-style-type: none"> ● Identify types of angles by size and relationships ● Identify the relationship between angles and write and solve an Algebra equation to solve for an unknown 	
<p>Unit 5</p>	<ul style="list-style-type: none"> ● 7.SP.A.1 ● 7.SP.A.2 ● 7.SP.B.3 ● 7.SP.B.4 ● 7.SP.C.5 ● 7.SP.C.6 ● 7.SP,C.7 ● 7.SP.C.8 	<ul style="list-style-type: none"> · Use random sampling to draw inferences about a population · Draw informal comparative inferences about two populations · Investigate chance processes and develop, use, and evaluate probability models 	

Subject: Math	Grade: 7	Unit: 1	1 st Marking Period
Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills	
<ul style="list-style-type: none"> 7.NS.A.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. <ul style="list-style-type: none"> 7.NS.A.1a. Describe situations in which opposite quantities combine to make 0. <i>For example, in the first round of a game, Maria scored 20 points. In the second round she lost 20 points. What is her score at the end of the second round?</i> 7.NS.A.1b. Understand $p + q$ as the number located a distance q from p, in the positive or negative direction depending on whether q is positive or 	<p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments & critique the reasoning of others.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> Opposite quantities combine to make 0 (additive inverses). $p + q$ is the number located a distance q from p, in the positive or negative direction depending on whether q is positive or negative. Subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$ The product of two whole numbers is the total number of objects in a number of equal groups. <p>Students are able to:</p> <ul style="list-style-type: none"> represent addition and subtraction on a horizontal number line. represent addition and subtraction on a vertical number line. interpret sums of rational numbers in real-world situations. show that the distance between two rational numbers on the number line is the absolute value of their difference. <p>Learning Goal 1: Describe real-world situations in which (positive and negative) rational numbers are combined, emphasizing rational numbers that combine to make 0. Represent sums of rational numbers ($p + q$) on horizontal and vertical number lines, showing that the distance along the number line is q and including situations in which q is negative and positive.</p>	

<p>negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.</p> <p>7.NS.A.1c. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.</p> <p>7.NS.A.1d. Apply properties of operations as strategies to add and subtract rational numbers.</p>		<p>Learning Goal 2: Add and subtract (positive and negative) rational numbers, showing that the distance between two points on a number line is the absolute value of their difference and representing subtraction using an additive inverse.</p>
<ul style="list-style-type: none"> 7.NS.A.2. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. 	<p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.4 Model with mathematics.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> Every quotient of integers (with non-zero divisor) is a rational number.

<p>7.NS.A.2a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.</p> <p>7.NS.A.2b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. 2c. Interpret quotients of rational numbers by describing real world contexts.</p>	<p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<ul style="list-style-type: none"> ● Decimal form of a rational number terminates in 0s or eventually repeats. ● Integers can be divided, provided that the divisor is not zero. ● If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. <p>Students are able to:</p> <ul style="list-style-type: none"> ● multiply and divide signed numbers. ● use long division to convert a rational number to a decimal. <p>Learning Goal 3: Multiply and divide signed numbers, including rational numbers, and interpret the products and quotients using real-world contexts.</p> <p>Learning Goal 4: Convert a rational number to a decimal using long division and explain why the decimal is either a terminating or repeating decimal.</p>
---	--	--

<p>7.NS.A.2c. Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p>7.NS.A.2d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.</p>		
<ul style="list-style-type: none"> 7.NS.A.3. Solve real-world and mathematical problems involving the four operations with rational numbers. 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> The process for multiplying and dividing fractions extends to multiplying and dividing rational numbers. <p>Students are able to:</p> <ul style="list-style-type: none"> add and subtract rational numbers. multiply and divide rational numbers using the properties of operations. apply the convention of order of operations to add, subtract, multiply and divide rational numbers. solve real world problems involving the four operations with rational numbers.

		<p>Learning Goal 5: Apply properties of operations as strategies to add, subtract, multiply, and divide rational numbers.</p> <p>Learning Goal 6: Solve mathematical and real-world problems involving addition, subtraction, multiplication, and division of signed rational numbers</p> <p>Learning Goal 4: Convert a rational number to a decimal using long division and explain why the decimal is either a terminating or repeating decimal</p>
<ul style="list-style-type: none"> 7.EE.B.4. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments & critique the reasoning of others.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s): No new concept(s) introduced</p> <p>Students are able to:</p> <ul style="list-style-type: none"> Solve an equation of the form $px + q = r$ by applying addition, subtraction, multiplication or division. <p>Learning Goal 7: Fluently solve 1 step equations; interpret the solutions in the context of the problem (<i>Equations of the form $px + q = r$ where p, q, and r are specific rational numbers</i>).</p>

