INTRODUCTION

In grade 3, instructional time should focus on five critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100 (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; (4) describing and analyzing two-dimensional shapes; and (5) solving problems involving measurement and estimation of intervals of time, money, liquid volumes, masses, and lengths of objects.			

SETTING THE STAGE

	ASSIGNMENT (CALL TO ACTION)	RESOURCE/URL
Welcome to the Grade 3 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.		
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. 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.	**REVIEW** the "Teacher Resources" and "Student Resources" section of the PA Core Implementation section of the SAS Portal.	http://www.pdesas.org/Standard/PACore

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 *Adding It Up*: 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

TOPIC	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTIONS	RESOURCE/URL
Standards for Mathematical Content	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.			
		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

Addition, Subtraction, and Place Value

Module Title	Message	Assignment / Call to Action	Content Directions	Resource / URL	Alternative to IOS or Notes
Grade Level Summary	In grade 3, instructional time should focus on five critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100 (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; (4) describing and analyzing two-dimensional shapes; and (5) solving problems involving measurement and estimation of intervals of time, money, liquid volumes, masses, and lengths of objects.				
Module 1 Overview	In this lesson, students will: • Investigate, understand, and use place value to manipulate numbers. • Continue to develop understanding of addition and subtraction and use strategies and properties to do so proficiently and fluently. • Build on understanding of place value to round whole numbers. **FOCUS STANDARDS FOR MODULE 1:** CC.2.1.3.B.1 - Apply place value understanding and properties of operations to perform multi-digit arithmetic.				
		ACCESS Mathematics Grade 3 Module 2 Instructional Framework		http://www.pdesas.org/module/cm/Cmap/View/	
Add and Subtract Two- and Three-Digit Whole Numbers	In this lesson, you will apply appropriate strategies to accurately add and subtract two- and three-digit numbers.	**ASSESS** your current understanding of strategies to add two-digit numbers.	Import the task and solve within the Show Me app.	http://www.insidemathematics.org/assets/common-core-math-tasks/adding%20numbers.pdf	
				https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		LEARN how to add using an open number line.		https://www.youtube.com/watch?v=nhr34uOnC9M	
		ADD 345 + 287 on an open number line using the Show Me App while explaining your thinking.	Use the Show Me App while explaining your thinking.	https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		WATCH a video to learn about adding three digit whole numbers.		https://www.youtube.com/watch?v=-NRUc2Kxu10	
		ADD two 3-digit numbers using base ten blocks.	Choose Addition and then Answers up to 2000 (3digit + 3digit). Take a screen shot of one of your final answers from the Base Ten Blocks exploration.	https://itunes.apple.com/us/app/base-ten-blocks-math/id878351349?mt=8	
		RECORD your thinking of how to solve the addition problem in written form.	Import previous screenshots into the Show Me app. Show and explain how these 2 numbers would be added together in written form.	https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		PRACTICE adding two and three-digit numbers.	Splash Math - choose grade 2, then add within 1000, then level 4 through 9	https://itunes.apple.com/us/app/splash-math-grades-1-to-5/id672658828?mt=8	https://www.splashmath.com/math-skills/second-grade
		LEARN about subtracting using an open number line.		https://www.youtube.com/watch?v=8kNANxcTmDI	
		SUBTRACT 976 - 258 on an open number line using the Show Me App while explaining your thinking.		https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		WATCH a video about subtraction of two-digit subtraction with base ten blocks.		https://www.youtube.com/watch?v=FQI0IgA-7fI#t=143	
		SUBTRACT two 3-digit numbers using base ten blocks.	Choose Subtraction and then 3digit + 3digit. Take a screen shot of one of your final answers from the Base Ten Blocks exploration	https://itunes.apple.com/us/app/base-ten-blocks-math/id878351349?mt=8	
		RECORD your thinking of how to solve a subtraction problem in written form.	Import previous screenshot into the Show Me app. Show and explain how these 2 numbers would be subtracted in written form.	https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en

