

Madison Public Schools

Math 7/Accelerated Math 7 Curriculum

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Summer 2017

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Summer 2018

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Approval date:

Original: November 7, 2017
Revision: September 25, 2018

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Course Overview

Description

Math 7 is a course aimed at reinforcing and building upon mathematical skills taught in previous classes with additional advanced computation and algebraic concepts. Within the course, students will focus primarily on developing critical thinking skills through problem solving and will simultaneously develop fluency with rational numbers including integers, fractions and decimals. Math 7 offers students opportunities to model situations with the use of expressions, equations, inequalities, ratios and proportions. Written and verbal expression of thoughts is integrated throughout the course allowing students to express their thinking and reasoning.

Goals

This course aims to:

- enable students to make sense of various types of problems and the reasonableness of their answers
- build student confidence with the various approaches to solving a problem and persevere in solving them
- encourage students to become abstract thinkers who make sense of quantities and their relationships in problem situations
- develop students' ability to cooperatively discuss, make conjectures and critique ideas of one another
- use, apply, and model mathematics to solve problems arising in everyday life, society, and the workplace
- consider the variety of available tools when solving a mathematical problem
- communicate mathematical ideas precisely and effectively to others
- determine a pattern or analyze structure within mathematical content to apply to related ideas
- use repeated reasoning to follow a multi-step process through to completion

Materials

Core: Big Ideas Red Book (Accelerated)

Supplemental: Edulastic, illustrative Math, Khan Academy

Resources

[Suggested activities and resources page](#)

Benchmarks

Students will take the [STAR](#) Mathematics assessment a minimum 3 times during the school year.

[Modifications and Adaptations for Special Needs Learners](#)

(Gifted and Talented Students, English Language Learners, Special Education Students, At-Risk Students)

Scope and Sequence (Pacing Guide)

Unit Number	Topic of Study	Duration (Weeks Taught)
1	Integers	3 weeks
2	Rational Numbers	2 weeks
3	Expressions and Equations	3 weeks
4	Inequalities	3 weeks
5	Ratios and Proportions	4 weeks
6	Percents	4 weeks
7	Two-Dimensional Geometry	4 weeks
8	Three-Dimensional Geometry	2 weeks
9	Probability and Statistics	4 weeks
10	Laws of Exponents (Accelerated only)	2 weeks
11	Linear Equations (Accelerated only)	4 weeks
12	8th Grade Geometry (Accelerated only)	3 weeks

Unit 1 Overview	
Unit Title: Integers	
Unit Summary: Within this unit, students will learn to: <ul style="list-style-type: none"> - Add, subtract, multiply and divide integers - Apply properties of operations as strategies to perform operations with integers - Solve problems involving integers in real world contexts. 	
Suggested Pacing: 14 days (11 days for instruction, 3 days for review/assessment)	
Learning Targets	
Unit Essential Questions: <ul style="list-style-type: none"> • How can you use integers to represent real life situations? • How can you tell if the sum of two integers is positive, negative or zero? • How are adding integers and subtracting integers related? • How can you tell if the product/quotient of two integers is positive, negative or zero? 	
Unit Enduring Understandings: <ul style="list-style-type: none"> • Numerical representations can be used to describe and compare the value of real world quantities. • Relationships exist between positive and negative integers • Every point on a line corresponds to a Real Number • Absolute value is a numbers distance from zero. • Operations can be used to solve problems and equations with both positive and negative numbers. • Solving real world problems involves using all properties of operations and all integer rules. 	
Evidence of Learning	
<p>Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as, observation, exit tickets, independent practice, activities, questioning and discussions</p> <p>Summative Assessments: Unit 1 Assessment</p> <p>This assessment will contain a variety of multiple choice, open-ended, select all that apply, matching/sorting and/or short answer questions that will be common across all Math 7/Accelerated Math 7 classes with flexibility for each teacher and level course to differentiate with additional questions, as appropriate. The assessment will contain questions that address the standards listed below.</p>	

Objectives (Students will be able to...)	Essential Content/Skills	Suggested Assessments	Standards (NJSLs)	Pacing
Find the absolute value of numbers Solve real life problems involving absolute value	Content: Absolute value Integers Number line Skills: Find the absolute value of a number Compare and order integers involving absolute value	Partner Activity: QR Task Cards- Students solve problems and check answers by scanning QR codes Group Activity: Create a timeline by ordering integers, involving absolute value, on toilet paper Whole Group Activity: Create human number line by giving students index cards with integers on them	Review: 6.NS.C. 5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. 6.NS.C.7c- Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. 6.NS.C.7d- Distinguish comparisons of absolute value from statements about order. Preparing for 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.	1 days
Add and subtract rational integers Solve real life problems involving addition and	Content: Integer Number line Skills: Adding and subtracting integers	Individual Activity: Maze - Follow path by matching answers to integer computation problems	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.	5 days

subtraction of integers		<p>Partner Activity: Placemats - Students work in groups of 4 to solve problems involving adding integers, then add up answers to get a sum which is then checked by the teacher</p> <p>Self- Checking Task Cards</p>	<p>a. Describe situations in which opposite quantities combine to make 0.</p> <p>b. 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 negative. Show that a number and its opposite have a sum of 0. Interpret sums of rational numbers by describing real world situations.</p> <p>c. 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>d. Apply properties of operations as strategies to add and subtract rational numbers.</p> <p>7.NS.3: Solve real-world and mathematical problems involving the four operations with rational numbers.</p> <p>SMP4 Model with mathematics.</p> <p>SMP5 Use appropriate tools strategically.</p> <p>CRP4. Communicate clearly and effectively and with reason.</p>	
<p>Multiply and divide integers</p> <p>Solve real life problems involving multiplication and division of integers</p>	<p>Content: Rational Numbers</p> <p>Skills: Multiplying and Dividing Rational Numbers</p>	<p>Individual Activity: Google Slides Puzzle - Students solve computation problems involving adding and subtracting integers and move the corresponding answer pieces with the Google doc. If all of the pieces fit together, they have completed the puzzle.</p> <p>Partner Activity: Self- Checking Task Cards</p>	<p>7.NS.2: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.</p> <p>a. 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>b. 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 $-(p/q)=(-p)/q=p/(-q)$. Interpret quotients of rational</p>	3 days

			<p>numbers by describing real world contexts.</p> <p>c. Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p>d. 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> <p>7.NS.3: Solve real-world and mathematical problems involving the four operations with rational numbers.</p> <p>9.1.8.D.1 Determine how saving contributes to financial well-being</p> <p>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p>	
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Unit 2 Overview	
Unit Title: Rational Numbers	
<p>Unit Summary: Within this unit, students will learn to:</p> <ul style="list-style-type: none"> - Add, subtract, multiply and divide rational numbers. - Apply properties of operations as strategies to perform operations with rational numbers. - Convert a rational number to decimal form using long division. - Solve problems involving rational numbers in real world contexts. 	
Suggested Pacing: 10 days (8 days for instruction, 2 days for review/assessment)	
Learning Targets	
<p>Unit Essential Questions:</p> <ul style="list-style-type: none"> • How can you use a number line to order rational numbers? • How can you use what you know about adding integers to add rational numbers? • How can you use what you know about subtracting integers to subtract rational numbers? • Why is the product of two negative rational numbers positive? 	
<p>Unit Enduring Understandings:</p> <ul style="list-style-type: none"> • Numerical representations can be used to describe and compare the value of real world quantities. • Every point on a line corresponds to a Real Number • Understand that every fraction has a decimal equivalent but the inverse may not always be true. • Understand that a rational number is the quotient of two integers. • Operations can be used to solve problems and equations with both positive and negative numbers. 	

- Solving real world problems involves using all properties of operations and all integer rules.

Evidence of Learning

Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as, observation, exit tickets, independent practice, activities, questioning and discussions

Summative Assessments: Unit 2 Assessment

This assessment will contain a variety of multiple choice, open-ended, select all that apply, matching/sorting and/or short answer questions that will be common across all Math 7/Accelerated Math 7 classes with flexibility for each teacher and level course to differentiate with additional questions, as appropriate. The assessment will contain questions that address the standards listed below.