Formative Assessments	Summative Assessments
<ul style="list-style-type: none"> ● Warm Up Board Problems ● Check for Understanding Discussions ● Skill Check Quizzes ● Small Group Activities ● Teacher’s Observation ● IXL & Digits On-line Assignments 	<ul style="list-style-type: none"> ● Topic Tests ● Post Unit Test ● Benchmark Test ● Standardized Testing
Suggested Primary Resources	Suggested Supplemental Resources
<p><i>PARCC Released Items:</i> https://prc.parcconline.org/assessments/parcc-released-items</p> <p><i>PARCC Practice Tests Unit 1 : TestNav</i> https://parcctrng.testnav.com/client/index.html#login?username=17MT08PTOE01010_100&password=PCPRACTICE</p>	<p><i>District/school resources and supplementary resources that are texts as well as digital resources used to support the instruction.</i></p> <p>http://mymathuniverse.com/digitsREALIZE https://www.ixl.com</p>
Cross-Curricular Connections & 21st Century Skills	
<ul style="list-style-type: none"> ● Open ended math problems using language from ELA <ul style="list-style-type: none"> ○ NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text relate to each other and the whole. <ul style="list-style-type: none"> ▪ Deconstructing word problems. ○ NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. <ul style="list-style-type: none"> ▪ Prose constructed response. 	
Essential Questions	Enduring Understanding
<ul style="list-style-type: none"> ● What types of numbers are rational numbers? ● What is the absolute value of a number? 	<ul style="list-style-type: none"> ● Rational numbers are numbers which can be written as fractions. They allow us to divide any 2 numbers except for division by 0.

<ul style="list-style-type: none"> • How can you add, subtract, multiply or divide rational numbers? • How do you convert a rational number to a decimal using long division? • How can variables be used to represent quantities in a real-world or mathematical problem to construct simple equations and inequalities to solve problems by reasoning about the quantities? 	<ul style="list-style-type: none"> • Rational numbers can be added, subtracted and multiplied by following a set order of operations and sign rules.
--	---

Differentiation		
504	<ul style="list-style-type: none"> ● preferential seating ● extended time on tests and assignments ● reduced homework or classwork ● verbal, visual, or technology aids 	<ul style="list-style-type: none"> ● modified materials ● behavior management support ● adjusted class schedules or grading ● modified testing
Enrichment	<ul style="list-style-type: none"> • Provide supplemental materials and activities to build on skills • Provide differentiated assessment and feedback 	<ul style="list-style-type: none"> • Encourage student participation, input and reflection

IEP	<ul style="list-style-type: none"> ● Provide in class instructional support ● Provide instruction and practice with multiple media tools ● Frequent Feedback ● Preferential seating ● Extended time for assignments and tests when appropriate ● Modified assignments and tests 	<ul style="list-style-type: none"> ● Provide leveled text and activities that adapt as students build skills ● Provide multiple means of action and expression ● Consider learning styles and interests ● Provide a calculator when required
ELLs	<ul style="list-style-type: none"> ● Assess prior knowledge ● Pre-teach new vocabulary and meaning of symbols ● Connect new vocabulary and skills to prior knowledge ● Embed glossaries or definitions ● Provide translations 	<ul style="list-style-type: none"> ● Provide cooperative learning opportunities ● Incorporate a variety of learning senses ● Graphic organizers
At-risk	<ul style="list-style-type: none"> ● Purposeful seating ● Counselor involvement ● Parent involvement 	<ul style="list-style-type: none"> ● Contracts ● Alternate assessments ● Hands-on learning
21st Century Skills		
<ul style="list-style-type: none"> ● Creativity ● Innovation ● Critical Thinking 		<ul style="list-style-type: none"> ● Problem Solving ● Communication ● Collaboration

Integrating Technology

- Chromebooks
- Internet research

- Virtual collaboration and projects
- Online programs

Subject: Math	Grade: 7	Unit: 2	2st Marking Period
Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills	
<ul style="list-style-type: none"> ● 7.RP.A.1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. <i>For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate</i> <div style="text-align: right; margin-right: 20px;"> $\frac{\frac{1}{2}}{\frac{1}{4}}$ </div> <i>as the complex fraction</i> <i>mph, equivalently 2 mph.</i> 	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.6 Attend to precision.	Concept(s): No new concepts. Students are able to: <ul style="list-style-type: none"> ● Compute unit rates with fractions. ● Compute unit rates with ratios of fractions representing measurement quantities. in both like and different units of measure. 	

		Learning Goal 1: Calculate and interpret unit rates of various quantities involving ratios of fractions that contain like and different units.
<ul style="list-style-type: none"> ● 7.RP.A.2. Recognize and represent proportional relationships between quantities. <p style="margin-left: 40px;">7.RP.A.2a. 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.</p> <p style="margin-left: 40px;">7.RP.A.2b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</p> <p style="margin-left: 40px;">7.RP.A.2c. Represent proportional relationships by equations. <i>For example,</i></p>	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments & critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p>	<p style="text-align: center;">Concept(s):</p> <ul style="list-style-type: none"> ● Proportions represent equality between two ratios. ● Constant of proportionality <p>Students are able to:</p> <ul style="list-style-type: none"> ● use tables and graphs to determine if two quantities are in a proportional relationship. ● identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. ● write equations representing proportional relationships. ● Interpret the origin and (1, r) on the graph of a proportional relationship in context. ● interpret a point on the graph of a proportional relationship in context. <p style="margin-left: 40px;">Learning Goal 2: Determine if a proportional relationship exists between two quantities e.g. by testing for equivalent ratios in a table or graph on the coordinate plane and observing whether the graph is a straight line through the origin.</p> <p style="margin-left: 40px;">Learning Goal 3: Identify the constant of proportionality (unit rate or COP) from tables, graphs, equations, diagrams, and verbal descriptions.</p>

