

Introduction

In Grade 7, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples.

Setting the Stage

	ASSIGNMENT (CALL TO ACTION)	RESOURCE/ URL	
<p>Welcome to the Grade 7 Mathematics Pennsylvania Learns iTunes U course. We are setting the stage for this course by providing you with background information about Pennsylvania Mathematics Core Standards and the Standards for Mathematical Practice.</p>			
<p>Pennsylvania Core Standards: The State Board approved the final Chapter 4 regulations on September 12, 2013. The Independent Regulatory Review Commission (IRRC) approved the final regulation on November 21, 2013. With publication of Chapter 4 in the Pennsylvania Bulletin, the new regulations took effect on March 1, 2014.</p> <p>As part of the new regulations, Pennsylvania’s Core Standards offer a set of rigorous, high-quality academic expectations in Mathematics that all students should master by the end of each grade level. The PA Core Standards are robust and relevant to the real world and reflect the knowledge and skills our young people need to succeed in life after high school, in both post-secondary education and a globally competitive workforce.</p>	<p>REVIEW the “Teacher Resources” and “Student Resources” section of the PA Core Implementation section of the SAS Portal.</p>	<p>http://www.pdesas.org/Standard/PACore</p>	

Standards for Mathematical Practice and Content

TOPIC	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTIONS	RESOURCE/ URL
About the Standards for Mathematical Practice and Content	The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important “processes and proficiencies” with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council’s report <i>Adding It Up</i> : This report explores how students in pre-K through 8th grade learn mathematics and highlights the importance of the inclusion of the following in teaching and learning: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one’s own efficacy).			
Standards for Mathematical Practice	The eight Standards of Mathematical Practice: 1 Make sense of problems and persevere in solving them. 2 Reason abstractly and quantitatively. 3 Construct viable arguments and critique the reasoning of others. 4 Model with mathematics. 5 Use appropriate tools strategically. 6 Attend to precision. 7 Look for and make use of structure. 8 Look for and express regularity in repeated reasoning. The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years.			
		LEARN how the standards improve teaching, make learning more engaging, create shared expectations, and cultivate lifelong learning for students.	NCTM and The Hunt Institute have produced a series of videos to enhance understanding of the mathematics that students need to succeed in college, life, and careers. Beginning in the primary grades, the videos address the importance of developing a solid foundation for algebra, as well as laying the groundwork for calculus and other postsecondary mathematics coursework. The series also covers the Standards for Mathematical Practice elaborated in the PA Core Standards for Mathematics and examines why developing conceptual understanding requires a different approach to teaching and learning.	https://itunes.apple.com/us/itunes-u/hunt-institute-ccss-series/id461816983?mt=10

Standards for Mathematical Content	<p>The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word “understand” are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices. The content standards which set an expectation of understanding are potential “points of intersection” between the Standards for Mathematical Content and the Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit the time, resources, innovative energies, and focus necessary to qualitatively improve the curriculum, instruction, assessment, professional development, and student achievement in mathematics.</p>			
		DEEPEN your understanding of the PA Core Standards shifts in mathematics.	This course is intended to deepen your understanding of the PA Core Standards shifts in mathematics. It is designed to stimulate thinking around designing and delivering instruction matched to the Standards and how this may change your classroom practice. The content describes how the Standards differ from previous Standards and thoroughly explains the Shifts of focus, coherence and rigor.	https://itunes.apple.com/us/course/ccss-for-teachers-math-shifts/id679843407

Topic Title	Outline Description	Title Post	Assignment	Content Title	Content URL or Location	Alternative to IOS or Notes
Module 1: Ratios and Proportional Relationships	<p>In Module 1, students build on their Grade 6 experiences with ratios, unit rates, and fraction division to analyze proportional relationships. They decide whether two quantities are in a proportional relationship, identify constants of proportionality, and represent the relationship by equations. These skills are then applied to real-world problems including scale drawings.</p> <p>Students examine situations carefully to determine if they are describing a proportional relationship. Their analysis is applied to relationships given in tables, graphs, and verbal descriptions.</p> <p>Students relate the equation of a proportional relationship to ratio tables. Students learn that the unit rate of a collection of equivalent ratios is called the constant of proportionality and can be used to represent proportional relationships with equations of the form $y=kx$, where k is the constant of proportionality.</p> <p>Students apply their learning to graphs and interpret the points on the graph within the context of the situation.</p> <p>Students extend their reasoning about ratios and proportional relationships to compute unit rates for ratios and rates specified by rational numbers, such as a speed of 1/2 mile per 1/4 hour. Students apply their experience in the first topics above and their new understanding of unit rates for ratios and rates involving fractions to solve multistep ratio word problems.</p> <p>Finally, in this module, students bring the sum of their experience with proportional relationships to the context of scale drawings. Given a scale drawing, students rely on their background in working with side lengths and areas of polygons. as they identify the scale factor as the constant of proportionality, and calculate the actual lengths and areas of objects in the drawing.</p> <p>Later, students will extend the concepts of this module to percent problems.</p> <p>Module 1 Focus Standard:</p> <ul style="list-style-type: none"> • CC.2.1.7.D.1 Analyze proportional relationships and use them to model and solve real-world and mathematical problems. <p>Module Objectives:</p> <ul style="list-style-type: none"> • Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units. • Determine whether two quantities are proportionally related 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 					