Module Title	Message	Assignment / Call to Action	Content Directions	Resource / URL	Alternative to IOS or Notes
		PRACTICE subtracting two and three-digit numbers.	Splash Math - choose grade 2, then subtract within 1000, then level 4 through 9	https://itunes.apple.com/us/app/splash-math-grades-1-to-5/id672658828?mt=8	https://www.splashmath.com/math-skills/second-grade
One and Two-step addition and subtraction in word problems	In this lesson, you will apply appropriate strategies to accurately solve one and two step addition and subtraction word problems.	**SOLVE** word problems involving addition and subtraction through 1000.	Math Word Problems app, choose addition or subtraction of 3 and 2 digit numbers	https://itunes.apple.com/us/app/math-word-problems-addition/id827114443?mt=8	http://www.mathplayground.com/wpdatabase/wpindex.html - Choose word problem from Addition II or Addition III
		LEARN how to use thinking blocks to solve two step problems.		https://www.youtube.com/watch?v=IgofQXaPXK0	
		SOLVE addition and subtraction two step word problems using the Thinking Blocks app.	Choose the Change Model - 2 steps and the numbers 1 to 300	https://itunes.apple.com/us/app/thinking-blocks-addition/id668450919?mt=8	http://www.mathplayground.com/tb_addition/thinking_blocks_addition_subtraction.html
Comparing and Ordering Numbers	In this lesson, you will accurately order a set of numbers from least to greatest or from greatest to least. You should use numbers up through 9,999 and limit to sets to no more than four numbers.	**REPRESENT** numbers in the thousands.		https://braingenie.ck12.org/skills/102527	
		LEARN about comparing and ordering numbers under 1,000.		https://www.youtube.com/watch?v=iOkM9Ox7QSE	
		PRACTICE comparing numbers.	Choose grade 3, then number sense, then level 3 (compare numbers)	https://itunes.apple.com/us/app/splash-math-grades-1-to-5/id672658828?mt=8	https://www.splashmath.com/math-skills/third-grade
		LEARN how to order numbers using a number line.		https://www.youtube.com/watch?v=iMOpxIa4MU0&list=WL&index=8	
		PRACTICE ordering numbers.	Go to the settings icon and choose 10 tiles starting in one of the hundred ranges-	https://itunes.apple.com/us/app/line-em-up/id419041848?mt=8	
		PRACTICE ordering numbers.	Choose grade 3, then number sense, then level 4 (order numbers)	https://itunes.apple.com/us/app/splash-math-grades-1-to-5/id672658828?mt=8	https://www.splashmath.com/math-skills/third-grade
		APPLY ordering and comparing strategies by completing the following task.	Import the task and solve within the Show Me app.	http://www.insidemathematics.org/assets/common-core-math-tasks/a%20question%20of%20numbers.pdf	
				https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		APPLY ordering strategies to **CREATE** a problem and **DESCRIBE** how to solve it.		See "Ordering Numbers" PDF	
				https://itunes.apple.com/us/app/educreations-interactive-whiteboard/id478617061?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
Round two- and three-digit whole numbers	In this lesson, you will apply rounding concepts to accurately round two- and three-digit numbers to the nearest ten or hundred.	**WATCH** this video to learn about rounding whole numbers to the nearest ten.		https://www.youtube.com/watch?v=CMdck80SHnw	
		USE the number line app to complete the following 4 tasks.		https://itunes.apple.com/us/app/number-line-by-math-learning/id751816884?mt=8	https://www.mathlearningcenter.org/web-apps/number-line/
		PRACTICE rounding to the nearest ten using the number line app.	Change the numbering to 10s to complete part a and to 100s for part b. Take a screenshot after completing the each task using the number line app.	https://www.illustrativemathematics.org/content-standards/3/NBT/A/1/tasks/1805	Rounding to the Nearest Ten and Hundred task
		LEARN about rounding to the nearest hundred.		https://www.youtube.com/watch?v=bx-XKcgKqzc	
		PRACTICE rounding to the nearest hundred using the number line app.	Change the numbering to 100s. Take a screenshot after completing the task using the number line app.	https://www.illustrativemathematics.org/content-standards/3/NBT/A/1/tasks/1806	Rounding to the Nearest 100 and 1000 task
		EXTEND your knowledge about rounding.	Take a screenshot after completing the task using the number line app	https://www.illustrativemathematics.org/content-standards/3/NBT/A/1/tasks/745	Rounding to 50 or 500 task

Module 2: Multiplication and Division with Factors of 2,3,4,5, and 10

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTONS	URL	Alternative to IOS or Notes
Grade Level Summary	In grade 3, instructional time should focus on five critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100 (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; (4) describing and analyzing two-dimensional shapes; and (5) solving problems involving measurement and estimation of intervals of time, money, liquid volumes, masses, and lengths of objects.				
Module 2 Overview	Module 2 builds upon the foundation of multiplicative thinking with units started in grade 2. First, students concentrate on the meaning of multiplication and division and begin developing fluency for learning products and representing and solving problems involving multiplication and division involving factors of 2, 3, 4, 5, and 10. The restricted set of facts keeps learning manageable, and also provides enough examples to do one- and two-step word problems and to start measurement problems involving weight, money, length, capacities, and time in the second module. **Focus Standards for Module 2** CC.2.2.3.A.1 - Represent and solve problems involving multiplication and division. CC.2.2.3.A.2 - Understand properties of multiplication and the relationship between multiplication and division. CC.2.2.3.A.3 - Demonstrate multiplication and division fluency. **Important Standards for Module 1** CC.2.1.3.B.1 - Apply place value understanding and properties of operations to perform multi-digit arithmetic. CC.2.2.3.A.4 - Solve problems involving the four operations, and identify and explain patterns in arithmetic. **Standards for Mathematical Practice** MP# 1. Make sense of problems and persevere in solving them. MP# 2. Reason abstractly and quantitatively. MP# 3. Construct viable arguments and critique the reasoning of others. MP# 4. Model with mathematics. MP# 5. Use appropriate tools strategically. MP# 6. Attend to precision. MP# 7. Look for and make use of structure. (Deductive Reasoning) MP# 8. Look for and express regularity in repeated reasoning. (Inductive Reasoning) Mathematical Practices resource page on SAS				
		ACCESS Mathematics Grade 3 Module 2 Instructional Framework		http://www.pdesas.org/module/cm/Cmap/View/16849	
Multiply whole numbers	In this lesson, you will multiply factors (limited to 2, 3, 4, 5, 10) to find products of whole numbers.	**WATCH** the video to see how multiplication is repeated addition.		http://youtu.be/2bjnhxFEwC0	
		SOLVE the Tri-Triangles problem.	Engage in Level A only.	http://www.insidemathematics.org/assets/problems-of-the-month/tri-triangles.pdf	
		LEARN how multiplication can be represented with arrays.		https://www.youtube.com/watch?v=E6yk9O43t3c	