<p><i>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 $t = pn$.</i></p> <p>7.RP.A.2d. 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.</p>		<p>Learning Goal 4: Write equations to model proportional relationships in real world problems.</p> <p>Learning Goal 5: Use the graph of a proportional relationship to interpret the meaning of any point (x, y) on the graph in terms of the situation - including the points $(0, 0)$ and $(1, r)$, recognizing that r is the unit rate.</p>
<ul style="list-style-type: none"> 7.RP.A.3. Use proportional relationships to solve multistep ratio and percent problems. <i>Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.</i> 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> Recognize percent as a ratio indicating the quantity <i>per one hundred</i>. Use proportions to solve multi-step percent problems including simple interest, tax, markups, discounts, gratuities, commissions, fees, percent increase, percent decrease, percent error. Use proportions to solve Multi-step ratio problems. <p>Learning Goal 6: Solve multi-step ratio and percent problems using proportional relationships (<i>simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error</i>) cent as a ratio indicating the quantity <i>per one hundred</i>.</p>

<ul style="list-style-type: none"> 7.G.A.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. 	<p>MP. 2 Reason abstractly and quantitatively.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> Scale and proportion <p>Students are able to:</p> <ul style="list-style-type: none"> use ratios and proportions to create scale drawings. reproduce a scale drawing at a different scale. computing actual lengths and areas from a scale drawing. solve problems involving scale drawings using proportions. <p>Learning Goal 7: Use ratio and proportion to solve problems involving scale drawings of geometric figures.</p>

Formative Assessments	Summative Assessments
<ul style="list-style-type: none"> Warm Up Board Problems Discussions Skill Checks (Quizzes) Small Group Activities Teacher’s Observation Checks for Understanding IXL & Digits On-line Assignments 	<ul style="list-style-type: none"> Topic Tests Post Unit Test Benchmark Test Standardized Testing

Suggested Primary Resources	Suggested Supplemental Resources
<p><i>PARCC Released Items:</i> https://prc.parcconline.org/assessments/parcc-released-items</p> <p><i>PARCC Practice Tests Unit 1 : TestNav</i> https://parcctrng.testnav.com/client/index.html#login?username=17MT08PTOE01010_100&password=PCPRACTICE</p>	<p><i>District/school resources and supplementary resources that are texts as well as digital resources used to support the instruction.</i> https://www.ixl.com http://mymathuniverse.com/digitsREALIZE</p>
Cross-Curricular Connections & 21 st Century Skills	
<ul style="list-style-type: none"> ● Open ended math problems using language from ELA <ul style="list-style-type: none"> ○ NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text relate to each other and the whole. <ul style="list-style-type: none"> ▪ Deconstructing word problems. ○ NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. <ul style="list-style-type: none"> ▪ Prose constructed response. ● Connection to Social Studies using maps and scale factors 	
Essential Questions	Enduring Understanding
<ul style="list-style-type: none"> ● What is a ratio? ● How do you compute a unit rate? ● How do you recognize a proportional relationship? ● What is a constant of proportionality (COP)? ● What is scale factor and how does it relate to measurement applications? ● How do you use proportional relationships to solve multistep ratio and percent problems? 	<ul style="list-style-type: none"> ● Equivalent ratios are proportional and the cross products of proportions are equal. ● Ratios can be applied to find unit rates (COP = y/x). ● Graphs of proportional relationships are linear and pass through the origin. ● All entries of proportions tables or charts have equivalent ratios or rates (COP). ● The equation of proportional relationships is: $y = COPx$.

Differentiation

504	<ul style="list-style-type: none"> ● preferential seating ● extended time on tests and assignments ● reduced homework or classwork ● verbal, visual, or technology aids 	<ul style="list-style-type: none"> ● modified textbooks or audio-video materials ● behavior management support ● adjusted class schedules or grading ● verbal testing
Enrichment	<ul style="list-style-type: none"> ● Differentiate instruct ● Provide supplemental materials to build on skills ● Provide differentiated assessment and feedback 	<ul style="list-style-type: none"> ● Encourage student participation, input and reflection ● Compare unit rate (COP) to slope of a line
IEP	<ul style="list-style-type: none"> ● Provide in class instructional support ● Provide access to a variety of tools for responses ● Provide opportunities to build familiarity and practice with multiple media tools ● Frequent Feedback ● Preferential seating ● Extended time ● Modified assignments and test 	<ul style="list-style-type: none"> ● Leveled text and activities that adapt as students build skills ● Provide multiple means of action and expression ● Consider learning styles and interests ● Use of calculator
ELLs	<ul style="list-style-type: none"> ● Assess prior knowledge ● Pre-teach new vocabulary and meaning of symbols ● Connect new vocabulary to background knowledge ● Embed glossaries or definitions ● Provide translations 	<ul style="list-style-type: none"> ● Cooperative Learning Opportunities ● Incorporate a variety of learning senses ● Graphic organizers