Alternative Assessment: Currency Exchange Project (Big Ideas Math (red book accelerated), chapter 3 resources)

Objectives (Students will be able to...)	Essential Content/Skills	Suggested Assessments	Standards (NJSLs)	Pacing
<p>Understand that a rational number is an integer divided by an integer.</p> <p>Convert rational numbers to decimals.</p> <p>Solve real life problems involving adding and subtracting rational numbers</p>	<p>Skills: Convert a fraction to a decimal or a decimal to a fraction.</p>	<p>Individual Activity: Color by Number with answer key provided</p> <p>Group Activity: Create a timeline by ordering rational numbers, involving absolute value, on toilet paper</p> <p>Whole Group Activity: Create human number line by giving students index cards with rational numbers on them</p>	<p>Review:</p> <p>6.NS.C. 5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.</p> <p>6.NS.C.7c- Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.</p> <p>6.NS.C.7d- Distinguish comparisons of absolute value from statements about order.</p> <p>Preparing for standards: 7.NS.1: Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers;</p>	2 day

			<p>represent addition and subtraction on a horizontal or vertical number line diagram.</p> <p>7.NS.2: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.</p> <p>7.NS.3: Solve real-world and mathematical problems involving the four operations with rational numbers.</p> <p>8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools.</p>	
<p>Add and subtract rational numbers</p> <p>Solve real life problems involving addition and subtraction of rational numbers</p>	<p>Content: Rational numbers Number line</p> <p>Skills: Adding and subtracting rational numbers</p>	<p>Individual Activity: Facing Math- Students solve problems and their answers will indicate what kind of eyes, ears, nose, mouth, etc to draw on a blank face</p> <p>Partner Activity: Super Sleuth- Students solve problems to get clues to figure out the combination to a lock</p> <p>Self- Checking Task Cards</p>	<p>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.</p> <p>a. Describe situations in which opposite quantities combine to make 0.</p> <p>b. 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 negative. Show that a number and its opposite have a sum of 0. Interpret sums of rational numbers by describing real world situations.</p> <p>c. 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>d. Apply properties of operations as strategies to add and subtract rational numbers.</p> <p>7.NS.3: Solve real-world and mathematical problems involving the four operations with rational numbers.</p> <p>CRP11. Use technology to enhance productivity.</p>	4 days
Multiply and divide rational numbers	Content: Rational Numbers	Individual Activity: Color by Number	7.NS.2: Apply and extend previous understandings of multiplication and division and of	2 days

Solve real life problems involving multiplication and division of rational numbers	Skills: Multiplying and Dividing Rational Numbers	with answer key provided Partner Activity: Puzzle- students solve computational problems involving rational numbers and then match up the problem with a solution to complete a puzzle	fractions to multiply and divide rational numbers. a. 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. b. 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 $-(p/q)=(-p)/q=p/(-q)$. Interpret quotients of rational numbers by describing real world contexts. c. Apply properties of operations as strategies to multiply and divide rational numbers. d. 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. 7.NS.3: Solve real-world and mathematical problems involving the four operations with rational numbers. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively. 8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools.	
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Unit 3 Overview

Unit Title: Expressions and Equations

Unit Summary: Within this unit, students will learn to:

- Simplify linear expressions
- Add, subtract and multiply linear expressions
- Rewrite linear expressions by applying the distributive property and factoring
- Understand that rewriting expressions in different forms can show how the quantities are related
- Write algebraic expressions to represent real world situations.
- Write multi-step equations to solve real-world and mathematical problems
- Solve multi-step equations involving variables on both sides
- Solve equations with no solution and all real number solutions

Suggested Pacing: 15 days (12 days for instruction, 3 days for review/assessment)

Learning Targets

Unit Essential Questions:

- How can you simplify an algebraic expression?
- How can you add, subtract and multiply algebraic expressions?
- Why would one need to find equivalent forms of an expression?
- What is an equation?
- How can we create an equation for a given situation?
- How can we solve multi-step equations? How can we check the solution?
- How can we simplify equations, using the number properties, before looking for a solution?

Unit Enduring Understandings:

- Only like terms can be combined, e.g., $x + y = x + y$ but $x + x = 2x$.
- To factor an expression, one must factor out the greatest common factor.
- Rewriting an expression in different forms in a problem context can clarify the problem.
- Rewriting an expression can clarify how the quantities in the problem are related.
- Equations may be used as models to solve mathematical and real world problems
- Real world problems may be represented by the formation and solution of linear equations
- Variables represent one number and any given solution may be checked for precision
- Real world problems may be represented by the formation and solution of linear equations

Evidence of Learning

Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as, observation, exit tickets, independent practice, activities, questioning and discussions

Summative Assessments: Unit 3 Assessment

This assessment will contain a variety of multiple choice, open-ended, select all that apply, matching/sorting and/or short answer questions that will be common across all Math 7/Accelerated Math 7 classes with flexibility for each teacher and level course to differentiate with additional questions, as appropriate. The assessment will contain questions that address the standards listed below.

Objectives (Students will be able to...)	Essential Content/Skills	Suggested Assessments	Standards (NJSLs)	Pacing
Simplify linear expressions by combining like terms	<p>Content: Linear Expressions Coefficients Like terms</p> <p>Skills: Combining like terms</p>	Partner Activity: Matching Activity (Match equivalent expressions)	<p>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. <i>For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”</i></p> <p>NJLSA.L6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.</p>	1 day
Apply properties of operations as strategies to add and subtract linear expressions with rational coefficients	<p>Content: Linear Expressions Coefficients Like terms</p> <p>Skills: Add linear expressions Subtract linear expressions Simplify expressions by combining like terms</p>	Partner Activity: Adding and Subtracting Linear Expressions QR Task Cards	7.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	2 days
Apply properties of operations as strategies to factor linear expressions with rational coefficients	<p>Content: Linear expression Coefficient Factoring Greatest common factor (GCF) Like term</p> <p>Skills: Find the GCF Apply the distributive property Combine like terms</p>	<p>Individual Activity: Drag and Drop (Pairing coefficients and expressions to create expanded expression)</p> <p>Individual Activity: Maze (Follow path by matching expressions in factored and expanded form)</p> <p>Partner Activity:</p>	<p>7.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.</p> <p>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. <i>For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”</i></p>	2 days

		Factoring Scavenger Hunt (Match expanded expression with factored expression)		
Apply properties of operations as strategies to expand linear expressions with rational coefficients	<p>Content: Distributive property Linear expression Like term</p> <p>Skills: Apply the distributive property Combine like terms</p>	Individual Activity: Triples Activity (Finding three equivalent expressions)	<p>7.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.</p> <p>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. <i>For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”</i></p>	1 day

<p>Use variables to represent quantities in a real-world or mathematical problem.</p> <p>Construct simple equations to solve problems by reasoning about the quantities</p> <p>Formulate mathematical equations from words.</p>	<p>Content: Variables Equations</p> <p>Skills: Identify unknown quantities and assign them variables</p> <p>Write multi-step equations to represent real world and mathematical problems</p>	<p>Individual Activity: Word Problem Chart-Students identify unknown quantities, assign it a variable and then write a word problem to match scenario</p> <p>Partner Activity: Equation Match-Up-Matching Equations with Word Problems</p>	<p>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> <p>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.</p> <p>SMP4 Model with mathematics.</p> <p>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p>	3 days
Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals).	<p>Content: Equations Inverse Operations</p> <p>Skills: Solve multi-step equations using inverse operations</p>	<p>Individual Activity: Solve multi-step equations task cards</p> <p>Individual Activity: Relay Race (problems posted around room-solve one problem and then use that solution as the</p>	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 appropriate; and assess the reasonableness of	3 days