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTONS	URL	Alternative to IOS or Notes
		DEMONSTRATE an understanding of multiplication sentences from illustrations for 2,3,4,5,10.		http://braingenie.ck12.org/skills/103009	
		REPRESENT an array using the colored chips.	Roll the dice two times from the first app. Make an array with the numbers you rolled using the first dice for the number of rows and the second dice for the number of columns. Create the array with the number frames app. Write a multiplication equation expressing the total number of counters. Take a screenshot of your array and equation. Repeat this process 5 times.	https://itunes.apple.com/us/app/random-dice-number-color-card-generator-rng/id1164168003?mt=12	https://play.google.com/store/apps/details?id=appinventor.ai_ansonsavage.DiceRole_Magic8Ball_Extension_Two_Die&hl=en
				https://itunes.apple.com/us/app/number-frames-by-math-learning/id873198123?mt=8	https://www.mathlearningcenter.org/web-apps/number-frames/
		EXPLAIN how you could use a number line to represent multiplication.	Use the Show Me app to demonstrate how you could represent 5 x 4 on a number line. Share your video with another students to see if they agree.	https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		CHECK your understanding of using a number line to solve multiplication problems.	Choose Multiplication Facts, levels 3, 4, 5, 6, and 8	Kids Math- Multiplication Worksheets Grade 3 - https://itunes.apple.com/us/app/splash-math-3rd-grade-worksheets/id449564960?mt=8	https://www.splashmath.com/math-skills/third-grade
Properties of Multiplication	In this lesson, you will understand the commutative property of multiplication. Ex.2 x 4 = 4 x 2	**LEARN** about the commutative property of multiplication by using an array.		https://learnzillion.com/lessons/963-understand-the-commutative-property-by-naming-arrays	
		DEMONSTRATE your understanding of the commutative property.	Use the colored tiles to form your arrays. Take a screenshot of each array and its corresponding multiplication sentence.	http://www.k-5mathteachingresources.com/support-files/turn-your-array.pdf	
				https://itunes.apple.com/us/app/color-tiles-manipulative/id656246736?mt=8	https://www.mathlearningcenter.org/web-apps/number-pieces/
Multiplication Word Problems	In this lesson, you will apply multiplication skills and strategies to solve word problems.	**PRACTICE** multiplication word problems with factors of 2, 3, 4, 5.	Choose Multiplication Up to 5	https://itunes.apple.com/us/app/math-word-problems-multiplication/id820574139?mt=8	
Fluency with Multiplication Facts	In this lesson, you will increase multiplication fluency with factors of 2, 3, 4, 5, 10.	**PRACTICE** multiplication by 2.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/multiplying-by-2	
		PRACTICE multiplication by 3.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/multiplying-by-3	
		PRACTICE multiplication by 4.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/multiplying-by-4	
		PRACTICE multiplication by 5.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/multiplying-by-5	

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTONS	URL	Alternative to IOS or Notes
		PRACTICE multiplication by 10.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-3rd-grade-multiplying-by-10/e/multiplication_1	
Strategies To Find Quotients With Whole Numbers	In this lesson, you will learn and apply division strategies to find quotients of whole numbers. (Exercises will include dividends through 50, with divisors limited to 2, 3, 4,5, 10.)	**WATCH** and **LISTEN** to "The Doorbell Rang" to learn about of division.		www.watchknowlearn.org/Video.aspx?VideoID=46208	
		LEARN about division.	Watch from the beginning until 2:30	http://www.virtualnerd.com/common-core/grade-3/3_OA-operations-algebraic-thinking/A/2/divide-integers-example	
		LEARN more about division.	Watch from the beginning to 6:32	https://www.khanacademy.org/math/arithmetic/multiplication-division/delightful_division/v/division-1	
		EXPLAIN what division means.	Import the task into the Show Me app.	https://www.illustrativemathematics.org/content-standards/3/OA/A/2/tasks/1531	Fish Tanks task
		EXPLAIN what each of the division sentences mean within the Show Me app.		https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
Solving Word Problems	In this lesson, you will apply division skills and strategies to solve word problems.	**DEMONSTRATE** how to solve a division word problem.	Import the task into the Show Me app and explain your answer to the task.	https://www.illustrativemathematics.org/content-standards/3/OA/A/2/tasks/1540	Markers in Boxes task
				https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		DEMONSTRATE how to solve a division word problem using arrays.	Demonstrate how to solve each problem using arrays created with the colored tiles app. Take a screenshot of each array.	https://www.illustrativemathematics.org/content-standards/3/OA/A/3/tasks/344	Two Interpretations of Division task
				https://itunes.apple.com/us/app/color-tiles-manipulative/id656246736?mt=8	https://www.mathlearningcenter.org/web-apps/number-pieces/
		EXPLAIN how to solve a division word problem.	Import the screenshot of your arrays into the Show Me app and explain what each array means.	https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		DEMONSTRATE understanding by dividing by 2, 3, 4, 5, 10 with word problems.		http://braingenie.ck12.org/skills/103053	
				http://braingenie.ck12.org/skills/103054	
				http://braingenie.ck12.org/skills/103055	
				http://braingenie.ck12.org/skills/103056	
		PRACTICE division word problems with divisors of 2, 3, 4, 5.	Choose division Up to 25 divided by 5	https://itunes.apple.com/us/app/math-word-problems-multiplication/id820574139?mt=8	
Increasing Division Fluency	In this lesson, you will increase division fluency with divisors of 2, 3, 4, 5, 10.	**PRACTICE** division by 2.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/dividing-by-2	

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTONS	URL	Alternative to IOS or Notes
		PRACTICE division by 3.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/dividing-by-3	
		PRACTICE division by 4.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/dividing-by-4	
		PRACTICE division by 5.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/dividing-by-5	
Writing Word Problems to Match An Array	In this lesson, you will write word problems to match an array.	**WRITE** a multiplication and division word problem and number sentence to match each array.	Import a screen shot of your chosen array into the show me app. Write and explain your multiplication and division word problems and number sentences.	http://www.k-5mathteachingresources.com/support-files/array-picture-cards.pdf	
				https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en