At-risk	<ul style="list-style-type: none"> ● Purposeful seating ● Counselor involvement ● Parent involvement 	<ul style="list-style-type: none"> ● Contracts ● Alternate assessments ● Hands-on learning
21st Century Skills		
<ul style="list-style-type: none"> ● Creativity ● Innovation ● Critical Thinking 	<ul style="list-style-type: none"> ● Problem Solving ● Communication ● Collaboration 	
Integrating Technology		
<ul style="list-style-type: none"> ● Chromebooks ● Internet research 	<ul style="list-style-type: none"> ● Virtual collaboration and projects ● Online programs 	

Subject: Math	Grade: 7	Unit: 3	3st Marking Period
Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills	
<ul style="list-style-type: none"> ● 7.EE.A.1. Apply properties of operations as strategies to add, 	MP.2 Reason abstractly and	Concept(s):	

<p>subtract, factor, and expand linear expressions with rational coefficients.</p> <ul style="list-style-type: none"> 7.EE.A.2. Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. <i>For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”.</i> 	<p>quantitatively.</p> <p>MP.7 Look for and make use of structure.</p>	<ul style="list-style-type: none"> Rewriting an expression in different forms in a problem context can shed light on the problem. <p>Students are able to:</p> <ul style="list-style-type: none"> add and subtract linear expressions having rational coefficients, using properties of operations. factor and expand linear expressions having rational coefficients, using properties of operations. Write expressions in equivalent forms to shed light on the problem and interpret the relationship between the quantities in the context of the problem. <p>Learning Goal 1: Apply the properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.</p> <p>Learning Goal 2: Rewrite algebraic expressions in equivalent forms to highlight how the quantities in it are related.</p>
<ul style="list-style-type: none"> 7.EE.B.3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments & critique the reasoning of others.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> Rational numbers can take different forms. <p>Students are able to:</p> <ul style="list-style-type: none"> solve multi-step real-life problems using rational numbers in any form.

<p>appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. <i>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.</i></p>	<p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p>	<ul style="list-style-type: none"> · solve multi-step mathematical problems using rational numbers in any form. · convert between decimals and fractions and apply properties of operations when calculating with rational numbers. · estimate to determine the reasonableness of answers. <p>Learning Goal 3: Solve multi-step real life and mathematical problems with rational numbers in any form (fractions, decimals) by applying properties of operations and converting rational numbers between forms as needed. Assess the reasonableness of answers using mental computation and estimation strategies.</p>
<ul style="list-style-type: none"> ● 7.EE.B.4. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. 7.EE.B.4a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments & critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools</p>	<p>Concept(s): No new concept(s) introduced</p> <p>Students are able to:</p> <ul style="list-style-type: none"> · compare an arithmetic solution to a word problem to the algebraic solution of the word problem, identifying the sequence of operations in each solution. · write an equation of the form $px + q = r$ or $p(x + q) = r$ in order to solve a word problem.

<p>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. <i>For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?</i></p> <p>7.EE.B.4b. 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.</p> <p><i>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</i></p>	<p>strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<ul style="list-style-type: none"> · fluently solve equations of the form $px + q = r$ and $p(x + q) = r$. · write an inequality of the form $px + q > r$, $px + q < r$, $px + q \geq r$ or $px + q \leq r$ to solve a word problem. · graph the solution set of the inequality. · interpret the solution to an inequality in the context of the problem. <p>Learning Goal 4: Use variables to represent quantities in a real-world or mathematical problem by constructing simple equations and inequalities to represent problems.</p> <p>Learning Goal 5: Fluently solve equations; solve inequalities, graph the solution set of the inequality and interpret the solutions in the context of the problem (<i>Equations of the form $px + q = r$ and $p(x + q) = r$ and inequalities of the form $px + q > r$, $px + q \geq r$, $px + q \leq r$, or $px + q < r$, where p, q, and r are specific rational numbers</i>).</p>
--	--	--

<i>need to make, and describe the solutions.</i>		
--	--	--

Formative Assessments	Summative Assessments
<ul style="list-style-type: none"> ● Warm Up Board Problems ● Discussions ● Skill Checks (Quizzes) ● Small Group Activities ● Teacher’s Observation ● Checks for Understanding ● IXL & Digits On-line Assignments 	<ul style="list-style-type: none"> ● Topic Tests ● Post Unit Test ● Benchmark Test ● Standardized Testing
Suggested Primary Resources	Suggested Supplemental Resources
<p><i>Exemplar tasks or illustrative models could be provided.</i></p> <p>PARCC Released Items: https://prc.parcconline.org/assessments/parcc-released-items</p> <p>PARCC Practice Tests Unit 1 : TestNav https://parcctrng.testnav.com/client/index.html#login?username=17MT08PTOE01010_100&password=PCPRACTICE</p>	<p><i>District/school resources and supplementary resources that are texts as well as digital resources used to support the instruction.</i></p> <p>digits online https://www.ixl.com http://mymathuniverse.com/digitsREALIZE</p>
Cross-Curricular Connections & 21st Century Skills	
<ul style="list-style-type: none"> ● Open ended math problems using language from ELA <ul style="list-style-type: none"> ○ NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text relate to each other and the whole. <ul style="list-style-type: none"> ▪ Deconstructing word problems. 	