Assess the reasonableness of answers using mental computation and estimation strategies.	<p>Determine if a solution “makes sense” to the problem</p> <p>Determine if equations have no solution or all real number solutions</p>	<p>missing box in the next problem)</p> <p>Partner Activity: Equations Puzzle (Solve equations and match up equations with solutions to complete a puzzle)</p> <p>Group Activity: Equations Placemats (each of 4 students solves an equation then add their solutions together to get a final sum)</p> <p>Group Activity: Super Sleuth (4 clues given- students work together to solve problems, check their answers, and get clues to a combination to unlock a lock)</p>	<p>answers using mental computation and estimation strategies.</p> <p>SMP4 Model with mathematics.</p> <p>3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (3-ESS2-1) Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (3-ESS2-1)</p> <p>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p> <p>8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools.</p>	
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Unit 4 Overview				
Unit Title: Inequalities				
Unit Summary: Within this unit, students will learn to: <ul style="list-style-type: none"> - Write multi-step inequalities involving integers and rational numbers to represent real world situations - Solve multi-step inequalities using inverse operations to solve real world problems - Graph inequalities on a number line - Recognize and understand the differences between equations and inequalities 				
Suggested Pacing: 13 days (10 days for instruction, 3 days for review/assessment)				
Learning Targets				
Unit Essential Questions: <ul style="list-style-type: none"> • What is an inequality? • How should we apply inverse operations to solve an inequality? • How should we deal with negative coefficients when solving an inequality? • How can we use a number line to represent solutions to an inequality? 				
Unit Enduring Understandings: <ul style="list-style-type: none"> • An inequality is another way to describe a relationship between expressions; instead of showing that the values of two expressions are equal, inequalities indicate that the value of one expression is greater than (or greater than or equal to) the value of the other expression. • In solving an inequality, multiplying or dividing both expressions by a negative number reverses the sign that indicates the relationships between the two expressions. 				
Evidence of Learning				
<p>Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as, observation, exit tickets, independent practice, activities, questioning and discussions</p> <p>Summative Assessments: Unit 4 Assessment</p> <p>This assessment will contain a variety of multiple choice, open-ended, select all that apply, matching/sorting and/or short answer questions that will be common across all Math 7/Accelerated Math 7 classes with flexibility for each teacher and level course to differentiate with additional questions, as appropriate. The assessment will contain questions that address the standards listed below.</p>				

Objectives (Students will be able to...)	Essential Content/Skills	Suggested Assessments	Standards (NJSLs)	Pacing
Construct simple inequalities to solve problems by reasoning about the quantities.	Content: Inequality Solution Solution set Skills:	Individual Activity: Show pictures of signs (ex. Speed limit sign) and have students construct inequalities to represent the signs	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.	3 days

	Write an inequality to represent a scenario	Partner Activity: Matching Inequalities- Match word problems and scenarios to inequalities	<p>SMP2 Reason abstractly and quantitatively.</p> <p>SMP4 Model with mathematics.</p> <p>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p>	
<p>Solve multi-step inequalities</p> <p>Interpret the solution set of an inequality in the context of a problem.</p>	<p>Content: Inequality Inverse operations Solution Solution set</p> <p>Skills: Solve multi-step inequalities by using inverse operations</p> <p>Switch the direction of the inequality symbol when multiplying or dividing by a negative quantity</p>	<p>Individual Activity: QR Task Cards- Students solve multi-step inequalities and check their answers using QR codes</p> <p>Group Activity: Pass the Problem- Each student does a step to solve the inequality and they pass the paper around until the problem is complete</p> <p>Group Activity: Are you a Solution? Game- Each student has a number. Students solve an inequality and then determine whether their number is part of the solution set.</p>	<p>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> <p>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.</p>	4 days
Graph the solution set of an inequality.	<p>Content: Solution set</p> <p>Skills: Graph a solution set on a number line</p>	<p>Individual Activity: Color by Number- students solve inequalities and match the solution sets to a color, then color that given number in a picture</p> <p>Partner Activity: Graph It - Students are given inequalities and they need to piece together the open circle, closed circle and directional arrows to construct the solution set on the number line</p>	<p>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> <p>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.</p>	3 days

Unit 5 Overview

Unit Title: Ratios and Proportions

Unit Summary: Within this unit, students will learn to:

- Find unit rates associated with ratios of fractions, areas, and other quantities in like or different units
- Decide whether two quantities are proportional using ratio tables and graphs
- Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions
- Represent proportional relationships with equations
- Explain what a point (x,y) means on a proportional graph in context, particularly $(0,0)$ and $(1,r)$, where r is the unit rate
- Use proportionality to solve real world ratio problems
- Use their understanding of proportionality to determine if figures are similar or congruent
- Use scale drawings and models to compute actual lengths and areas

Suggested Pacing: 19 days (16 days for instruction, 3 days for review/assessment)

Learning Targets

Unit Essential Questions:

- What is a ratio?
- What is a unit rate? What is the constant of proportionality?
- How are unit rates used in the real world?
- How can we compute unit rates for ratios and rates specified by rational numbers?
- How do you determine a proportional relationship? What about non-proportional relationships?
- How can proportional relationships be used to solve applications including determining similarity?
- How can we represent proportionality using a table, graph, equation, and or verbal description?
- How can the rate of change be found in various representations of linear data?
- How can proportional relationships be used to convert between units of measurement?

Unit Enduring Understandings:

- Understand a proportional relationship when graphed is a straight line through the origin.
- Realize that a specific point (x,y) on a linear graph represents a rate.
- Understand that the point $(1,r)$ on a linear graph represents the unit rate.
- Proportional relationships are made up of equivalent ratios.
- In proportions, unknowns can be determined by applying cross products to set up and solve an equation.
- Recognize that relationships may be represented using tables, graphs, equations, and verbal descriptions.
- Scale Factor influences similarity between figures in that if their corresponding sides are not proportional, they cannot be similar.

- Two figures are similar if they are the same shape and have congruent corresponding angles.
- A proportion may be solved to convert between units of measurement.

Evidence of Learning

Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as, observation, exit tickets, independent practice, activities, questioning and discussions

Summative Assessments: Unit 5 Assessment

This assessment will contain a variety of multiple choice, open-ended, select all that apply, matching/sorting and/or short answer questions that will be common across all Math 7/Accelerated Math 7 classes with flexibility for each teacher and level course to differentiate with additional questions, as appropriate. The assessment will contain questions that address the standards listed below.

Alternative Assessment: Race Course Rates Project (Big Ideas Math, (Red Accelerated book) chapter 5 resources)

Objectives (Students will be able to...)	Essential Content/Skills	Suggested Assessments	Standards (NJSLs)	Pacing
Find ratios, rates and unit rates Find ratios and rates involving ratios of fractions	Content: Ratios Rates Unit Rates Ratio Tables Complex Fractions Skills: Find a ratio when given a scenario, graph or table Find a rate when given a scenario, graph or table Find a unit rate when given a table, graph or scenario Solve problems involving ratios	Individual Activity: Better Buy - Students look at prices of goods and determine which one is the better buy by determining the unit price of the items Partner Activity: Ratios and Rates Scavenger Hunt- students look at scenarios and determine the ratio or rate which will then lead them to the next question	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.	2 days
Use equivalent ratios to determine whether two ratios form a proportion Use the Cross Products Property to determine whether two ratios form a proportion	Content: Equivalent Ratios Proportion Cross Products Property Skills: Determine whether two ratios are proportional	Individual Activity: Show two ratios and have students hold up paddles either saying "Proportional" or "Nonproportional" Group Activity: Speed Dating- Students rotate around room	7.RP.A.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.	1 day