Module 3: Problem Solving with Mass, Time, Capacity, Length, and Money

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTONS	URL	Alternative to IOS or Notes
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Module 3 Overview	Module 3, which focuses on measurement, again provides students with internalization time for learning the 2, 3, 4, 5, and 10 facts as part of their fluency activities. Students can also take this time to work with place value, comparison and rounding concepts. **Focus Standards for Module 3** CC.2.4.3.A.1 - Solve problems involving measurement and estimation of temperature, liquid volume, mass or length. CC.2.4.3.A.2 - Tell and write time to the nearest minute and solve problems by calculating time intervals. CC.2.4.3.A.3 - Solve problems and make change involving money using a combination of coins and bills. **Important Standards for Module 3** CC.2.1.3.B.1 - Apply place value understanding and properties of operations to perform multi-digit arithmetic. CC.2.2.3.A.1 - Represent and solve problems involving multiplication and division. CC.2.2.3.A.4 - Solve problems involving the four operations, and identify and explain patterns in arithmetic. Standards for Mathematical Practice MP# 1. Make sense of problems and persevere in solving them. MP# 2. Reason abstractly and quantitatively. MP# 4. Model with mathematics. MP# 5. Use appropriate tools strategically. MP# 6. Attend to precision. MP# 7. Look for and make use of structure. (Deductive Reasoning) MP# 8. Look for and express regularity in repeated reasoning. (Inductive Reasoning)				
		ACCESS Mathematics Grade 3 Module 3 Instructional Framework		http://www.pdesas.org/module/cm/Cmap/View/16850	
Time to the Nearest Minute	In this lesson you will tell, show, and/or write time (analog) to the nearest minute.	**LEARN** how to tell time to the nearest minute.		https://learnzillion.com/lessons/836-reading-the-exact-minute-on-a-clock	
		LEARN how to represent time on a analog clock.		https://learnzillion.com/lessons/838-drawing-the-exact-time-on-a-clock	
		PRACTICE telling time.		https://itunes.apple.com/us/app/tell-time-little-matchups/id440944851?mt=8	http://www.mathplayground.com/puzzle_pics_clocks.html
Elapsed Time	In this lesson, you will calculate elapsed time to the minute in a given situation (total elapsed time limited to 60 minutes or less).	**LEARN** how to calculate elapsed time problems using a number line.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-telling-time/v/telling-time-problems-with-number-line	

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTONS	URL	Alternative to IOS or Notes
		SOLVE elapsed time problems.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-telling-time/e/telling-time-word-problems-with-the-number-line	
		SOLVE elapsed time problems.	Import the problems in the Show Me App and explain your thinking.	http://s3.amazonaws.com/illustrativemathematics/attachments/000/010/713/original/student_task_1989.pdf?1462404745	
				https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
Measurement of Volume	In this lesson, you will measure and estimate liquid volumes using standard units (cups, pints, quarts, gallons, ounces,liters and milliliters). You will also add, subtract, multiply, and divide to solve one-step word problems involving liquid volumes that are given in the same units.	**REVIEW** the basic units of capacity.		http://www.virtualnerd.com/middle-math/measurement/customary-system/units-customary-capacity-definition	
		LEARN how to calculate word problems involving volume.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-mass-volume/v/arithmetic-word-problems-with-volume	
		SOLVE word problems involving volume.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-mass-volume/e/volume-word-problems-1	
Mass	In this lesson, you will decide which metric unit of mass (grams or kilograms) would be the best unit to measure an object.	**LEARN** about the different units for metric mass.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-mass-volume/v/intuition-for-grams	
		LEARN how to select the correct unit of measure.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-mass-volume/v/mass-problems	
		PRACTICE weighing objects.		https://itunes.apple.com/us/app/my-first-weighing-exercises/id376179115?mt=8	
One-Step Word Problems Involving Mass	In this lesson, you will also add, subtract, multiply, and divide to solve one-step word problems involving mass that are given in the same units.	**SOLVE** word problems involving mass.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-mass-volume/e/measure-mass	
		SOLVE word problems involving mass and volume.	Demonstrate your solution to each word problem using the Show Me App.	https://www.engageny.org/sites/default/files/resource/attachments/math-g3-m2-full-module.pdf (pages 2.B.29 - 2.B.33)	
				https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTONS	URL	Alternative to IOS or Notes
		SOLVE word problems involving mass and volume.	Do problems on pages D7.9 and D7.10	https://bridges1.mathlearningcenter.org/files/media/Bridges_Gr3_OnlineSupplement/B3SUP-D7_MeasMassVol_0313.pdf	
Money	In this lesson, you will count money involving a combination of dollar bills and coins.	**LISTEN** to a song on counting quarters.		https://itunes.apple.com/us/course/quarterrific-coin-counting/id640606453?i=152856980&mt=2	
		PRACTICE counting money.		http://www.mathplayground.com/puzzle_pics_money.html	
		COMPARE coins and bills: least and greatest amount of money with pictures.	In this lesson you will compare total values of combinations of coins (penny, nickel, dime, quarter) and/or dollar bills less than $5.00.	http://braingenie.ck12.org/skills/102066	
		LEARN how to make change.	In this lesson you will make change for an amount up to $5.00 with no more than $2.00 change given (penny, nickel, dime, quarter, and dollar).	https://www.khanacademy.org/math/cc-fourth-grade-math/cc-4th-measurement-topic/cc-4th-money/v/change-from-buying-apples	
		PRACTICE making change.		http://mrnussbaum.com/cash-out-ipad.html	
		PRACTICE counting money, comparing amounts, and making change.		Jungle Coins - learn coin math - https://itunes.apple.com/us/app/jungle-coins-learn-coin-math/id380864501?mt=8	
		WATCH the demonstration on how to round money to the nearest dollar.	In this lesson, you will round amounts of money to the nearest dollar.	http://www.teachertube.com/video/rounding-to-the-nearest-dollar-5836	
		PRACTICE rounding money to the nearest dollar.		https://www.ixl.com/math/grade-3/rounding-money-amounts	