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Unit Rates	In this lesson, students will compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units.		UNDERSTAND real life applications of unit rate by watching two videos.		https://m.youtube.com/watch?v=BZ1M01YBKhk	
					https://m.youtube.com/watch?v=kVxRByQOwf4	
			LEARN how to find unit rates associated with ratio of fractions using pictures.		https://learnzillion.com/lessons/2617-determine-unit-rates-using-pictures	
			LEARN how to find unit rates associated with ratio of fractions using division.		https://learnzillion.com/lesson_plans/9019-find-unit-rates-in-situations-involving-fractions	
			PRACTICE solving real-world problems by applying unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.	Demonstrate your solutions through the Explain Everything app. Use Level a for Basic Review, Level B for Asking for More, or Level C to Step Beyond	https://pa01001022.schoolwires.net/cms/lib/PA01001022/Centricity/Domain/385/Worksheet%206-1C%20Rate%20Word%20Problems.pdf	
					http://s3.amazonaws.com/illustrativemathematics/attachments/000/009/700/original/student_task_82.pdf?1462398592	
					http://s3.amazonaws.com/illustrativemathematics/attachments/000/010/158/original/student_task_828.pdf?1462401333	

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					http://s3.amazonaws.com/illustrativemathematics/attachments/000/010/701/original/student_task_1968.pdf?1462404669	
					https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
Testing for Proportional Relationships	In this lesson, students determine whether two quantities are proportionally related 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		LEARN about whether two quantities are proportionally related by testing for equivalent ratios in a table, or observing whether the graph is a straight line through the origin on a coordinate plane.	PRACTICE the skills as you work through the series of videos.	https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-ratio-proportion/cc-7th-proportional-rel	
Represent Proportional Relationships with Equation	In this lesson, students will represent proportional relationships with equations.		LEARN how to represent proportional relationships with equations.		https://learnzillion.com/lessons/1870-identify-unit-rates-using-equations	
			PRACTICE representing proportional relationships with equations.		https://www.ixl.com/math/grade-8/write-an-equation-for-a-proportional-relationship	
			PRACTICE representing proportional relationships with equations.		http://s3.amazonaws.com/illustrativemathematics/attachments/000/009/716/original/student_task_101.pdf?1462398684	
					http://s3.amazonaws.com/illustrativemathematics/attachments/000/009/776/original/student_task_180.pdf?1462399037	

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					https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
Identifying Constant of Proportionality	In this lesson, students will identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.		LEARN how to identify the constant of proportionality (unit rate) in verbal descriptions of proportional relationships.		https://learnzillion.com/lessons/1869-identify-rates-from-verbal-descriptions	
			LEARN how to identify the constant of proportionality (unit rate) in diagrams of proportional relationships.		https://learnzillion.com/lessons/1872-identify-unit-rates-in-diagrams	
			LEARN how to identify the constant of proportionality (unit rate) in graphs of proportional relationships.		https://learnzillion.com/lessons/1873-identify-unit-rates-in-graphs	
			PRACTICE identifying the constant of proportionality.		https://www.ixl.com/math/grade-7/find-the-constant-of-variation	
			PRACTICE identifying the constant of proportionality.	Import into and solve in Explain Everything.	https://betterlesson.com/lesson/resource/2406488/equationsforproportionalrelationships_ips-docx?from=resource_title	
Interpreting the Graphs of Proportional Relationships	In this lesson, students will 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.		LEARN how to interpret a point on the graph of a proportional relationships.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-ratio-proportion/cc-7th-equations-of-proportional-relationships/v/examples-interpreting-graphs-of-proportional-relationships	

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			PRACTICE interpreting a point on a graph of a proportional relationship.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-ratio-proportion/cc-7th-equations-of-proportional-relationships/e/interpreting-graphs-of-proportional-relationships	
			PRACTICE interpreting a point on a graph of a proportional relationship.	Import and solve in Explain Everything.	http://s3.amazonaws.com/illustrativemathematics/attachments/000/009/719/original/student_task_104.pdf?1462398702	
					http://s3.amazonaws.com/illustrativemathematics/attachments/000/009/777/original/student_task_181.pdf?1462399043	
Solving Word Problems involving Proportional Relationships	In this lesson, students will use proportional relationships to solve multi-step ratio problems.		LEARN how to solve multi-step ratio problems.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-ratio-proportion/cc-7th-write-and-solve-proportions/v/find-an-unknown-in-a-proportion-2	
					https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-ratio-proportion/cc-7th-write-and-solve-proportions/v/using-proportion-to-solve-for-variable	
			PRACTICE solving multi-step ratio problems.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-ratio-proportion/cc-7th-write-and-solve-proportions/e/constructing-proportions-to-solve-application-problems	

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			PRACTICE solving multi-step ratio problems.	Use the Explain Everything app to demonstrate and explain your solutions.	Gotham city taxis task from https://www.illustrativemathematics.org/content-standards/tasks/884	
					https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
Scale Drawings	In this lesson, students will solve problems involving scale drawings of geometric figures, including finding length and area.		LEARN how to find the scale factor using division.		https://learnzillion.com/lessons/2780-find-scale-factor-using-division	
			LEARN how to create scale drawings.		https://learnzillion.com/lessons/2881-generate-a-scale-drawing	
			SOLVE problems involving scale drawings of geometric figures.		https://www.ixl.com/math/grade-7/scale-drawings-and-scale-factors	
			SOLVE problems involving scale drawings of geometric figures.	Use the Explain Everything app to demonstrate and explain your solutions.	http://s3.amazonaws.com/illustrativemathematics/attachments/000/009/722/original/student_task_107.pdf?1462398719	
					http://s3.amazonaws.com/illustrativemathematics/attachments/000/010/292/original/student_task_1082.pdf?1462402142	
					http://s3.amazonaws.com/illustrativemathematics/attachments/000/010/715/original/student_task_1991.pdf?1462404756	
					https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en