	<p>Identify proportional relationships</p> <p>Apply Cross Products Property</p> <p>Determine whether quantities are proportional by looking at a graph</p> <p>Interpret plotted points on a graph of a proportional relationship</p>	<p>and get paired up with another student. They then need to determine if they form a proportion by seeing if they have equivalent ratios</p>		
<p>Write proportions</p> <p>Solve proportions using mental math</p>	<p>Content: Proportions</p> <p>Skills: Write a proportion when given a scenario</p> <p>Simplify proportions</p> <p>Solve proportions using mental math</p>	<p>Partner Activity: Batting Averages (Real Life Application) - Have students calculate the batting averages of players by writing proportions</p> <p>Group Activity: Sugar Packets (3-Act Math)- Determine how much sugar packets are in popular beverages to determine which is the healthiest</p>	<p>7.RP.A.2 Recognize and represent proportional relationships between quantities. c. Represent proportional relationships by equations.</p>	2 days
<p>Solve proportions using multiplication or the Cross Products Property</p> <p>Use a point on a graph to write and solve proportions</p>	<p>Content: Cross Products Property</p> <p>Skills: Solve proportions using multiplication</p> <p>Solve proportions using the Cross Products Property</p>	<p>Group Activity: Placemats- Students work in groups of 4 to solve problems involving proportions, then add up answers to get a sum which is then checked by the teacher</p> <p>Group Activity- Harvard Graduation (3 Act Math)- Determine the time at which a student graduates by setting up a proportion</p>	<p>7.RP.A.2 Recognize and represent proportional relationships between quantities. 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.</p> <p>SMP1 Make sense of problems and persevere in solving them.</p> <p>5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real-world problems. (5-PS1-2)</p>	3 days

			CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.	
<p>Identify direct variation from graphs or equations</p> <p>Use direct variation models to solve problems</p>	<p>Content: Direct variation Constant of proportionality</p> <p>Skills: Identify direct variation by looking at graphs, tables and equations</p>	<p>Partner Activity: Direct Variation Sort- students sort graphs, charts and equations as to whether they show direction variation or not, then determine the constant of proportionality</p>	<p>7.RP.A.2 Recognize and represent proportional relationships between quantities. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</p>	3 days
<p>Determine whether two figures are congruent or similar</p>	<p>Content: Congruent figures Similar figures</p> <p>Skills: Set up proportions of side lengths to determine whether figures are congruent or similar</p>	<p>Partner Activity: Math Libs- Students determine unknown side lengths of congruent and similar figures by setting up proportions- answers then correspond to words that will go in a Mad Libs paragraph</p> <p>Partner Activity: Give students various shapes and have them sort them into piles of similar figures</p>	<p>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>	2 days
<p>Use scale drawings to find actual distances</p> <p>Find scale factors</p> <p>Use scale drawings to find actual perimeters and areas</p> <p>Recreate scale drawings at a different scale</p>	<p>Content: Scale Scale drawing Scale model Scale factor</p> <p>Skills: Create a scale drawing Create a scale model Determine the scale factor Find unknown sides of a figure or find actual distances after being given a scale factor or scale</p>	<p>Individual Activity: Scale Drawing- Students choose a picture of a cartoon character and create a scale drawing of it after determining a scale factor</p> <p>Partner Activity: Scale Model Project- Students pick an object and create a scale model of it</p>	<p>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> <p>CRP11. Use technology to enhance productivity.</p> <p>CRP6. Demonstrate creativity and innovation.</p> <p>NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.</p>	3 days

			NJSLSA.SL5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.	
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Unit 6 Overview

Unit Title: Percents

Unit Summary: Within this unit, students will learn to:

- Compare fractions, decimals and percents
- Use proportionality to solve real world percent problems
- Use the percent equation to model real world situations
- Solve percent problems involving percents of increase and decrease, and simple interest

Suggested Pacing: 19 days (16 days for instruction, 3 days for review/assessment)

Learning Targets

Unit Essential Questions:

- What is a percent? How can we determine the percent of any given number?
- How do proportions relate to percentages?
- How can proportional relationships be used to solve percent problems?
- What is the difference between a markup and markdown?
- What is the correlation between percent increase and percent decrease?
- What information do we need to calculate percent error?
- Can money grow? How can we calculate simple interest?

Unit Enduring Understandings:

- Percent literally means per 100 and can be represented as a ratio with 100 as the denominator.
- Understand and communicate information using the relationships of decimals, fractions, integers, and rational/irrational numbers.
- Make sense of percent problems by modeling the proportional relationship using an equation, a table, a graph, mental math, and factors of 100.
- Realize when to use algebraic expressions and equations to solve multi-step percent problems.
- Understand the use of estimation to determine reasonableness, when solving percent word problems.
- Recognize that when they find a certain percent of a given quantity, the answer must be greater than the given quantity if they found more than 100% of it and less if they found less than 100% of it.
- Percent decreases and increases are measures of percent change, which is a relative measure based on absolute change.
- Understand the use of absolute error to calculate percent error.
- Simple interest may be calculated by applying the appropriate formula.

Evidence of Learning

Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as, observation, exit tickets, independent practice, activities, questioning and discussions

Summative Assessments: Unit 6 Assessment

This assessment will contain a variety of multiple choice, open-ended, select all that apply, matching/sorting and/or short answer questions that will be common across all Math 7/Accelerated Math 7 classes with flexibility for each teacher and level course to differentiate with additional questions, as appropriate. The assessment will contain questions that address the standards listed below.

Objectives (Students will be able to...)	Essential Content/Skills	Suggested Assessments	Standards (NJSLs)	Pacing
Write percents as decimals Write decimals as percents Solve real-life problems involving decimals and percents	Content: Percents Decimals Skills: Writing percents as decimals Writing decimals as percents Writing a fraction as a percent and a decimal	Individual Activity: Create foldable explaining all the rules about converting between decimals, fractions and percents Group Activity: Fractions, Decimals and Percents Match-Assign students a fraction, decimal or percent and have them find their partners	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 appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. 8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools.	2 days
Compare and order fractions, decimals and percents Solve real-life problems involving comparing fractions, decimals and percents	Content: Fractions Decimals Percents Number line Skills: Compare and order fractions, decimals and percents	Group Activity: Have students order fractions, decimals and percents using string and clothespins Partner Activity: Drag and Drop- Google Doc activity where students drag fractions, decimals and percents on a number line Partner Activity: Fractions, Decimals and Percents War Whole Class Activity: Human Number Line- Assign students a fraction decimal and/or percent and have them put	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 appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. 8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools.	2 days

		themselves in order from least to greatest		
Use the percent proportion to find parts, wholes and percents	<p>Content: Percent proportion (part/whole = %/100) Part Whole Percent</p> <p>Skills: Estimate a part Estimate a percent Estimate a whole Create a percent proportion to find missing parts, wholes or percents</p>	<p>Individual Activity: Scavenger Hunt- Use percent proportion to find missing parts, whole or percents, which will then lead you to the next problem</p> <p>Partner Activity: Drag and Drop- have students drag and drop parts, wholes and percents into the percent proportion to solve problems</p>	7.RP.A.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.	2 days
Use the percent equation to find parts, wholes and percents	<p>Content: Percent equation [part=(%)(whole)]</p> <p>Skills: Create and solve a percent equation to find missing parts, wholes and percents</p>	<p>Partner Activity: Math Lib- students solve problems and find answers to fill in words to a silly story</p>	7.RP.A.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.	2 days
Calculate percents of increase and decrease	<p>Content: Percent increase Percent decrease</p> <p>Skills: Find the percent increase Find the percent decrease Find a percent of change</p>	<p>Partner Activity: Now and Then- students compare prices of items several years ago and determine the percent of increase or decrease</p> <p>Partner Activity: Task Cards</p>	7.RP.A.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.	2 days
<p>Use percents of discounts to find prices of items</p> <p>Use percents of markups to find selling prices of items</p>	<p>Content: Discount Markup Commission</p> <p>Skills: Find a sale price Find an original price Find a selling price</p>	<p>Partner Activity: The Game of Life- students get real life shopping scenarios and they need to balance a checkbook by purchasing items that have been discounted or marked up</p> <p>Group Activity: Dueling Discounts</p>	<p>7.RP.A.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.</p> <p>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p>	4 days

		3-Act- When is it better to use \$25 off coupons vs. 25% off coupons		
Use the simple interest formula to find interest earned or paid, annual interest rates, and amounts paid on loans	<p>Content: Simple Interest Principal Interest rate Time</p> <p>Skills: Finding interest earned</p> <p>Finding an annual interest rate</p> <p>Finding an amount of time</p> <p>Finding an amount paid on a loan</p>	<p>Individual Activity: Scavenger Hunt</p> <p>Partner Activity: Give students real life scenarios and determine how much they would need to pay for a car loan- Have them compare prices with different interest rates over different periods of time</p>	<p>7.RP.A.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.</p> <p>CRP11. Use technology to enhance productivity.</p> <p>8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools.</p> <p>8.1.8.F.1 Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision.</p> <p>9.1.8.E.5 Analyze interest rates and fees associated with financial services, credit cards, debit cards, and gift cards</p>	2 days