Module 4: Multiplication and Division with Factors of 6,7,8, and 9

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTONS	URL	Alternative to IOS or Notes
Grade Level Summary	In grade 3, instructional time should focus on five critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100 (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; (4) describing and analyzing two-dimensional shapes; and (5) solving problems involving measurement and estimation of intervals of time, money, liquid volumes, masses, and lengths of objects.				
Module 4 Overview	Students learn the remaining multiplication and division facts in Module 3 as they continue to develop their understanding of multiplication and division strategies within 100 and use those strategies to solve two-step word problems. The “2, 3, 4, 5 and 10 facts” module (Module 1) and the “6, 7, 8 and 9 facts” module (Module 3) both provide important, sustained time for work in understanding the structure of rectangular arrays to prepare students for area later in the module. This work is necessary because students initially find it difficult to distinguish the different squares in a rectangular array area model, count them and recognize that the count is related to multiplication. Modules 2 and 4 slowly build up to a rectangular array area model using hands-on rectangular arrays (i.e., a Rekenrek) and/or pictures of rectangular arrays involving objects only (stars, disks, etc.)—all in the context of learning multiplication and division. After working with arrays, students are ready to investigate area and the formula for the area of a rectangle. They measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps. When that shape is a rectangle with whole number side lengths, it is easy to partition the rectangle into squares with equal areas. **Focus Standards for Module 4** CC.2.2.3.A.1 - Represent and solve problems involving multiplication and division. CC.2.2.3.A.2 - Understand properties of multiplication and the relationship between multiplication and division. CC.2.2.3.A.3 - Demonstrate multiplication and division fluency. **Important Standards for Module 4** CC.2.1.3.B.1 - Apply place value understanding and properties of operations to perform multi-digit arithmetic. CC.2.2.3.A.2 - Understand properties of multiplication and the relationship between multiplication and division. CC.2.2.3.A.4 - Solve problems involving the four operations, and identify and explain patterns in arithmetic. **Standards for Mathematical Practice** MP# 1. Make sense of problems and persevere in solving them. MP# 2. Reason abstractly and quantitatively. MP# 3. Construct viable arguments and critique the reasoning of others. MP# 4. Model with mathematics. MP# 5. Use appropriate tools strategically. MP# 6. Attend to Precision. MP# 7. Look for and make use of structure (Deductive Reasoning)MP# 8. Look for and express regularity in repeated reasoning				
		ACCESS Mathematics Grade 3 Module 4 Instructional Framework		http://www.pdesas.org/module/cm/Cmap/View/16852	
Multiplication	In this lesson, you will multiply factors (limited to 6, 7, 8, and 9) to find products of whole numbers.	**DEMONSTRATE** understanding of multiplication sentences from illustrations for 6, 7, 8, and 9.		http://braingenie.ck12.org/skills/103023	

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTONS	URL	Alternative to IOS or Notes
Multiplication Word Problems	In this lesson, you will use multiplication (up to and including 10 X 10) to solve word problems in problems involving equal groups, arrays, and/or measurement quantities.	**PRACTICE** and **SOLVE** multiplication word problems.		http://www.khanacademy.org/math/arithmetic/multiplication-division/mult-div-word-problems/v/multiplication-word-problem-example-1	
		SOLVE multiplication word problems.	Use the Show Me app to demonstrate how you solved the problem.	http://www.homeschoolmath.net/teaching/md/understanding_word_problems.php	
				https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		SOLVE word problems involving multiplication through factors up to 12.	Choose Multiplication up to 12 x 12.	https://itunes.apple.com/us/app/math-word-problems-multiplication/id820574139?mt=8	http://www.mathplayground.com/wpdatabase/13a.html
		LEARN how thinking blocks work.		https://www.youtube.com/watch?v=IY1LpmWvxqQ	
		APPLY multiplication to word problems through use of thinking blocks.	Choose the Find the Missing Product Model	https://itunes.apple.com/us/app/thinking-blocks-multiplication/id669725575?mt=8	http://www.mathplayground.com/tb_multiplication/thinking_blocks_multiplication_division.html
Fluency with Multiplication	In this lesson, you will multiply to find products of whole numbers fluently up to and including 10 X 10.	**PRACTICE** multiplication facts.	Choose Multiplication Facts, then levels 9, 10, 11, and 12	https://itunes.apple.com/us/app/splash-math-3rd-grade-worksheets/id449564960?mt=8	https://www.splashmath.com/math-skills/third-grade
		PRACTICE multiplication by 6.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/multiplying-by-6	
		PRACTICE multiplication by 7.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/multiplying-by-7	
		PRACTICE multiplication by 8.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/multiplying-by-8	
		PRACTICE multiplication by 9.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/multiplying-by-9	
		PRACTICE multiplication facts.		Milk Hunt : Kids Math Game - https://itunes.apple.com/us/app/milk-hunt/id906245761?mt=8	https://play.google.com/store/apps/details?id=com.triodoxic.milkhunt&hl=en
Properties of Multiplication	In this lesson, you will understand the associative property of multiplication. Example: (2x3) x 4 = 2x (3x4).	**LEARN** how to multiply three factors using the associative property of multiplication.		https://itunes.apple.com/us/podcast/3rd-gr-multiplying-three-factors/id545391286?i=118839588&mt=2	
		LEARN how to solve multiplication problems using the associative property.		https://learnzillion.com/lessons/46-solve-multiplication-problems-using-associative-property	

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTONS	URL	Alternative to IOS or Notes
Multiplication by multiples of ten	In this lesson, you will accurately compute the product of one-digit by two-digit numbers with one of the numbers. being a multiple of ten. (Example: numbers from 10 through 90).	**LEARN** how to multiply by multiples of 10 with base ten blocks.	Watch the video at the beginning of the lesson.	https://learnzillion.com/lesson_plans/9654-1-use-place-value-to-multiply-with-multiples-of-10-c?card=82084	
		PRACTICE multiplying a one digit number by a mutliple of ten.	Choose Multiplication, then level 1 (Multiply by Multiples of 10)	https://itunes.apple.com/us/app/splash-math-3rd-grade-worksheets/id449564960?mt=8	https://www.splashmath.com/math-skills/third-grade
Division	In this lesson, you will divide to find quotients of whole numbers with dividends through 100. Divisors and quotients will be up to 10. You will use division to solve word problems in problems involving equal groups, arrays, and/or measurement quantities.	**LEARN** about a strategy for solving division word problems.		https://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/v/blueberries-for-friends	
		SOLVE word problems involving division.	Choose Division Up to 144 divided by 12.	https://itunes.apple.com/us/app/math-word-problems-multiplication/id820574139?mt=8	
		UNDERSTAND how thinking blocks work.		https://www.youtube.com/watch?v=2iiIfeMubkE	
		APPLY division to word problems through use of thinking blocks.	Choose the Find the Missing Divisor or Quotient.	https://itunes.apple.com/us/app/thinking-blocks-multiplication/id669725575?mt=8	http://www.mathplayground.com/tb_multiplication/thinking_blocks_multiplication_division.html
		DISTINGUISH between sharing and grouping situations.	Take a screen shot of the blank chart and import into the show me app. Copy and paste the correct word problems into each column.	http://s3.amazonaws.com/illustrativemathematics/attachments/000/010/512/original/student_task_1540.pdf?1462403524	
				https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
Fluency with Division	In this lesson, you will divide to find quotients of whole numbers fluently up to and including 100 divided by 10.	**PRACTICE** division by 6.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/dividing-by-6	
		PRACTICE division by 7.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/dividing-by-7	
		PRACTICE division by 8.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/dividing-by-8	
		PRACTICE division by 9.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/dividing-by-9	