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Module 2: Rational Numbers	<p>In Module 2, students develop a unified understanding of numbers, recognizing fractions and decimals (that have a finite or a repeating decimal representation) as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division to all rational numbers, maintaining the properties of operations and the relationships between addition and subtraction, and multiplication and division. By applying these properties, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers.</p> <p>Module 2 Focus Standards</p> <p>CC.2.1.7.E.1 - Apply and extend previous understandings of operations with fractions to operations with rational numbers.</p> <p>Module 2 Objectives:</p> <ul style="list-style-type: none"> Apply properties of operations to add and subtract rational numbers, including real-world contexts. Represent addition and subtraction on a horizontal or vertical number line. Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats. 				
Addition and Subtraction of Integers on a Number Line	In this lesson, students will represent addition and subtraction on a horizontal or vertical number line.	ENGAGE in adding integers through the Integers app.	Choose the Colored Chips first. Next choose the Number Line to add.	https://itunes.apple.com/us/app/interactive-integers-addition/id461996605?mt=8	http://www.mathgoodies.com/games/integer_game/IFLgame_standalone.swf
		WRITE a rule for adding two integers with the same sign. Demonstrate your rule with an example.		https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything&hl=en
		WRITE a rule for adding two integers with different signs. Demonstrate your rule with an example.		https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything&hl=en
		PRACTICE adding integers by applying your rules.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-negative-numbers-add-and-subtract/cc-7th-add-negatives/e/adding-negative-numbers	
		ADD negative numbers including decimals on a number line.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-negative-numbers-add-and-subtract/cc-7th-add-sub-neg-number-line/e/adding-negative-numbers-on-the-number-line	

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		ENGAGE in subtracting integers through the Number Line app.	Choose the Subtraction operation in the upper right corner. Drag the blue and red arrow to change the subtrahend and the minuend. Look for patterns in where the arrows move and the final answer.	https://itunes.apple.com/us/app/number-line-manipulative/id805013846?mt=8	https://www.mathlearningcenter.org/web-apps/number-line/
		ENGAGE in subtracting integers through the Integers app.	Choose the Number Line to subtract.	https://itunes.apple.com/us/app/interactive-integers-addition/id461996605?mt=8	http://www.mathgoodies.com/games/integer_game/IFLgame_standalone.swf
		WRITE a rule for subtracting two integers.		https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything&hl=en
		CHECK to see if your rule is correct by watching the following video.		https://learnzillion.com/lessons/1029	
		PRACTICE using the rule for subtraction on a number line.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-negative-numbers-add-and-subtract/cc-7th-add-sub-neg-number-line/e/negative-number-addition-and-subtraction--equations-and-number-lines	
		PRACTICE subtracting integers by applying your rule.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-negative-numbers-add-and-subtract/cc-7th-sub-neg-intro/e/adding_and_subtracting_negative_numbers	
		PRACTICE integer addition and subtraction using a vertical number line.		http://pbskids.org/cyberchase/math-games/space-coupe-rescue	
Add and Subtract Rational Numbers in Real World Contexts	In this lesson, students will apply properties of operations to add and subtract rational numbers, including real-world contexts.	LEARN how to subtract rational numbers using real-world contexts.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-negative-numbers-add-and-subtract/cc-7th-add-sub-word-problems-w-negatives/v/finding-initial-temperature-from-temperature-changes	
		PRACTICE adding and subtracting rational numbers in real world contexts.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-negative-numbers-add-and-subtract/cc-7th-add-sub-word-problems-w-negatives/e/adding-negative-numbers-word-problems	

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		PRACTICE interpreting the sum or difference of rational numbers. in real world problems.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-negative-numbers-add-and-subtract/cc-7th-add-sub-word-problems-w-negatives/e/negative-number-addition-and-subtraction--interpretation-problems	
		PRACTICE adding and subtracting rational numbers in real world contexts.	Demonstrate and explain your solutions in the Explain Everything app.	Difference of Integers task from https://www.illustrativemathematics.org/content-standards/7/NS/A/1/tasks/1987	
				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		PRACTICE adding and subtracting rational numbers in real world contexts.	Demonstrate and explain your solutions in the Explain Everything app.	Freezing points task from https://www.illustrativemathematics.org/content-standards/7/NS/A/1/tasks/314	
				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
Properties of Operations: Multiply and Divide Rational Numbers	In this lesson, students apply properties of operations to multiply and divide rational numbers, including real-world contexts.	LEARN how to multiply integers using colored chips.	Import the activity into the Explain Everything app and annotate over it. You may want to use the colored chips in the Number Frame app to support your work.	IntegerMultChip activity in Module 2 on wikispace	
				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
				https://itunes.apple.com/us/app/number-frames-by-math-learning/id873198123?mt=8	https://www.mathlearningcenter.org/web-apps/number-frames/
		CHECK if your conclusions were correct about multiplying integers by looking at it from a pattern perspective.		https://learnzillion.com/lessons/704-multiply-positive-and-negative-integers-by-noticing-patterns	
		LEARN how to divide integers using colored chips.	Import the activity into the Explain Everything app and annotate over it. You may want to use the colored chips in the Number Frame app to support your work.	Integer Division activity from module 2 on wikispace.	
				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en