Unit 7 Overview
Unit Title: Two-dimensional Geometry
<p>Unit Summary: Within this unit, students will be able to:</p> <ul style="list-style-type: none"> - Use complementary, supplementary, vertical and adjacent angles - Draw geometric shapes with given conditions, focusing on triangles and quadrilaterals - Reproduce a scale drawing at a different scale - Represent proportional relationships with equations - Use proportionality to solve ratio problems - Find missing angle measures in quadrilaterals. - Find area and circumference of circles - Find area of composite figures
Suggested Pacing: 18 days (15 days for instruction, 3 days for review/assessment)
Learning Targets
<p>Unit Essential Questions:</p> <ul style="list-style-type: none"> • What can you conclude about the angles formed by two intersecting lines? • How can you classify angles? • How can you construct triangles? • How can you classify quadrilaterals? • How can you find the area of a circle? • How can you find the circumference of a circle? • How can you find the perimeter of a composite figure? • How can you find the area of a composite figure?
<p>Unit Enduring Understandings:</p> <ul style="list-style-type: none"> • Area is the number of square units needed to cover a two-dimensional figure. • Circumference is the number of linear units needed to surround a circle. • The circumference of a circle is related to its diameter (and also its radius). • There is a relationship between the circumference and the area of a circle. • Relationships between angles depends on where the angles are located.
Evidence of Learning
<p>Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as, observation, exit tickets, independent practice, activities, questioning and discussions</p> <p>Summative Assessments: Unit 7 Assessment</p> <p>This assessment will contain a variety of multiple choice, open-ended, select all that apply, matching/sorting and/or short answer questions that will be common across all Math 7/Accelerated Math 7 classes with flexibility for each teacher and level course to differentiate with additional questions, as appropriate. The assessment will contain questions that address the standards listed below.</p>

Objectives (Students will be able to...)	Essential Content/Skills	Suggested Assessments	Standards (NJSLs)	Pacing
<p>Identify adjacent and vertical angles</p> <p>Find angle measures using adjacent and vertical angles</p>	<p>Content: Acute Right Obtuse Straight Adjacent angles Vertical angles Congruent angles Equations</p> <p>Skills: Naming pairs of adjacent and vertical angles</p> <p>Construct angles of given measurements</p> <p>Find missing angle measurements by creating and solving equations</p>	<p>Individual Activity: Math Lib- Students find missing angles measurements by solving for variable. Answers correlate with words to fill in math lib story.</p> <p>Partner Activity: Tape intersecting lines on the floor with masking tape. Have angle expressions on index cards. Place index cards with expressions in different angles. Students use knowledge of vertical and adjacent angles to determine value of variable and missing angles measurements.</p>	<p>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.</p>	2 days
<p>Classify pairs of angles as complementary, supplementary or neither</p> <p>Find angle measures using complementary and supplementary angles</p>	<p>Content: Complementary angles Supplementary angles Equations</p> <p>Skills: Identify angles as being complementary, supplementary or neither</p> <p>Use complementary and supplementary angles to find missing angle measurements</p> <p>Construct pairs of complementary and supplementary angles</p>	<p>Partner Activity: Puzzle- Students solve for variables in complementary and supplementary angle expressions and then match up pieces with the value of the variable</p> <p>Whole Class Activity: Necklace Activity- Students are given an angle on a necklace. They then walk around the classroom finding their complement or supplement.</p>	<p>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.</p> <p>SMP3 Construct viable arguments and critique the reasoning of others.</p>	2 days
<p>Construct triangles with given angle measures</p>	<p>Content: Acute triangle Obtuse triangle</p>	<p>Individual Activity- Have students construct triangles</p>	<p>7.G.A.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes</p>	2 days

Construct triangles with given side lengths	<p>Right triangle Equiangular triangle Scalene triangle Isosceles triangle Equilateral triangle</p> <p>Skills: Classify triangles using angles and side lengths</p> <p>Construct triangles using angle measures</p> <p>Construct triangles using side lengths</p>	<p>with geometry software when given angle measurements and/or side lengths</p> <p>Individual Activity- Create mosaic with given triangle dimensions</p>	<p>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.</p> <p>CRP11. Use technology to enhance productivity.</p> <p>SMP3 Construct viable arguments and critique the reasoning of others.</p>	
<p>Understand the sum of the angle measures of any quadrilateral is 360 degrees</p> <p>Find missing angle measures in quadrilaterals</p> <p>Construct quadrilaterals</p>	<p>Content: Quadrilaterals Equations</p> <p>Skills: Classify quadrilaterals</p> <p>Find missing angle measurements of quadrilaterals by using and solving equations</p> <p>Construct a quadrilateral when given side lengths or angle measurements</p>	<p>Individual Activity- Geometric Cartoon- Students construct triangles and quadrilaterals with given conditions and use shapes to create a cartoon character</p> <p>Individual Activity- Students construct quadrilaterals on geoboards with given conditions</p>	<p>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>	2 days
<p>Describe a circle in terms of radius and diameter</p> <p>Understand the concept of pi</p> <p>Calculate circumferences of circles and perimeters of semicircles</p>	<p>Content: Circle Center Radius Diameter Pi</p> <p>Skills: Find the radius and diameter of a circle</p> <p>Calculate the circumference of a circle</p> <p>Estimate the diameter of a circle</p> <p>Find the perimeter of a semicircular region</p>	<p>Partner Activity: Find circumference of circular objects by measuring diameters</p>	<p>7.G.B.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.</p> <p>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p>	3 days
Calculate perimeters of composite figures	Content: Composite Figures	Partner Activity: Given students	7.G.B.6 Solve real-world and mathematical problems involving	1 day

	<p>Skills: Estimate perimeter of a composite figure using grid paper</p> <p>Find the perimeter of a composite figure</p>	<p>pictures of objects (ex: houses, pencil, etc) and have students figure out the perimeter of the composite shape</p>	<p>area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.</p>	
<p>Calculate area of circles and semicircles</p>	<p>Content: Circle Semicircles Area</p> <p>Skills: Find the area of a circle</p> <p>Find the area of a semicircle</p>	<p>Individual Activity- Have students design a piece of art constructed only of circles and semicircles. Have them find the areas of the shapes and record them in a chart. Specific conditions will need to be met (Ex. Blue circles should have a combined area of 500 cm²)</p>	<p>7.G.B.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.</p>	<p>1 day</p>
<p>Calculate areas of composite figures by separating them into familiar figures</p>	<p>Content: Composite figures Area</p> <p>Skills: Find the area of a composite figure using grid paper</p> <p>Find the area of a composite figure by decomposing the figure into familiar shapes</p>	<p>Partner Activity: Given students pictures of objects (ex: houses, pencil, etc) and have students figure out the area of the composite shape</p> <p>Partner Activity- Find areas of puzzle pieces</p>	<p>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>	<p>2 days</p>

Unit 8 Overview				
Unit Title: Three-dimensional Geometry				
Unit Summary: Within this unit, students will be able to: <ul style="list-style-type: none"> - Solve real world problems involving surface areas and volumes of objects composed of prisms, pyramids and cylinders - Describe the cross sections that result from slicing three-dimensional figures 				
Suggested Pacing: 11 days (9 days for instruction, 2 days for review/assessment)				
Learning Targets				
Unit Essential Questions: <ul style="list-style-type: none"> • How can you find the surface area of three dimensional figures? • How can you find the volume of three dimensional figures? • How can you determine the shape of a cross section? 				
Unit Enduring Understandings: <ul style="list-style-type: none"> • Understand volume as a measure of filling an object and surface area as a measure of wrapping or covering an object. • Understand that three-dimensional figures may have the same volume but quite different surface areas or they may have the same surface areas but different shapes and volumes. • Understand how changes in one or more dimensions of a rectangular prism or cylinder will affect the prism's volume. • Understand the effect on surface area and volume of applying a scale factor to a rectangular prism. 				
Evidence of Learning				
<p>Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as, observation, exit tickets, independent practice, activities, questioning and discussions</p> <p>Summative Assessments: Unit 8 Assessment</p> <p>This assessment will contain a variety of multiple choice, open-ended, select all that apply, matching/sorting and/or short answer questions that will be common across all Math 7/Accelerated Math 7 classes with flexibility for each teacher and level course to differentiate with additional questions, as appropriate. The assessment will contain questions that address the standards listed below.</p>				