- NJSLA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
 - Prose constructed response.

Essential Questions	Enduring Understanding
<ul style="list-style-type: none"> ● How can you apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients. ● How can you solve multi-step real life and mathematical problems with rational numbers in any form (fractions, decimals) by applying properties of operations and converting rational numbers between forms as needed. ● How can you 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. ● How is the solution to an equation different from the solution to an inequality? 	<ul style="list-style-type: none"> ● Algebra techniques can be used to solve for patterns, translate words into symbols, set up expressions, equations and inequalities and translate problems into equations or inequalities to solve for unknowns.

Differentiation		
504	<ul style="list-style-type: none"> ● preferential seating ● extended time on tests and assignments ● reduced homework or classwork ● verbal, visual, or technology aids 	<ul style="list-style-type: none"> ● modified textbooks or audio-video materials ● behavior management support ● adjusted class schedules or grading ● verbal testing
Enrichment	<ul style="list-style-type: none"> ● Differentiate instruct ● Provide supplemental materials to build on skills ● Provide differentiated assessment and feedback 	<ul style="list-style-type: none"> ● Encourage student participation, input and reflection <p style="margin-left: 40px;">Expand to 5 step Algebra Equations</p>

IEP	<ul style="list-style-type: none"> ● Provide in class instructional support ● Provide access to a variety of tools for responses ● Provide opportunities to build familiarity and practice with multiple media tools ● Frequent Feedback ● Preferential seating ● Extended time ● Modified assignments and test 	<ul style="list-style-type: none"> ● Leveled text and activities that adapt as students build skills ● Provide multiple means of action and expression ● Consider learning styles and interests ● Use of calculator
ELLs	<ul style="list-style-type: none"> ● Assess prior knowledge ● Pre-teach new vocabulary and meaning of symbols ● Connect new vocabulary to background knowledge ● Embed glossaries or definitions ● Provide translations 	<ul style="list-style-type: none"> ● Cooperative Learning Opportunities ● Incorporate a variety of learning senses ● Graphic organizers
At-risk	<ul style="list-style-type: none"> ● Purposeful seating ● Counselor involvement ● Parent involvement 	<ul style="list-style-type: none"> ● Contracts ● Alternate assessments ● Hands-on learning
21st Century Skills		
<ul style="list-style-type: none"> ● Creativity ● Innovation ● Critical Thinking 		<ul style="list-style-type: none"> ● Problem Solving ● Communication ● Collaboration

Integrating Technology

- Chromebooks
- Internet research

- Virtual collaboration and projects
- Online programs

Subject: Math	Grade: 7	Unit: 4	4st Marking Period
Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills	
<ul style="list-style-type: none"> ● 7.G.B.4. Know the formula for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments & critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> · Circumference <p>Students are able to:</p> <ul style="list-style-type: none"> · solve problems by finding the area and circumference of circles. · show that the area of a circle can be derived from the circumference. <p>Learning Goal 1: Know the formulas for the area and circumference of a circle and use them to solve problems. Give an informal derivation of the relationship between the circumference and area of a circle.</p>	

	<p>structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p>	
<ul style="list-style-type: none"> ● 7.G.B.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.EE.B.4. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. <ul style="list-style-type: none"> 7.EE.B.4a. 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. 	<p>MP.3 Construct viable arguments & critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p>	<p>Concept(s): No new concept(s) introduced</p> <p>Students are able to:</p> <ul style="list-style-type: none"> · use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations. · solve mathematical problems by writing and solving simple algebraic equations based on the relationships between and properties of angles (supplementary, complementary, vertical, and adjacent). <p>Learning Goal 2: Write and solve <i>simple</i> multi-step algebraic equations involving supplementary, complementary, vertical, and adjacent angles.</p>

<ul style="list-style-type: none"> 7.G.B.6. Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments & critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s): No new concept(s) introduced</p> <p>Students are able to:</p> <ul style="list-style-type: none"> · solve real-world and mathematical problems involving area of two dimensional objects composed of triangles, quadrilaterals, and polygons. · solve real-world and mathematical problems involving volume of three dimensional objects composed of cubes and right prisms. · solve real-world and mathematical problems involving surface area of three-dimensional objects composed of cubes and right prisms. <p>Learning Goal 3: 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.</p>
<ul style="list-style-type: none"> 7.G.A.2. Draw (<i>with technology, with ruler and protractor as well as freehand</i>) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or 	<p>MP.3 Construct viable arguments & critique the reasoning of others.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> · Conditions for unique triangles, more than one triangle, and no triangle. <p>Students are able to:</p> <ul style="list-style-type: none"> · draw geometric shapes with given conditions, including