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				https://itunes.apple.com/us/app/number-frames-by-math-learning/id873198123?mt=8	https://www.mathlearningcenter.org/web-apps/number-frames/
		CHECK if your conclusions were correct about dividing integers.		https://learnzillion.com/lessons/1032	
		PRACTICE multiplying and dividing rational numbers.		https://www.ixl.com/math/grade-7/multiply-and-divide-integers	
		PRACTICE solving world problems requiring multiplication and division of integers.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-negative-numbers-multiply-and-divide/cc-7th-mult-div-neg-word-problems/e/negative-number-word-problems-1	
		PRACTICE solving world problems requiring multiplication and division of integers.	Demonstrate and explain your solutions within the Explain Everything app.	Drill heights task from https://www.illustrativemathematics.org/content-standards/7/NS/A/3/tasks/1602	
				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
Decimal Form of a Rational Number	In this lesson, students demonstrate that the decimal form of a rational number terminates or eventually repeats.	PRACTICE changing fractions to decimals to determine if terminate or repeat.	Demonstrate and explain your solutions within the Explain Everything app.	Decimal expansion task from https://www.illustrativemathematics.org/content-standards/tasks/1542	
				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en

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Module 3: Expressions and Equations	<p>This module consolidates and expands upon students' understanding of equivalent expressions as they apply the properties of operations to write expressions in both standard form and in factored form. They use linear equations to solve unknown angle problems and other problems presented within context to understand that solving algebraic equations is all about the numbers. Students use the number line to understand the properties of inequality and recognize when to preserve the inequality and when to reverse the inequality when solving problems leading to inequalities. They interpret solutions within the context of problems. Students extend their sixth-grade study of geometric figures and the relationships between them as they apply their work with expressions and equations to solve problems involving area and circumference of a circle, as well as volume and surface area of right prisms.</p> <p>Module 3 Focus Standards: CC.2.2.7.B.1 - Apply properties of operations to generate equivalent expressions. CC.2.2.7.B.3 - Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations. CC.2.3.7.A.1</p> <p>Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.</p> <p>Module 3 Objectives:</p> <ul style="list-style-type: none"> Apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients. 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 word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers, and graph the solution set of the inequality. Determine the reasonableness of answer(s) or interpret the solution(s) in the context of the problem. Find the area and circumference of a circle. Solve problems involving area and circumference of a circle(s). 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. 				
Properties of Operations: Linear Expressions with Rational Coefficients	In this lesson, students apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients.	LEARN how to expand linear expressions using the distributive property.		https://learnzillion.com/lessons/1126-expand-linear-expressions-using-the-distributive-property	
		PRACTICE expanding linear expressions using the distributive property.		http://www.ixl.com/math/grade-7/distributive-property	
		LEARN how to add and subtract linear expressions by combining like terms.		https://www.youtube.com/watch?v=WumcRfkdvSM	
		PRACTICE combining like terms.		http://www.ixl.com/math/grade-7/add-and-subtract-like-terms	
		LEARN how to factor linear expressions.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-variables-expressions/cc-7th-factoring/v/factoring-linear-binomials	

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		PRACTICE factoring linear expressions.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-variables-expressions/cc-7th-factoring/e/factoring_linear_binomials	
		PRACTICE factoring linear expressions involving fractions.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-variables-expressions/cc-7th-factoring/e/manipulating-linear-expressions-with-rational-coefficients	
		PRACTICE creating equivalent expressions involving negative numbers.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-variables-expressions/cc-7th-factoring/e/equiv-expressions-w-neg-and-dist	
One-Step Equations	In this lesson, students review how to solve one step equations.	REVIEW Solving One-Step Equations and PRACTICE solving one-step equations.		http://www.algebralab.org/lessons/lesson.aspx?file=Algebra_OneVariableOneStep.xml	
Multi-Step Linear Equations	In this lesson, students will 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.	LEARN how to solve linear equations through the use of algebra tiles.	Engage in the lesson, followed by completing the questions, and the challenge activities.	https://itunes.apple.com/us/app/solving-equations/id522498600?mt=8	http://www.mathplayground.com/AlgebraScales_Main.swf
		READ about a strategy for solving two step equations.		http://www.purplemath.com/modules/solvein3.htm	
		PRACTICE solving two-step equations.		http://www.ixl.com/math/grade-7/solve-two-step-linear-equations	
		PRACTICE solving two-step equations.		http://www.mathguide.com/cgi-bin/quizmasters/EquationsTwo.cgi	
		PRACTICE solving one and two-step equations presented in the Classroom Jeopardy Game.		http://superteachertools.com/jeopardy/usergames/Nov201045/game1289312532.php	
		LEARN how to solve word problems with equations using bar models.		https://learnzillion.com/lessons/1509-use-a-bar-model-to-write-and-solve-equations	
		PRACTICE solving word problems with equations.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-variables-expressions/cc-7th-linear-eq-word-probs/e/linear-equation-world-problems-2	