Objectives (Students will be able to...)	Essential Content/Skills	Suggested Assessments	Standards (NJSLs)	Pacing
Use 2D nets to represent 3D solids Calculate surface areas of rectangular and triangular prisms	Content: Surface area Lateral surface Area Rectangular prism Triangular prism Cube	Individual Activity: Match nets with 3D solids Individual Activity: See how many different ways a net	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.	2 days

	<p>Skills:</p> <p>Draw and identify nets of 3D figures</p> <p>Calculate surface area of rectangular prism</p> <p>Calculate surface area of triangular prism</p> <p>Calculate lateral surface area of prisms</p>	<p>can be drawn by recording all findings on graph paper</p> <p>Partner Activity: Give students real world objects and have them find the surface area of the objects.</p>		
Calculate surface areas of regular pyramids	<p>Content:</p> <p>Surface area</p> <p>Regular pyramid</p> <p>Slant height</p> <p>Skills:</p> <p>Calculate surface area of a square pyramid</p> <p>Calculate surface area of a triangular pyramid</p> <p>Calculate surface areas of composite solids</p>	<p>Individual Activity:</p> <p>Color by Number-</p> <p>Students calculate surface areas and then color in a picture that correlates with the different answers</p>	<p>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> <p>SMP5 Use appropriate tools strategically.</p>	1 day
Calculate surface area of cylinders	<p>Content:</p> <p>Surface Area</p> <p>Cylinder</p> <p>Lateral surface</p> <p>Skills:</p> <p>Calculate the circumference of a circle</p> <p>Calculate surface area of a cylinder</p>	<p>Partner Activity: Give students real life objects in the shapes of cylinders and have students determine surface area of the objects</p>	<p>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>	2 days
Calculate volume of prisms	<p>Content:</p> <p>Volume</p> <p>Prism</p> <p>Skills:</p> <p>Calculate the volume of a prism</p>	<p>Partner Activity: Give students real world objects in the shapes of various prisms and have students determine the volume of the various objects,</p>	<p>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>	1 day

Calculate volume of pyramids	<p>Content: Volume Pyramid</p> <p>Skills: Calculate the volume of a pyramid</p> <p>Calculate volume of composite solids</p>	<p>Partner Activity: Give students real world objects of the same shape, but different size, and have students determine what the better buy would be by measuring and calculating the volume of the figures</p>	<p>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> <p>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p>	2 days
Describe the intersections of planes and solids	<p>Content: Cross section</p> <p>Skills: Find the shape of a cross section of a 3D figure</p>	<p>Partner Activity: Give students playdough and floss. Have them create 3D figures with the playdough and then determine what shape the vertical and horizontal cross sections are. Record the results in a chart.</p>	<p>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> <p>CRP11. Use technology to enhance productivity.</p>	1 day

Unit 9 Overview

Unit Title: Probability and Statistics

Unit Summary: Within this unit, students will:

- Understand representative samples (random sampling) and populations
- Compare two populations from random samples using measures of center and variability
- Understand that probability is the likelihood of an event occurring, expressed as a number from 0 to 1
- Develop probability models and use them to find probabilities
- Find the probabilities of compound events

Suggested Pacing: 18 days (15 days for instruction, 3 days for review/assessment)

Learning Targets

Unit Essential Questions:

- What influences the probability that a given event will occur?
- How can we use modeling to form a prediction?
- What is a simulation? How can it be useful?
- How can you tell when to use each measure of central tendency to represent a data set?
- What influences our decision when choosing the best graph for a data set? How can we make sure a sample is valid and does not display bias?
- How can we make generalizations from a sample to a population?
- How can random sampling be used to draw inferences about a population?
- In what ways can we describe the spread of data?

Unit Enduring Understandings:

- Reading, understanding, interpreting, and communicating data are critical in modeling
- Probability quantifies the likelihood that something will happen and enables us to make predictions and informed decisions.
- The chance of an event happening may be represented by use of decimals, fractions, and or percentages.
- Discussing and determining the likelihood of an event relies on recognizing when to utilize the fundamental counting principle and recognizing which type of probability we are working with.
- Understand the difference between a sample and its population.
- Recognize the validity of different sampling methods and that bias samples lead to invalid conclusions.
- Compare two data distributions and address questions about differences between populations.
- Begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.
- Understand that datasets may be used to predict future events

Evidence of Learning

Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as, observation, exit tickets, independent practice, activities, questioning and discussions

Summative Assessments: Unit 9 Assessment

This assessment will contain a variety of multiple choice, open-ended, select all that apply, matching/sorting and/or short answer questions that will be common across all Math 7/Accelerated Math 7 classes with flexibility for each teacher and level course to differentiate with additional questions, as appropriate. The assessment will contain questions that address the standards listed below.

Alternative Assessment; Color Study Project (Big Ideas Math, (red accelerated book) Chapter 10 resources)

Objectives (Students will be able to...)	Essential Content/Skills	Suggested Assessments	Standards (NJSLs)	Pacing
Identify and count the outcomes of experiments	<p>Content: Experiment Outcomes Event Favorable outcomes</p> <p>Skills: Identifying total and favorable outcomes</p> <p>Determine whether or not a game is fair by analyzing possible outcomes</p>	<p>Partner Activity: Fair Game?- Give students a variety of different games and have students determine which games are fair or not and explain their decisions for each.</p> <p>Partner Activity: Game Creation- Have students create a fair game.</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 probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	1 day
<p>Understand the concept of probability and the relationship between probability and likelihood</p> <p>Find probabilities of events</p>	<p>Content: Probability Likelihood</p> <p>Skills: Describing the likelihood of an event Find the probability of an event</p>	<p>Individual Activity: Science Integration with Punnett Squares- have students determine the probability of parents having a boy, girl, a girl with curly hair, etc.</p> <p>Partner Activity: Probability Stations- Have different stations set up around the room with different activities/games. Students must find the probabilities of various events at each of the stations.</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 probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.</p> <p>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 a. Develop a uniform probability model by assigning equal probability to all outcomes, and</p>	2 days

			use the model to determine probabilities of events.	
<p>Find relative frequencies</p> <p>Use experimental probability to make predictions</p> <p>Use theoretical probabilities to find quantities</p> <p>Compare experimental and theoretical probabilities</p>	<p>Content: Relative frequency Experimental probability Theoretical probability</p> <p>Skills: Find an experimental probability</p> <p>Make predictions after analyzing experimental probabilities</p> <p>Find a theoretical probability</p> <p>Compare experimental and theoretical probabilities</p>	<p>Partner Activity: Have students complete various experiments. Have them compare theoretical probabilities with experimental probabilities.</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 probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.</p> <p>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.</p> <p>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.</p> <p>a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.</p> <p>b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.</p> <p>NJSLSA.L6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.</p>	2 days