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTONS	URL	Alternative to IOS or Notes
Multiplication Equations	In this lesson you will use multiplication (up to and including 10 X 10) and/or division (dividends through 50 and divisors and quotients through 10) to solve word problems in problems involving equal groups, arrays, and/or measurement quantities. You may have to determine the unknown whole number in a multiplication or division equation relating three whole numbers. Be prepared to interpret and/or model division as a multiplication equation with an unknown factor.	**RELATE** division to multiplication word problems.		https://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-third-grade-applying-mult-div/e/relate-division-to-multiplication-word-problems	
		PRACTICE and **SOLVE** multiplication and division word problems.		http://www.khanacademy.org/math/arithmetic/multiplication-division/mult-div-word-problems/e/arithmetic_word_problems	
Patterns	In this lesson, you will identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain the patterns using properties of operations. You may create or match a story to a combination of symbols and numbers or you may have to identify the missing symbol that makes a number sentence true.	**LEARN** about patterns in the hundreds chart and multiplication table.	Engage in the entire lesson.	https://learnzillion.com/lesson_plans/9723-4-find-patterns-and-describe-them-using-properties-of-operations-c?card=82999	
		DEMONSTRATE understanding of patterns in the addition table.	Record your thinking in the Show Me App.	https://www.illustrativemathematics.org/content-standards/3/OA/D/9/tasks/953	Addition Patterns task
				https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		LEARN about patterns in multiplication tables.		https://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-exp-pattern-topic/cc-3rd-grade-properties-patterns/v/patterns-in-multiplication-tables-practice	
		PRACTICE finding patterns in the multiplication table.		https://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-exp-pattern-topic/cc-3rd-grade-properties-patterns/e/patterns-in-the-addition-table-and-multiplication-table	
		PRACTICE continuing a pattern within in/out tables.		http://www.ixl.com/math/grade-3/multiplication-input-output-tables	
Two-Step Word Problems	In this lesson, you will solve two-step whole number word problems using the four operations (+, -, x, ÷). In some word problems you will use equations with a symbol standing for an unknown quantity. Be sure to assess the reasonableness of your answers as you work.	**LEARN** how to solve two-step word problems.		https://braingenie.ck12.org/skills/102973/learn	
		LEARN how to solve two-step word problems.		https://braingenie.ck12.org/skills/103247/learn	
		PRACTICE solving two-step word problems.		https://braingenie.ck12.org/skills/103246	
		LEARN how to solve two-step word problems (Khan Academy Full Course).		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-3rd-two-step-word-problems/v/how-many-truffle-eating-guests-attended-a-party	

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTONS	URL	Alternative to IOS or Notes
		PRACTICE solving two step word problems.		https://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-mult-div-topic/cc-3rd-two-step-word-problems/e/two-step-word-problems-with-addition--subtraction--multiplication--and-division	
		UNDERSTAND how thinking blocks work.		https://www.youtube.com/watch?v=AOp6CkkicU4	
		SOLVE two step word problems through use of thinking blocks.	Choose More than One Operations.	https://itunes.apple.com/us/app/thinking-blocks-multiplication/id669725575?mt=8	http://www.mathplayground.com/tb_multiplication/thinking_blocks_multiplication_division.html
		SOLVE two step word problems.	Solve each problem by representing your thinking with a diagram and mathematical calculations within the Show Me App.	http://s3.amazonaws.com/illustrativemathematics/attachments/000/009/658/original/student_task_13.pdf?1462398338	
				https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		SOLVE two step word problems.	Solve each problem by representing your thinking with a diagram and mathematical calculations within the Show Me App.	http://s3.amazonaws.com/illustrativemathematics/attachments/000/010/399/original/student_task_1301.pdf?1462402814	
				https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
Area	In this lesson, you will accurately measure area by counting unit squares. Examples: square centimeter, square meter, square inch, square foot, and non-standards units.	**DISCOVER** the formula for area of a rectangle.	Complete all lessons within the area unit.	https://learnzillion.com/resources/64162-developing-conceptual-understanding-of-area#1	
		CONSTRUCT several rectangles and complete the chart from the previous post.	Use graph paper as the background to create the rectangles. On a second page, import an image of the table from the previous post and complete the table.	https://itunes.apple.com/us/app/educreations-interactive-whiteboard/id478617061?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		SOLVE problems involving area.	Import the assignment into the Show Me app and explain your thinking.	https://www.illustrativemathematics.org/content-standards/3/MD/C/tasks/516	Square Counting Shortcut task
				https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		SOLVE area word problems.	Solve the problem with a diagram and numerical calculations within the Show Me App.	http://s3.amazonaws.com/illustrativemathematics/attachments/000/010/714/original/student_task_1990.pdf?1462404751	
				https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		PRACTICE finding area using this app.		https://itunes.apple.com/us/app/kids-math-area-perimeter-worksheets/id609686842?mt=8	
		APPLY multiplication skills to find area to complete playground activity.		See "AreaDesignTask" PDF	