Topic Title	Title Post	Assignment	Content Title	Content URL or Location	Alternative to IOS or Notes
Solving and Graphing A Two-Step Inequality	In this lesson, students 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, and graph the solution set of the inequality.	LEARN how to solve and graph a two-step inequality.		http://www.virtualnerd.com/pre-algebra/inequalities-multi-step-equations/inequalities-multiple-steps/solve-multiple-step-inequalities/inequality-two-step-solution-and-graph	
		PRACTICE solving two step inequalities.		https://www.ixl.com/math/grade-7/solve-two-step-linear-inequalities	
		PRACTICE graphing solutions to two step inequalities.		https://www.ixl.com/math/grade-7/graph-solutions-to-two-step-linear-inequalities	
		PRACTICE solving word problems requiring creating and solving of equations or inequalities.	Create and solve your equations and inequalities within the Explain Everything app.	http://s3.amazonaws.com/illustrativemathematics/attachments/000/010/241/original/student_task_986.pdf?1462401831	
				http://s3.amazonaws.com/illustrativemathematics/attachments/000/010/068/original/student_task_643.pdf?1462400790	
				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
Area and Circumference of a Circle	Find the area and circumference of a circle. Solve problems involving area and circumference of a circle(s).	LISTEN to a song about circle vocabulary and formulas.		http://www.youtube.com/watch?v=ldnZevLaX6I&edufilter=okMglJx4LqGlJwfRqmGyQ&safefilter=active	
		READ about the circumference of a circle and PRACTICE calculating the circumference of a circle.		http://www.mathgoodies.com/lessons/vol2/circumference.html	
		PRACTICE calculating the area and circumference of a circle.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-geometry/cc-7th-area-circumference/e/area-and-circumference-of-circles	
		CALCULATE area and perimeters of squares and rectangles and the circumference of circles.	Performance Assessment Task: Pizza Crust	http://www.insidemathematics.org/assets/common-core-math-tasks/pizza%20crusts.pdf	
Surface Area and Volume	In this lesson, students will 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.	REVIEW finding the surface area and volume of a rectangular prism.		http://www.learner.org/interactives/geometry/area_surface.html	
				http://www.learner.org/interactives/geometry/area_volume.html	

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		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.	Demonstrate and explain your solutions in the Explain Everything app.	Sand under the Swing Set task on wikispace from https://www.illustrativemathematics.org/content-standards/tasks/266	
				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en

Topic Title	Topic Description	Assignment	Content Title	URL Checked with iPad	Alternative to IOS or Notes
Module 4: Percent and Proportional Relationships	<p>In Module 4, students develop an understanding of ratio and proportion with a concentration on percent. Problems in this module include simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, and percent error.</p> <p>Module 4 Focus Standard(s):</p> <p>CC.2.1.7.D.1 - Analyze proportional relationships and use them to model and solve real-world and mathematical problems.</p> <p>CC.2.2.7.B.3 - Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.</p> <p>Module 4 Objectives:</p> <ul style="list-style-type: none"> Use proportional relationships to solve multi-step ratio and percent problems including simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate. 				
Multistep Ratio and Percent Problems	In this lesson, students learn about and use proportional relationships to solve multistep ratio and percent problems.	LEARN how to use proportions to find the percent of a number.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-fractions-decimals/cc-7th-percent-word-problems/v/solving-percent-problems	
		PRACTICE using the proportion method to solve percent problems.		http://www.amby.com/educate/math/4-2_prop.html	

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		LEARN about solving word problems involving percents.		https://learnzillion.com/lessons/3507-apply-taxes-tips-and-discounts-using-a-proportion-and-scale-factor	
		PRACTICE solving word problems involving percents.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-fractions-decimals/cc-7th-percent-word-problems/e/discount-tax-and-tip-word-problems	
				https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-fractions-decimals/cc-7th-percent-word-problems/e/markup-and-commission-word-problems	
		LEARN about and PRACTICE percentage change.		http://www.mathsisfun.com/numbers/percentage-change.html	
		PRACTICE word problems involving percent change.		http://www.algebralab.org/Word/Word.aspx?file=Algebra_PercentsII.xml	

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		SOLVE a word problem involving tax.	Demonstrate and explain your solution within the Explain Everything app.	Buying Protein Bars task from https://www.illustrativemathematics.org/content-standards/tasks/148	
				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		SOLVE a word problem involving a markdown.	Demonstrate and explain your solution within the Explain Everything app.	Double Discounts task from https://www.illustrativemathematics.org/content-standards/tasks/2040	
				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		LEARN how to solve problems involving simple interest.		https://learnzillion.com/lessons/1538-calculate-simple-interest-using-the-simple-interest-equation	
		SOLVE a word problem involving simple interest.	Demonstrate and explain your solution within the Explain Everything app.	Lincoln's Math Problem task from https://www.illustrativemathematics.org/content-standards/tasks/1550	