<p>sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.</p>	<p>MP.7 Look for and make use of Structure.</p>	<p>constructing triangles from three measures of angles or sides.</p> <ul style="list-style-type: none"> recognize conditions determining a unique triangle, more than one triangle, or no triangle. <p>Learning Goal 4: Use freehand, mechanical (i.e. ruler, protractor) and technological tools to draw geometric shapes with given conditions (e.g. scale factor), focusing on constructing triangles.</p>
<ul style="list-style-type: none"> 7.G.A.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. 	<p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> Quantitative relationships can be represented in different ways. <p>Students are able to:</p> <ul style="list-style-type: none"> graph proportional relationships. interpret unit rate as the slope of a graph. compare two different proportional relationships that are represented in different ways (table of values, equation, graph, verbal description). <p>Learning Goal 5: Describe all of the 2-dimensional figures that result when a 3-dimensional figures are sliced from multiple angles.</p> <p>Learning Goal 6: Graph proportional relationships, interpreting slope as unit rate, and compare two proportional</p>

		relationships, each represented in different ways.
--	--	--

Formative Assessments	Summative Assessments
<ul style="list-style-type: none"> ● Warm Up Board Problems ● Discussions ● Skill Checks (Quizzes) ● Small Group Activities ● Teacher’s Observation ● Checks for Understanding ● IXL & Digits On-line Assignments 	<ul style="list-style-type: none"> ● Topic Tests ● Post Unit Test ● Benchmark Test ● Standardized Testing
Suggested Primary Resources	Suggested Supplemental Resources
<p><i>Exemplar tasks or illustrative models could be provided.</i></p> <p><i>PARCC Released Items:</i> https://prc.parcconline.org/assessments/parcc-released-items</p> <p><i>PARCC Practice Tests Unit 1 : TestNav</i> https://parctrng.testnav.com/client/index.html#login?username=17MT08PTOE01010_100&password=PCPRACTICE</p>	<p><i>District/school resources and supplementary resources that are texts as well as digital resources used to support the instruction.</i></p> <p><i>digits online</i> https://www.ixl.com http://mymathuniverse.com/digitsREALIZE</p>
Cross-Curricular Connections & 21 st Century Skills	
<ul style="list-style-type: none"> ● Open ended math problems using language from ELA ● The math of physical science 	
Essential Questions	Enduring Understanding
<ul style="list-style-type: none"> ● How do you calculate the area and perimeter or circumference of 2 dimensional shapes? ● How do you calculate the surface area and volume of prisms and pyramids? 	<ul style="list-style-type: none"> ● By understanding the relationships of points, lines and planes (surfaces), you can identify and determine the degrees in an angle, calculate the area and perimeter or circumference of 2D shapes, surface area and volume of 3D shapes and perform constructions.

<ul style="list-style-type: none"> • What are the characteristics of supplementary, complementary, vertical, and adjacent angles. • How can you apply the characteristics of angles to solve multi-step problems by writing and solving simple equations for an unknown angle in a figure. 	
--	--

Differentiation		
504	<ul style="list-style-type: none"> ● preferential seating ● extended time on tests and assignments ● reduced homework or classwork ● verbal, visual, or technology aids 	<ul style="list-style-type: none"> ● modified textbooks or audio-video materials ● behavior management support ● adjusted class schedules or grading ● verbal testing
Enrichment	<ul style="list-style-type: none"> ● Differentiate instruct ● Provide supplemental materials to build on skills ● Provide differentiated assessment and feedback 	<ul style="list-style-type: none"> ● Encourage student participation, input and reflection ● Pythagorean Thm & Linear equations
IEP	<ul style="list-style-type: none"> ● Provide in class instructional support ● Provide access to a variety of tools for responses ● Provide opportunities to build familiarity and practice with multiple media tools ● Frequent Feedback ● Preferential seating ● Extended time ● Modified assignments and test 	<ul style="list-style-type: none"> ● Leveled text and activities that adapt as students build skills ● Provide multiple means of action and expression ● Consider learning styles and interests ● Use of calculator

ELLs	<ul style="list-style-type: none"> ● Assess prior knowledge ● Pre-teach new vocabulary and meaning of symbols ● Connect new vocabulary to background knowledge ● Embed glossaries or definitions ● Provide translations 	<ul style="list-style-type: none"> ● Cooperative Learning Opportunities ● Incorporate a variety of learning senses ● Graphic organizers
At-risk	<ul style="list-style-type: none"> ● Purposeful seating ● Counselor involvement ● Parent involvement 	<ul style="list-style-type: none"> ● Contracts ● Alternate assessments ● Hands-on learning
21st Century Skills		
<ul style="list-style-type: none"> ● Creativity ● Innovation ● Critical Thinking 	<ul style="list-style-type: none"> ● Problem Solving ● Communication ● Collaboration 	
Integrating Technology		
<ul style="list-style-type: none"> ● Chromebooks ● Internet research 	<ul style="list-style-type: none"> ● Virtual collaboration and projects ● Online programs 	