Module 5: Fractions as Numbers on the Number Line

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTONS	URL	Alternative to IOS or Notes
Grade Level Summary	In grade 3, instructional time should focus on five critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100 (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; (4)describing and analyzing two-dimensional shapes; and (5) solving problems involving measurement and estimation of intervals of time, money, liquid volumes, masses, and lengths of objects.				
Module 5 Overview	The goal of Module 5 is for students to transition from thinking of fractions as parts of a figure to points on a number line. To make that jump, students think of fractions as being constructed out of unit fractions: “1 fourth” is the length of a segment on the number line such that the length of four concatenated fourth segments on the line equals 1 (the whole). Once the unit “1 fourth” has been established, counting them is as easy as counting whole numbers: 1 fourth, 2 fourths, 3 fourths, 4 fourths, 5 fourths, etc. Students also compare fractions, find equivalent fractions in special cases, and solve problems that involve comparing fractions. **Focus Standards for Module 5** CC.2.1.3.C.1 - Explore and develop an understanding of fractions as numbers. CC.2.2.3.A.2 - Understand properties of multiplication and the relationship between multiplication and division. **Important Standards for Module 5** CC.2.1.3.B.1 - Apply place value understanding and properties of operations to perform multi-digit arithmetic. **Standards for Mathematical Practice** MP# 1. Make sense of problems and persevere in solving them. MP# 2. Reason abstractly and quantitatively. MP# 3. Construct viable arguments and critique the reasoning of others. MP# 4. Model with mathematics. MP# 5. Use appropriate tools strategically. MP# 6. Attend to precision.				
		ACCESS Grade 3 Module 5 Instructional Framework		http://www.pdesas.org/module/cm/Cmap/View/16853	
Meaning of Fractions	In this lesson, you will be able to demonstrate that when a whole or set is partitioned into y equal parts, the fraction 1/y represents 1 part of the whole and/or the fraction x/y represents x equal parts of the whole (Limit the denominators to 2,3,4,6,and 8; limit numerators to whole numbers less than the denominator; no simplification necessary.).	**LEARN** the meaning of fractions	Choose Introduction	https://itunes.apple.com/us/app/fractions-3/id810343106?mt=8	https://learnzillion.com/resources/99854-understanding-fractions
		PRACTICE naming fractions.	Choose Fraction Names	https://itunes.apple.com/us/app/fractions-3/id810343106?mt=8	http://www.sheppardsoftware.com/mathgames/fractions/fracTut1.swf
		PRACTICE naming fractions.	Choose Shapes.	https://itunes.apple.com/us/app/zmath-grade-3-fractions-lite/id642066011?mt=8	http://www.visualfractions.com/IdentifyCircles/
		PRACTICE creating fractions.	Choose Simple Fractions.	https://itunes.apple.com/us/app/fractions-smart-pirates/id905173962?mt=8	
		DETERMINE the correct whole.	Import task into the Show Me app and explain your thinking.	https://www.illustrativemathematics.org/content-standards/3/NF/A/1/tasks/833	Naming the Whole for a Fraction

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTONS	URL	Alternative to IOS or Notes
				https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		PRACTICE naming fractions using the number rods.	Find the values of the other rods if the gray rod is worth one. Record their values and take a screen shot of your completed work. Choose a different rod to have a value of one and find the values of the other rods in relation to it (these may be fractions, mixed numbers or whole numbers). Record their values and take another screen shot.	https://itunes.apple.com/us/app/number-rods/id536204074?mt=8	https://nrich.maths.org/4348 - Use the orange rod as 1 or Launch https://wqed.pbslearningmedia.org/resource/rttt12.math.cuisenaire/modeling-fractions-with-cuisenaire-rods/#.WQODjldllmA
		CONSTRUCT different ways to divide the square into equal parts.	Use the rubber bands on the geoboard app to section the square into 4 equal parts. Take a screen shot of the each way.	https://itunes.apple.com/us/app/geoboard-by-math-learning/id519896952?mt=8	https://www.mathlearningcenter.org/web-apps/geoboard/
Fractions on a Number Line	In this lesson, you will represent fractions on a number line (Limit the denominators to 2,3,4,6, and 8; limit numerators to whole numbers less than the denominator; no simplification necessary.).	**LEARN** how to represent fractions on a number line.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-fractions-topic/cc-3rd-fractions-meaning/v/fractions-on-a-number-line	
		LOCATE unit fractions on a number line.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-fractions-topic/cc-3rd-fractions-meaning/e/fractions_on_the_number_line_1	
				http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-fractions-topic/cc-3rd-fractions-meaning/e/fractions_on_the_number_line_2	
		LOCATE fractions on a number line.		www.mathplayground.com/puzzle_pics_2/tilesmath_fractions.htm	
		LOCATE fractions on a number line.	Choose number line.	https://itunes.apple.com/us/app/zmath-grade-3-fractions-lite/id642066011?mt=8	http://www.visualfractions.com/IdentifyLines/
Equiavalent Fractions	In this lesson, you will recognize and generate simple equivalent fractions (Limit the denominators to 1,2,3,4,6, and 8; limit numerators to whole numbers less than the denominator.).	**CONSTRUCT** equivalent fractions using fraction tiles.	Find all the fraction tiles that are equivalent with the 1/2 strip. They must all be the same size piece. Take a screenshot of the different sets of tiles which are equal in length to 1/2. Repeat the process for the 1/3 tile. Take another screenshot of the different sets of tiles which are equal in length to 1/3.	https://itunes.apple.com/us/app/virtual-manipulatives!/id471341079?mt=8	http://www.abcya.com/fraction_percent_decimal_tiles.htm
		WRITE fraction equivalences.	Import the screenshots into the Show Me App and write the fraction equivalences for each.	https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		LEARN about equivalent fractions on a number line.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-fractions-topic/cc-3rd-comparing-fractions/v/equivalent-fractions-visually-and-on-number-line	