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				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		SOLVE multi-step problems with percents.		http://www.ixl.com/math/grade-8/multi-step-problems-with-percents	
Converting between Decimal, Fraction, and Percents	In this lesson, students will apply properties of operations to calculate with numbers in any form; convert between forms as appropriate.	REVIEW and PRACTICE converting decimals and fractions to percents.		http://www.mathsisfun.com/decimal-fraction-percentage.html	
		SOLVE word problems involving numbers in any form.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-fractions-decimals/cc-7th-multistep-word-probs/e/multistep-equations-without-variables	
		SOLVE word problems involving numbers in any form.	Demonstrate and explain your solution within the Explain Everything app.	http://map.mathshell.org/download.php?fileid=1181	
				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en

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Module 5: Statistic and Probability	<p>In Module 5, students learn to draw inferences about populations based on random samples. Through the study of chance processes, students learn to develop, use and evaluate probability models.</p> <p>Module 5 Focus Standards:</p> <ul style="list-style-type: none"> • CC.2.4.7.B.1 - Draw inferences about populations based on random sampling concepts. • CC.2.4.7.B.2 - Draw informal comparative inferences about two populations. • CC.2.4.7.B.3 - Investigate chance processes and develop, use, and evaluate probability models. <p>Module 5 Objectives:</p> <ul style="list-style-type: none"> • Determine whether a sample is a random sample given a real-world situation. • Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. • Compare two numerical data distributions using measures of center and variability. • Predict or determine whether some outcomes are certain, more likely, less likely, equally likely, or impossible. • Determine the probability of a chance event given relative frequency. Predict the approximate relative frequency given the probability. • Find the probability of a simple event, including the probability of a simple event not occurring. • Find probabilities of independent compound events using organized lists, tables, tree diagrams, and simulation. 				
Introduction to Random Sampling	In this lesson, students will determine whether a sample is a random sample given a real-world situation.	LEARN how to choose random, non-biased samples representative of the population.	Engage in the first 3 lessons.	https://learnzillion.com/resources/64242-sampling-inferences-and-comparing-populations	

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		DETERMINE the randomness of a sample.		https://www.ixl.com/math/grade-7/identify-representative-random-and-biased-samples	
		PRACTICE applying what you learned by solving real-world problems.	Import into the Explain Everything app and annotate over it.	http://www.mathworksheetsland.com/7/27randsamp/ip.pdf	
				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
Random Sampling to Draw Inferences	In this lesson, students will use data from a random sample to draw inferences about a population with an unknown characteristic of interest.	LEARN how to use proportional reasoning to make estimates about a population based on data from a random sample		https://learnzillion.com/lessons/1849-use-proportional-reasoning-to-make-estimates-about-a-population	
		PRACTICE making inferences from random samples.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-probability-statistics/cc-7th-population-sampling/e/making-inferences-from-random-samples	
		APPLY the concept of making inferences from random samples to solve the counting trees task.	Import the task into the Explain Everything app and annotate over it.	http://map.mathshell.org/download.php?fileid=1148	

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				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
Comparing Two Numerical Distributions	In this lesson, students will compare two numerical data distributions using measures of center and variability.	REVIEW how to find the mean, median, and mode. LEARN which is most appropriate to use when analyzing a set of data.	WATCH and ENGAGE in the narrated lesson. ANSWER the Questions and ENGAGE in the Challenge section.	https://itunes.apple.com/us/app/measures-of-center/id959988886?mt=8	https://learnzillion.com/lesson_plans/3357-7-compare-the-measures-of-center-and-variability-to-make-inferences-about-two-populations-c
		IDENTIFY the mean, median, mode, and range from graphs and charts.		https://www.ixl.com/math/grade-7/interpret-charts-to-find-mean-median-mode-and-range	
		REVIEW finding the mean absolute deviation and comparing two data sets using the mean absolute deviation.		https://learnzillion.com/lesson_plans/3360-8-compare-two-populations-using-the-mean-and-mean-absolute-deviation-mad-fp	
		PRACTICE comparing two data sets using measures of center and variability.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-probability-statistics/cc-7th-population-sampling/e/comparing-populations	

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		PRACTICE comparing two data sets using measures of center and variability.	Demonstrate and explain your thinking through the Explain Everything app.	College athletes task from https://www.illustrativemathematics.org/content-standards/tasks/1340	
				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
Intro to Probability	In this lesson, students will predict or determine whether some outcomes are certain, more likely, less likely, equally likely, or impossible.	LEARN about simple probability and DETERMINE whether the likelihood of some events happening.	WATCH and ENGAGE in the narrated lesson. ANSWER the Questions and ENGAGE in the Challenge section.	https://itunes.apple.com/us/app/probability-of-simple-events/id972181671?mt=8	https://learnzillion.com/lesson_plans/3548-1-predict-the-likelihood-of-a-random-event-getting-gumballs-c
		PRACTICE determining the likelihood of an event.		https://www.macmillanmh.com/math/mathconnects/assets/mhIn/00061621/00061621.swf	
Probability of Simple Events	In this lesson, students will find the probability of a simple event, including the probability of a simple event not occurring.	PRACTICE finding the probability of simple events.	Choose Chapter 5 - Probability: Simple Events from the drop down choices and then hit go to start the questions.	https://itunes.apple.com/us/app/ez-permutations-combinations/id735754535?mt=8	https://www.time4learning.com/_swf/demos/probability/MA4EB03a_Probably_a_favorite_teach_rev2.swf
		LEARN about finding the probability of a simple event not occurring.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-probability-statistics/cc-7th-basic-prob/v/probability-1-module-examples	