Subject: Math	Grade: 7	Unit: 5	4st Marking Period
----------------------	-----------------	----------------	--------------------------------------

Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills
<ul style="list-style-type: none"> 7.SP.A.1. Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences. 	<p>MP.3 Construct viable arguments & critique the reasoning of others.</p> <p>MP.6 Attend to precision.</p>	<p>Concept(s)</p> <ul style="list-style-type: none"> 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. Random sampling tends to produce representative samples. <p>Students are able to:</p> <ul style="list-style-type: none"> Analyze and distinguish between representative and non-representative samples of a population. <p>Learning Goal 1: Distinguish between representative and non-representative samples of a population (<i>e.g. if the class had 50% girls and the sample had 10</i></p>
<ul style="list-style-type: none"> 7.SP.A.2. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> Inferences can be drawn from random sampling. <p>Students are able to:</p> <ul style="list-style-type: none"> analyze data from a sample to draw inferences about the population.

<p>variation in estimates or predictions. <i>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.</i></p>	<p>& critique the reasoning of others. MP.4 Model with mathematics. MP.6 Attend to precision.</p>	<ul style="list-style-type: none"> · generate multiple random samples of the same size. · analyze the variation in multiple random samples of the same size. <p>Learning Goal 2: Use random sampling to produce a representative sample.</p> <p>Learning Goal 3: Develop inferences about a population using data from a random sample and assess the variation in estimates after generating multiple samples of the same size.</p>
<p>● 7.SP.B.3. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. <i>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</i></p>	<p>MP.3 Construct viable arguments & critique the reasoning of others. MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.</p>	<p>Concept(s): No new concepts introduced</p> <p>Students are able to:</p> <ul style="list-style-type: none"> · locate, approximately, the measure of center (mean or median) of a distribution · visually assess, given a distribution, the measure of spread (mean absolute deviation or inter-quartile range). · visually compare two numerical data distributions and describe the degree of overlap. · measure or approximate the difference between the measures centers and express it as a multiple of a measure of variability. <p>Learning Goal 4: Visually compare the means of two distributions that have similar variability; express the difference between the centers as a multiple</p>

<p><i>distributions of heights is noticeable.</i></p>		<p>of a measure of variability.</p>
<p>● 7.SP.B.4. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. <i>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.</i></p>	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments & critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p>	<p>Concept(s): No new concept(s) introduced</p> <p>Students are able to:</p> <ul style="list-style-type: none"> · using measures of center, draw informal inferences about two populations and compare the inferences. · using measures of variability, draw informal inferences about two populations and compare the inferences. <p>Learning Goal 5: Draw informal comparative inferences about two populations using their measures of center and measures of variability.</p>
<p>● 7.SP.C.5. Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a</p>	<p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> · Probability of a chance event is a number between 0 and 1. · Probability expresses the likelihood of the event occurring.

<p>probability around $\frac{1}{2}$ indicates an event that is neither unlikely or likely, and a probability near 1 indicates a likely event.</p>		<ul style="list-style-type: none"> · Larger probability indicates greater likelihood. <p>Students are able to:</p> <ul style="list-style-type: none"> · draw conclusions about the likelihood of events given their probability. <p>Learning Goal 6: Interpret and express the likelihood of a chance event as a number between 0 and 1, relating that the probability of an unlikely event happening is near 0, a likely event is near 1, and $\frac{1}{2}$ is neither likely nor unlikely.</p>
<ul style="list-style-type: none"> ● 7.SP.C.6. Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. <i>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.</i> 	<p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.3 Construct viable arguments & critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> · Relative frequency · Experimental probability · Theoretical probability <p>Students are able to:</p> <ul style="list-style-type: none"> · collect data on chance processes, noting the long-run relative frequency. · predict the approximate relative frequency given the theoretical probability. <p>Learning Goal 7: Approximate the probability of a chance</p>

		<p>event by collecting data and observing long-run relative frequency; predict the approximate relative frequency given the probability.</p>
<ul style="list-style-type: none"> ● 7.SP.C.7. Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. <ul style="list-style-type: none"> ● 7.SP.C.7a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. <i>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.</i> ● 7.SP.C.7b. Develop a probability model (which may not be uniform) by 	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.4 Model with mathematics.</p> <p>MP.6 Attend to precision.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> · Uniform (equally likely) and non-uniform probability models <p><i>Students are able to:</i></p> <ul style="list-style-type: none"> · develop a uniform probability model. · use a uniform probability model to determine the probabilities of events. · develop (non-uniform) probability models by observing frequencies in data that has been generated from a chance process. <p>Learning Goal 8: Develop a uniform probability model by assigning equal probability to all outcomes; develop probability models by observing frequencies and use the models to determine probabilities of events; compare probabilities from a model to observed frequencies and explain sources of discrepancy when agreement is not good.</p>

<p>observing frequencies in data generated from a chance process.</p> <p><i>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?</i></p>		
<ul style="list-style-type: none"> ● 7.SP.C.8. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. <ul style="list-style-type: none"> ● 7.SP.C.8a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the 	<p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> · Just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space. <p>Students are able to:</p> <ul style="list-style-type: none"> · Use organized lists, tables, and tree diagrams to represent sample spaces.