<p>Use tree diagrams, tables, or a formula to find the number of possible outcomes</p> <p>Find probabilities of compound events</p>	<p>Content: Sample space Fundamental Counting Principle</p> <p>Skills: Find a sample space</p> <p>Apply the Fundamental Counting Principle to find the total number of possible outcomes</p> <p>Find the probability of a compound event</p>	<p>Individual Activity: Probability Stations- Have stations set up around the room where students have to figure out the sample space and the total number of outcomes. Example: Give students a menu where they could pick an appetizer, entree and dessert OR an ad in the paper where they would need to choose a movie and time. (All real life examples.)</p> <p>Partner Activity: Probability Stations- Have stations set up around the room where students need to find compound probabilities (Examples: Flipping a coin and getting heads and choosing a heart out of a deck of cards.)</p>	<p>7.SP.C.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</p> <p>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.</p> <p>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.</p> <p>8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools.</p>	<p>2 days</p>
<p>Identify independent and dependent events</p> <p>Use formulas to find probabilities of independent and dependent events</p>	<p>Content: Independent Event Dependent Event Replacement</p> <p>Skills: Finding the probability of independent events</p> <p>Finding the probability of dependent events</p> <p>Finding the probability of a compound event</p>	<p>Group Activity/ Project: Probability Carnival Game- At the end of the unit, have students create a carnival game and determine the probability of winning the game. Have students explain if their game includes independent or dependent events.</p>	<p>7.SP.C.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</p> <p>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.</p> <p>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 events</p> <p>c. Design and use a simulation to generate frequencies for compound events.</p>	<p>2 days</p>

			CRP6. Demonstrate creativity and innovation.	
<p>Determine when samples are representative of populations</p> <p>Use data from random samples to make predictions about populations</p>	<p>Content: Population Sample Unbiased sample Biased sample</p> <p>Skills: Identify an unbiased sample</p> <p>Determine whether conclusions are valid</p> <p>Make predictions after looking at samples</p>	<p>Group Activity: Display a scenario on the Smartboard. Give students paddles with Valid on one side and not valid on the other. Students must hold up paddle if they think the conclusion is valid or not valid based on the sample that was taken.</p> <p>Partner Activity: Students design a survey and collect data. Students come up with conclusions at the end and present their findings to the class. They then determine whether or not the conclusions are valid or not depending on the survey technique.</p>	<p>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> <p>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 variation in estimates or predictions.</p> <p>CRP11. Use technology to enhance productivity.</p>	3 days
<p>Use measures of center and variation to compare populations</p> <p>Use random samples to compare populations</p>	<p>Content: Measures of center Mean Median Mode Measures of variation Range Interquartile Range (IQR) Mean Absolute Deviation (MAD) Bow and Whisker Plots</p> <p>Skills: Compare populations using measures of center and variation</p> <p>Use random samples to compare populations</p>	<p>Group Activity/Project: Have groups of students research a topic, such as the ages of athletes in different sports. Each group will represent their data with a box and whisker plot, and then calculate the various measures of center and variation. Students will then do gallery walk and make overall conclusions based on the data after comparing all of the information.</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.</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.</p> <p>CRP11. Use technology to enhance productivity.</p> <p>8.1.8.A.4 Graph and calculate data within a spreadsheet and present a summary of the results</p>	3 days

Unit 10 Overview

Unit Title: Laws of Exponents (ACC ONLY)

Unit Summary: Within this unit, students will:

- Use laws of exponents to multiply exponential expressions with the same base
- Use laws of exponents to divide exponential expressions with the same base
- Use laws of exponents to raise an exponent to an exponent
- Use the properties of integer exponents to generate equivalent expressions.

Suggested Pacing: 9 days (6 days for instruction, 3 days for review/assessment)

Learning Targets

Unit Essential Questions:

- How can you use exponents to write numbers?
- How can you use inductive reasoning to observe patterns and write general rules involving properties of exponents?
- How can you divide two powers that have the same base?
- How can you evaluate a nonzero number with an exponent of zero?
- How can you evaluate a nonzero number with a negative integer exponent?

Unit Enduring Understandings:

- A power is a product of repeated factors.
- To multiply powers with the same base, add their exponents
- To find a power of a power, multiply the exponents.
- To find a power of a product, find the power of each factor and multiply.
- To divide powers with the same base, subtract their exponents.
- For any nonzero number a , $a^0 = 1$. The power 0^0 is undefined

Evidence of Learning

Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as, observation, exit tickets, independent practice, activities, questioning and discussions

Summative Assessments: Unit 10 Assessment

This assessment will contain a variety of multiple choice, open-ended, select all that apply, matching/sorting and/or short answer questions that will be common across all Accelerated Math 7 classes with flexibility for each teacher and level course to differentiate with additional questions, as appropriate. The assessment will contain questions that address the standards listed below.

Objectives (Students will be able to...)	Essential Content/Skills	Suggested Assessments	Standards (NJSLs)	Pacing
Write expressions using integer exponents.	Content: Power Base Exponent	Individual Activity: Maze - Students rewrite exponents as	8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions.	1 day

Evaluate expressions involving integer exponents.	Skills: Writing and evaluating expressions using exponents	repeated multiplication and repeated multiplication as exponents. Answer key provided.	SMP8 Look for and express regularity in repeated reasoning.	
<p>Multiply powers with the same base.</p> <p>Find a power of a power.</p> <p>Find a power of a product.</p>	<p>Content: Product of Powers Property Power of a Power Property Power of a Product Property</p> <p>Skills: Multiplying exponents with the same base Raise a power to a power Raise a product to a power</p>	<p>Individual Activity: Color by Number with answer key.</p> <p>Partner Activity: Math Libs with answer key</p>	8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions.	2 days
<p>Divide powers with the same base.</p> <p>Simplify expressions involving the quotient of powers.</p>	<p>Content: Quotient of Powers Property</p> <p>Skills: Divide exponents with the same base</p>	<p>Partner Activity: Triples Activity (Google Docs) - Students use google docs to simplify exponential expressions and match three expressions with the same answer</p>	8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions.	1 day
<p>Evaluate expressions involving numbers with zero as an exponent.</p> <p>Evaluate expressions involving negative integer exponents.</p>	<p>Content: Zero Exponents Negative Exponents</p> <p>Skills: Raise exponents to a power of zero Raise exponents to a negative exponent</p>	<p>Individual Activity: Scavenger Hunt with answer key</p> <p>Group Activity: Laws of Exponents Bingo</p>	8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions.	2 days

Unit 11 Overview

Unit Title: Linear Equations (ACC ONLY)

Unit Summary: Within this unit, students will:

- Design and interpret graphs of linear equations
- Determine slope when given a scenario or equation and interpret what the slope means in reference to the scenario
- Make connections between slope and direct variation
- Write an equation in slope-intercept form and graph the line
- Write an equation in standard form and graph the line
- Identify parallel and perpendicular lines by comparing the slopes of the equations

Suggested Pacing: 21 days (18 days for instruction, 3 days for review/assessment)

Learning Targets

Unit Essential Questions:

- How can you recognize a linear equation?
- How can you represent a linear relationship?
- When is a relationship between two variables proportional?
- How can you use the slope and y-intercept of a line to describe the relationship between two quantities?

Unit Enduring Understandings:

- A linear equation represents a relationship between two quantities that change at a constant rate.
- Linear relationships can be represented by an equation, graph, or table.
- When two quantities are proportional, the relationship can be described as $y=mx$.
- Slope is a rate of change, or the change in the y values/x values. Slope describes how two quantities change in relation to one another.
- Linear equations can be rewritten to standard form and point-slope form.

Evidence of Learning

Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as, observation, exit tickets, independent practice, activities, questioning and discussions

Summative Assessments: Unit 11 Assessment

This assessment will contain a variety of multiple choice, open-ended, select all that apply, matching/sorting and/or short answer questions that will be common across all Accelerated Math 7 classes with flexibility for each teacher and level course to differentiate with additional questions, as appropriate. The assessment will contain questions that address the standards listed below.