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		PRACTICE finding the probability of simple events.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-probability-statistics/cc-7th-basic-prob/e/probability_1	
Theoretical and Experimental Probability	In this lesson, students will determine the probability of a chance event given relative frequency and predict the approximate relative frequency given the probability.	LEARN about theoretical and experimental probability (relative frequency).		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-probability-statistics/cc-7th-basic-prob/v/experimental-probability	
		PRACTICE finding experimental probability.	Choose how many marbles of each color you would like in the "jar". Choose one marble to draw and 100 trials. Determine what the theoretical probability of choosing each color from the jar would be and record that in Explain Everything. Now have the applet complete the 100 trials. Take a screenshot of the results and import into Explain Everything. Compare the experimental probabilities to the theoretical probabilities.	http://sciencenetlinks.com/interactives/marble/marblemania.html	

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		PRACTICE determining the probability of a chance event given the relative frequency and predict the approximate relative frequency given the probability.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-probability-statistics/cc-7th-basic-prob/e/finding-probability	
Probability of Compound Events	In this lesson, students will find probabilities of independent compound events using organized lists, tables, tree diagrams, and simulation.	LEARN about the possible outcomes for compound events.	Engage in both lessons completely.	https://learnzillion.com/lesson_plans/3554-1-jack-s-school-lunch-outcomes-for-compound-events-c	
				https://learnzillion.com/lesson_plans/3573-2-jack-s-school-supplies-outcomes-for-compound-events-fp	
		LEARN about finding the probability of compound independent events.	Engage in all lessons completely.	https://learnzillion.com/lesson_plans/3571-3-may-s-class-schedule-probability-of-compound-events-c	
				https://learnzillion.com/lesson_plans/3574-4-the-winning-ticket-probability-of-compound-events-fp	

Topic Title	Outline Description	Assignment	Content Title	Content URL or Location	Alternative to IOS or Notes
				https://learnzillion.com/lesson_plans/3575-5-at-the-arcade-probability-of-compound-events-with-replacement-fp	
				https://learnzillion.com/lesson_plans/3576-6-box-of-chocolates-probability-of-compound-events-without-replacement-fp	
		PRACTICE finding the probability of independent compound events.	Choose Chapter 8 - Compound Events from the drop down choices and then hit go to start the questions.	https://itunes.apple.com/us/app/ez-permutations-combinations/id735754535?mt=8	
		PRACTICE solving probabilities of compound, independent events.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-probability-statistics/cc-7th-compound-events/e/compound-events	
		PRACTICE solving probabilities of compound, independent events.	Demonstrate and explain your thinking within the Explain Everything app.	Rolling Twice task from https://www.illustrativemathematics.org/content-standards/tasks/890	

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				https:// itunes.apple.com/ us/app/explain- everything- interactive/ id431493086?mt=8	https:// play.google.com/ store/apps/details? id=com.explainever ything.explaineveryt hing&hl=en
Probability: Test Your Knowledge	In this lesson, students apply what they learned about probability.	ASSESS your skills regarding statistics and probability.	Import into Explain Everything to complete.	http:// map.mathshell.org/ download.php? fileid=1191	

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MODULE 6: GEOMETRY	<p>In Module 6, students draw and construct informal geometrical figures. They describe and indentify triangles based on their angles and side measures. They also find missing angles through their recently acquired equation solving abilities.</p> <p>Module 6 Focus Standards:</p> <ul style="list-style-type: none"> • CC.2.3.7.A.1 - Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume. • CC.2.3.7.A.2 - Visualize and represent geometric figures and describe the relationships between them. <p>Module 6 Objectives:</p> <ul style="list-style-type: none"> • Identify or describe the properties of all types of triangles based on angle and side measure. • Use and apply the triangle inequality theorem. • Describe the two-dimensional figures that result from slicing three-dimensional figures. • Identify and use properties of supplementary, complementary and adjacent angles in a multistep problem to write and solve simple equations for an unknown angle in a figure. • Identify and use properties of angles formed when two parallel lines are cut by a transversal (e.g., angles may include alternate interior, alternate exterior, vertical, corresponding). 				
Properties of Triangles	In this lesson, students identify or describe the properties of all types of triangles based on angle and side measure.	LEARN how to classify triangles.		http://www.virtualnerd.com/pre-algebra/geometry/triangles/define-triangles/triangle-types	

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		REVIEW the types of triangles and how to classify them.		http://www.mathopenref.com/triangleclassify.html	
		PRACTICE classifying triangles.		http://www.mathwarehouse.com/geometry/triangles/triangle-types.php	
		PRACTICE classifying triangles.		https://www.ixl.com/math/grade-7/classify-triangles	
Triangle Inequality Theorem	In this lesson, students use and apply the triangle inequality theorem.	EXPLORE the triangle inequality theorem.	After watching the video, engage in the Practice activities by hitting the red Practice button in the upper right corner.	http://www.ck12.org/geometry/Triangle-Inequality-Theorem/lecture/Triangle-Inequality-Theorem/r1/	
Two Dimensional Cross-Sections	In this lesson, students describe the two-dimensional figures that result from slicing three-dimensional figures.	LEARN about the two-dimensional figures that result from slicing three-dimensional figures.		https://learnzillion.com/lesson_plans/2874-9-slice-three-dimensional-figures-creates-two-dimensional-faces-c	
		PRACTICE slicing through a three-dimensional solid to produce a two-dimensional shape.		https://www.khanacademy.org/math/geometry/basic-geometry/cross-sections/e/slicing-3d-figures	
		PRACTICE slicing through a three-dimensional solid to produce a two-dimensional shape.	Import the task into the Explain Everything app to demonstrate and explain your solutions.	Cube Ninjas task from https://www.illustrativemathematics.org/content-standards/tasks/1532	