<p>sample space for which the compound event occurs.</p> <ul style="list-style-type: none"> ● 7.SP.C.8b. 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. ● 7.SP.C.8c. Design and use a simulation to generate frequencies for compound events. <i>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?</i> 		<ul style="list-style-type: none"> · Given a description of an event using everyday language, identify the outcomes in a sample space that make up the described event. · Design simulations. · Use designed simulations to generate frequencies for compound events. <p>Learning Goal 9: Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams, identifying the outcomes in the sample space which compose the event. Use the sample space to find the probability of a compound event.</p> <p>Learning Goal 10: Design and use a simulation to generate frequencies for compound events.</p>
---	--	---

Formative Assessments	Summative Assessments
<ul style="list-style-type: none"> ● Warm Up Board Problems ● Discussions ● Skill Checks (Quizzes) ● Small Group Activities ● Teacher's Observation ● Checks for Understanding ● IXL & Digits On-line Assignments 	<ul style="list-style-type: none"> ● Topic Tests ● Post Unit Test ● Benchmark Test ● Standardized Testing

Suggested Primary Resources	Suggested Supplemental Resources
<p><i>Exemplar tasks or illustrative models could be provided.</i></p> <p>PARCC Released Items: https://prc.parcconline.org/assessments/parcc-released-items</p> <p>PARCC Practice Tests Unit 1 : TestNav https://parctrng.testnav.com/client/index.html#login?username=17MT08PTOE01010_100&password=PCPRACTICE</p>	<p><i>District/school resources and supplementary resources that are texts as well as digital resources used to support the instruction.</i></p> <p><i>digits online</i> http://IXL.com http://mymathuniverse.com/digitsREALIZE</p>
Cross-Curricular Connections & 21st Century Skills	
<ul style="list-style-type: none"> ● Open ended math problems using language from ELA ● Probability of genetics in Science 	
Essential Questions	Enduring Understanding
<ul style="list-style-type: none"> ● What is the probability that a given event will occur? ● What is the difference between theoretical and experimental probability? ● How many different forms can be used to represent the probability of an event occurring? ● What methods can be used to find probabilities of compound events. ● How can you analyze and distinguish between representative and non-representative samples of a population. ● What indicators can be used to draw informal comparative inferences about two populations. 	<ul style="list-style-type: none"> ● Probability is the number of favorable outcomes compared to total possible outcomes. Events can be independent or dependent of each other depending on whether or not there is replacement. ● Order matters in determining total possible outcomes. The theoretical probability of an event can be different than the experimental probability. ● A sample space can be made of possible outcomes or the number of possible outcomes can be determined by applying the counting principle or permutations or combinations. ● To analyze, interpret and compare sets of data, it is useful to have various types of graphs for visually displaying the data. ● The mean, median, mode and IQR are one number summaries (central tendencies) that can be used to compare sets of data. ● Random samples of sets of data can be used to draw inferences about a population. ● Generalizations about a population from a sample are valid only if the sample is representative of that population.

Differentiation

504	<ul style="list-style-type: none"> ● preferential seating ● extended time on tests and assignments ● reduced homework or classwork ● verbal, visual, or technology aids 	<ul style="list-style-type: none"> ● modified textbooks or audio-video materials ● behavior management support ● adjusted class schedules or grading ● verbal testing
Enrichment	<ul style="list-style-type: none"> ● Differentiate instruct ● Provide supplemental materials to build on skills ● Provide differentiated assessment and feedback 	<ul style="list-style-type: none"> ● Encourage student participation, input and reflection
IEP	<ul style="list-style-type: none"> ● Provide in class instructional support ● Provide access to a variety of tools for responses ● Provide opportunities to build familiarity and practice with multiple media tools ● Frequent Feedback ● Preferential seating ● Extended time ● Modified assignments and test 	<ul style="list-style-type: none"> ● Leveled text and activities that adapt as students build skills ● Provide multiple means of action and expression ● Consider learning styles and interests ● Use of calculator
ELLs	<ul style="list-style-type: none"> ● Assess prior knowledge ● Pre-teach new vocabulary and meaning of symbols ● Connect new vocabulary to background knowledge ● Embed glossaries or definitions ● Provide translations 	<ul style="list-style-type: none"> ● Cooperative Learning Opportunities ● Incorporate a variety of learning senses ● Graphic organizers

At-risk	<ul style="list-style-type: none"> ● Purposeful seating ● Counselor involvement ● Parent involvement 	<ul style="list-style-type: none"> ● Contracts ● Alternate assessments ● Hands-on learning
21st Century Skills		
<ul style="list-style-type: none"> ● Creativity ● Innovation ● Critical Thinking 	<ul style="list-style-type: none"> ● Problem Solving ● Communication ● Collaboration 	
Integrating Technology		
<ul style="list-style-type: none"> ● Chromebooks ● Internet research 	<ul style="list-style-type: none"> ● Virtual collaboration and projects ● Online programs 	

Appendix A

**Approved June 2017
previous 7th curriculum**