Objectives (Students will be able to...)	Essential Content/Skills	Suggested Assessments	Standards (NJSLs)	Pacing
Understand that lines represent solutions of	<u>Content:</u> Linear equation	Partner Activity: Slope task cards-	8.EE.5 Graph proportional relationships, interpreting the	5 Days

<p>linear equations</p> <p>Graph linear equations</p> <p>Calculate the slope of a line</p> <p>Classify parallel and perpendicular lines by their slope</p>	<p>Solution of a linear equation</p> <p>Slope</p> <p>Rise</p> <p>Run</p> <p>Parallel and Perpendicular Lines</p> <p><u>Skills:</u></p> <p>Represent solutions to a linear equation by making a table of values.</p> <p>Plot ordered pairs</p> <p>Graph horizontal and vertical lines</p> <p>Describe the slope of a line as positive, negative, zero, or no slope</p> <p>Find the slope of horizontal and vertical lines</p> <p>Find the slope from two points</p> <p>Find the slope from a table</p> <p>Recognize that parallel lines have the same slope</p> <p>Recognize that perpendicular lines have negative reciprocal slopes</p> <p>Use similar triangles to explain why the slope is the same between any two points on a line</p>	<p>determine slope when given equations, graphs and charts</p> <p>Partner Activity: Slope Match Up- Match up various charts, graphs and equations with the same slope</p> <p>Group Activity: Barbie Bungee- Determine how many rubber bands are needed to bungee barbie off the stairs and get as close the floor as possible without hitting her head by writing and using linear equations</p>	<p>unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.</p> <p>8.EE.6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y=mx$ for a line through the origin and the equation $y=mx+b$ for a line intercepting the vertical axis at b.</p> <p>CRP11. Use technology to enhance productivity.</p>	
<p>Graph proportional relationships</p> <p>Identify slopes and y-intercepts</p> <p>Graph linear equations written in slope-intercept form</p>	<p><u>Content:</u></p> <p>Proportional relationships</p> <p>X-intercept</p> <p>Y-intercept</p> <p>Slope-intercept form</p> <p>Standard form</p> <p>Point-slope form</p>	<p>Partner Activity: Graph/Equation Dominoes- Match up graphs and equations in a domino activity</p> <p>Partner Activity:</p>	<p>8.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.</p>	13 Days

<p>Graph linear equations written in standard form</p> <p>Construct equations in slope intercept form</p> <p>Construct equations in point-slope form</p>	<p><u>Skills:</u> Tell whether x and y are proportional</p> <p>Analyze proportional relationships to find the slope and y-intercept</p> <p>Write an equation that represents a real-life situation</p> <p>Interpret and compare graphs and equations</p> <p>Identify the slope and y-intercept from an equation</p> <p>Use a graphing calculator to graph relationships</p> <p>Calculate the x- and y-intercepts from an equation</p> <p>Rewrite standard form to slope-intercept form</p> <p>Interpret the slope and y-intercept in real-life applications</p> <p>Identify the x- and y-components in a real-life situation</p> <p>Identify equations of parallel and perpendicular lines.</p> <p>Use point-slope form to write equations</p> <p>Write an equation in slope-point form when given two points</p> <p>Rewrite point-slope form to $y=mx+b$ form</p>	<p>Match up Task Cards - Cards have various equations, slopes, points and graphs and students need to make matches of 4 if they all match the same equation (equations written in both standard and slope-intercept form)</p>	<p>8.F.4 Construct a function to model a linear relationships between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two x, y values, including reading these from a table or graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or table of values.</p> <p>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p>	
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Unit 12 Overview
Unit Title: 8th Grade Geometry (ACC ONLY IF TIME PERMITS)
<p>Unit Summary: Within this unit, students will:</p> <ul style="list-style-type: none"> - Find missing lengths of right triangles using the pythagorean theorem, and explore the concept of non-perfect squares - Classify the non-perfect squares as irrational numbers, and estimate their values using perfect squares - Explore transforming polygons in a coordinate plane and analyzing the change that the transformation has on the location, orientation, and size of the shape - Inspect transformations that have occurred, and describe the series of events that have created the transformed shape from the original
Suggested Pacing:13 days (10 days for instruction, 3 days for review/assessment)
Learning Targets
<p>Unit Essential Questions:</p> <ul style="list-style-type: none"> • How are the lengths of the sides of a right triangle related? • How can you find decimal approximation of square roots that are not rational? • In what other ways can use Pythagorean Theorem? • Why does one need to perform transformations on figures? • How does knowing two figures are congruent or similar help one to solve problems? • How do changes in dimensions of similar geometric figures affect the perimeter and areas of the figures?
<p>Unit Enduring Understandings:</p> <ul style="list-style-type: none"> • Every irrational square root can be estimated by its location between two rational square roots. • Pythagorean Theorem explains how the lengths of the sides of a right triangle are related. • Pythagorean Theorem can be used to find distance. • The sum of the legs squared equals the hypotenuse squared. • Figures can be translated, reflected, and rotated in a plane. • Figures can be reduced or enlarged using a scale factor.
Evidence of Learning
<p>Formative Assessments: A variety of formative assessments will be used throughout the lesson, such as, observation, exit tickets, independent practice, activities, questioning and discussions</p> <p>Summative Assessments: Unit 12 Assessment This assessment will contain a variety of multiple choice, open-ended, select all that apply, matching/sorting and/or short answer questions that will be common across all Accelerated Math 7 classes with flexibility for each teacher and level course to differentiate with additional questions, as appropriate. The assessment will contain questions that address the standards listed below.</p>

Objectives (Students will be able to...)	Essential Content/Skills	Suggested Assessments	Standards (NJSLS)	Pacing
Approximate square roots	<p>Content: Squares Square roots</p> <p>Skills: Estimate the square root to the nearest tenth</p>	Individual Activity: Drag and Drop- Students drag and drop square roots onto a number line in a Google Document	<p>8.NS.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats into a rational number.</p> <p>8.NS.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions</p>	1 days
<p>Provide geometric proof of the Pythagorean Theorem.</p> <p>Use the Pythagorean Theorem to find unknown side lengths in right triangles.</p> <p>Use the pythagorean theorem and problem solving skills to find unknown measurements in real life situations.</p>	<p><u>Content:</u> Pythagorean Theorem Legs Hypotenuse Right triangles</p> <p><u>Skills:</u> Use the Pythagorean Theorem to find missing measures of right triangles and distances between points in the coordinate plane.</p>	<p>Individual Activity: QR Task Cards- Students solve problems related to the PT and need to check their answers by scanning a QR code</p> <p>Individual Activity: Color by Number - Solve problems related to Pythagorean Theorem and then color corresponding answers on coloring sheet</p>	<p>8.G.6 Explain a proof of the Pythagorean Theorem and its converse.</p> <p>8.G.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.</p> <p>8.G.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.</p>	2 Days
<p>Identify translations, reflections, and rotations.</p> <p>Translate, reflect, and rotate figures in the coordinate plane.</p> <p>Use more than one transformation to find images of figures.</p>	<p><u>Content:</u> Coordinate plane Ordered pair Polygon Quadrilateral Triangle Vertices Congruent figures Corresponding angles Corresponding sides Transformation Image Translation Reflection Line of reflection Rotation Center of rotation Angle of rotation</p>	<p>Individual Activity: Transformations Mystery Picture- Follow clues to create a mystery picture by translating, reflecting and rotating shapes on a coordinate grid</p> <p>Partner Activity: Transformation Dominoes- Match up shapes on coordinate grids with transformations in a domino activity</p> <p>Partner Activity:</p>	<p>8.G.1 Verify experimentally the properties of translations, reflections, rotations, and dilations.</p> <p>8.G.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. .</p> <p>8.G.3 Describe the effect of translations, reflections, and rotations on two-dimensional</p>	7 Days

	<p><u>Skills:</u> Verify the properties of translations, reflections, and rotations.</p> <p>Describe translations, reflections, rotations, and dilations using coordinates.</p> <p>Understand that figures are congruent (or similar) when they can be related by a sequence of translations, reflections, and rotations (and dilations).</p> <p>Describe a sequence that exhibits congruence or similarity between two figures</p> <p>Use notation for angles and sides</p> <p>Tell whether a figure is a translation of another figure</p> <p>Identify the line of reflection</p> <p>Tell whether a figure is a reflection of another figure</p> <p>Rotate figures 90° or 180° clockwise and counterclockwise</p> <p>Tell whether a figure is a rotation of another figure</p>	<p>Polygraph: Transformations</p> <p>Partner Activity: Desmos: Rotations</p>	<p>figures using coordinates.</p> <p>8.1.P.A.5 Demonstrate the ability to access and use resources on a computing device.</p> <p>8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools.</p>	
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