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				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything&hl=en
Supplementary, Complementary, and Adjacent Angles	In this lesson, students identify and use properties of supplementary, complementary and adjacent angles in a multistep problem to write and solve simple equations for an unknown angle in a figure.	LEARN about solving for unknown angles using angle properties.	Engage in all 3 lessons.	https://learnzillion.com/lesson_plans/2098-1-discover-that-intersecting-lines-produce-vertical-complementary-and-supplementary-angles-c	
				https://learnzillion.com/lesson_plans/2103-2-identify-vertical-complementary-and-supplementary-angles-fp	
				https://learnzillion.com/lesson_plans/2106-3-find-vertical-complementary-and-supplementary-angles-in-word-problems-a	
		PRACTICE solving for unknown angles.		http://www.ignitelearning.com/media/266_t07m02_IN09.swf	

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				https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-geometry/cc-7th-angles/e/complementary_and_supplementary_angles	
				https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-geometry/cc-7th-angles/e/vertical_angles	
		PRACTICE solving for unknown angles.		http://www.mathvillage.info/node/41	
				http://www.mathvillage.info/node/43	
		PRACTICE solving for unknown angles in real world situations.		https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-geometry/cc-7th-angles/e/solving-for-unknown-angles	
Angles Formed from Parallel Lines Cut by a Transversal	In this lesson, students identify and use properties of angles formed when two parallel lines are cut by a transversal (e.g., angles may include alternate interior, alternate exterior, vertical, corresponding).	READ about parallel lines and pairs of angles and SOLVE the problems.		http://www.mathsisfun.com/geometry/parallel-lines.html	
		PRACTICE identifying angles formed when parallel lines are cut by a transversal.		https://www.ixl.com/math/grade-7/transversal-of-parallel-lines	

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		PRACTICE solving for angles formed when parallel lines are cut by a transversal.	Import the task into the Explain Everything app to demonstrate and explain your solutions.	Find the Missing Angle Task from https://www.illustrativemathematics.org/content-standards/tasks/56	
				https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en

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Grade 7 Course Tracking Spreadsheet	The Course Tracking Spreadsheet is a mirror of the Pennsylvania Learns Grade 7 course.	The purpose of this Numbers document is for users who do not have an iPad; yet, want to use the course for instructional purposes.				
Module 1	In this lesson, students analyze and identify proportional relationships.	COMPLETE the proportional reasoning performance task.		http://schools.nyc.gov/NR/rdonlyres/41C0F04C-0BD6-491F-9BF0-16485EC080BE/0/NYCDOEG7MathProportionalReasoning_Final.pdf		
Module 3: Expressions and Equations	In this lesson, students apply knowledge of area and perimeter to solve real-world problems.	WATCH the video to observe how a class solves a real world geometry problem? Isn't this really a teacher resource?	A Real-World Project	https://www.teachingchannel.org/videos/real-world-geometry-lesson		
Module 4	In this lesson, students calculate the percentage of increase or decrease given a real-world scenario.	PRACTICE calculating percentage of increase or decrease given a real-world scenario.	Now and Then	http://illuminations.nctm.org/Lesson.aspx?id=3121		
Module 5	In this lesson, resources related to Grade 7 Statistics and Probability: Using Random Sampling to Draw Inferences about a population are provided.	VIEW the lesson plan created to teach students how to use random sampling to draw inferences.		http://www.wccusd.net/cms/lib03/CA01001466/Centricity/domain/60/lessons/grade%207%20lessons/InferencesFromRandomSamplesV1.pdf		
	In this lesson, students learn about various sampling techniques and how the type of sample can change the results of the survey.	VIEW the lesson plan created to teach students how to use random sampling to draw inferences.		http://www.wccusd.net/cms/lib03/CA01001466/Centricity/domain/60/lessons/grade%207%20lessons/InferencesFromRandomSamplesV1.pdf		
		VIEW the core lesson to learn how to make inferences about a population with an unknown characteristic.		https://learnzillion.com/lessons/1848-make-inferences-about-a-population-by-analyzing-random-samples		
Module 6	In this lesson, students use and apply the triangle inequality theorem.	EXPLORE the triangle inequality theorem.	Do this exploration to introduce the triangle inequality theorem.	http://www.deltastate.edu/docs/math/lp3lclark.pdf		
	In this lesson, students describe the two-dimensional figures that result from slicing three-dimensional figures.	PRACTICE slicing 3-D figures.	Do this exploration to introduce the concept.	http://7thgrademathteacherextraordinaire.blogspot.com/2013/04/slicing-three-dimensional-figures-cc-7g3.html		

	<p>In this lesson, students identify and use properties of supplementary, complementary and adjacent angles in a multistep problem to write and solve simple equations for an unknown angle in a figure.</p>	<p>APPLY your knowledge of angles to solve a real world task involving miniature golf.</p>		<p>http://www.achieve.org/files/CCSS-CTE-Task-MiniatureGolf-FINAL.pdf</p>		
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