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTONS	URL	Alternative to IOS or Notes
		PRACTICE finding equivalent fractions on a number line.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-fractions-topic/cc-3rd-comparing-fractions/e/equivalent-fraction-models	
		PRACTICE finding equivalent fractions with models.	Choose Fractions, then level 3.	https://itunes.apple.com/us/app/3rd-grade-splash-math-games./id449564960?mt=8	https://www.splashmath.com/math-skills/third-grade
		RECOGNIZE equivalent fractions.	Choose equivalent.	https://itunes.apple.com/us/app/fractions-smart-pirates/id905173962?mt=8	http://www.sheppardsoftware.com/mathgames/fractions/equivalent_fractions_shoot.swf
		RECOGNIZE and **GENERATE** equivalent fractions.	Choose equivalent fractions.	https://itunes.apple.com/us/app/zmath-grade-3-fractions-lite/id642066011?mt=8	http://www.mathplayground.com/Triplets/Triplets.html
				http://illuminations.nctm.org/assets/0/77/ed39bd77-5569-4fd2-bb1a-fb44d424cae5.swf	
Whole Numbers as Fractions	In this lesson you will express whole numbers as fractions, and/or generate fractions that are equivalent to whole numbers (Limit the denominators to 1,2,3,4,6,and 8; limit numerators to whole numbers less than the denominator.).	**CONSTRUCT** fractions equivalent to 1.	Find all the ways to make one whole using pieces of the same size. Take a screenshot of the different ways to represent one whole with fraction tiles.	https://itunes.apple.com/us/app/virtual-manipulatives!/id471341079?mt=8	http://www.abcya.com/fraction_percent_decimal_tiles.htm
		WRITE the fractions equivalent to 1.	Import the screenshot into the Show Me App and write all the fractions equivalent to 1.	https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		PRACTICE finding 1 on a number line.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-fractions-topic/cc-3rd-fractions-meaning/e/finding-1-on-the-number-line	
		LOCATE 1 on a number line.	Import task into the Show Me app and explain your thinking.	https://www.illustrativemathematics.org/content-standards/3/NF/A/2/tasks/169	Find 1 task
				https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
Comparing Fractions	In this lesson, you will compare two fractions with the same denominator (Limit the denominators to 1,2,3,4,6,and 8), using the symbols >, =.).	**WATCH** a video to learn about comparing fractions visually on a number line.		http://www.khanacademy.org/math/cc-third-grade-math/cc-3rd-fractions-topic/cc-3rd-comparing-fractions/v/comparing-fractions-visually-and-on-number-line	
		COMPARE fractions with the same denominator.	Choose Fraction, then Level 5 (Comparing Fractions with the Same Denominators).	https://itunes.apple.com/us/app/3rd-grade-splash-math-games./id449564960?mt=8	https://www.splashmath.com/math-skills/third-grade
		PRACTICE comparing fractions.		https://itunes.apple.com/us/app/oh-no-fractions!-curious-hat/id593418681?mt=8	http://www.professorgarfield.org/KBKids/video/kbs2012.swf
		PRACTICE fraction skills.		https://itunes.apple.com/us/app/slice-fractions/id794730213?mt=8	http://www.wmnet.org.uk/files/HigherLower-RevealOrderv4.swf - Choose Fractions
		DEMONSTRATE your understanding of fractions.		https://illuminations.nctm.org/Activity.aspx?id=4148	

Module 6: Collecting and Displaying Data

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTIONS	URL	Alternative to IOS or Notes
Grade Level Summary	In grade 3, instructional time should focus on five critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100 (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; (4) describing and analyzing two-dimensional shapes; and (5) solving problems involving measurement and estimation of intervals of time, money, liquid				
Module 6 Overview	In Module 6, students leave the world of exact measurements behind. By applying their knowledge of fractions from Module 5, they estimate lengths to the nearest halves and fourths of an inch and record that information in bar graphs and line plots. This module also prepares students for the multiplicative comparison problems of grade 4 by askingstudents “how many more” and “how many less” questions of scaled bar graphs. **Focus Standards for Module 6** CC.2.4.3.A.4 - Represent and interpret data using tally charts, tables, pictographs, line plots, and bar graphs. **Important Standards for Module 6** CC.2.4.3.A.1 - Solve problems involving measurement and estimation of temperature, liquid volume, mass or length. **Standards for Mathematical Practice** MP# 1. Make sense of problems and persevere in solving them. MP# 2. Reason abstractly and quantitatively. MP# 3. Construct viable arguments and critique the reasoning of others. MP# 4. Model with mathematics. MP# 5. Use appropriate tools strategically. MP# 6. Attend to Precision. MP# 7. Look for and make use of structure. (Deductive Reasoning) MP# 8. Look for and express regularity in repeated reasoning. (Inductive Reasoning) Mathematical Practices resource page on SAS				
		ACCESS Mathematics Grade 3 Module 6 Instructional Framework		http://www.pdesas.org/module/cm/Cmap/View/16855	
Length	In this lesson, you will use a ruler to measure lengths to the nearest quarter inch or centimeter.	**LEARN** how to measure to the nearest quarter of an inch.		https://learnzillion.com/lessons/3394-measure-to-the-nearest-half-inch-and-quarter-inch	
		MEASURE ten objects in the classroom to the nearest quarter of an inch.	Take a picture of the object next to the ruler. Import each image into the Show Me App and write the length of the object.	https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
Measurment Data	In this lesson, you will generate measurement data (to the nearest half and quarter inch) by using a ruler. You will also display this data by making a line plot with an appropriate scale.	**LEARN** how to show data in fractional amounts by creating a line plot.		https://learnzillion.com/lessons/2668	
		MEASURE ten objects in your desk to the nearest quarter of an inch and **CREATE** a line plot.	Create a table of these measurements and then create a line plot using Explain Everything. You may use graph paper background if that’s helpful.	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en	
Scaling Data	In this lesson, you will complete a scaled pictograph and scaled bar graph to represent a data set with several categories. You will interpret data to solve one- and two-step problems using the pictographs and bar graphs.	**LEARN** how to interpret data using bar graphs.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-data/v/more-solving-problems-with-bar-graphs	

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTIONS	URL	Alternative to IOS or Notes
		PRACTICE interpreting information from bar garphs.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-data/e/solving-problems-with-bar-graphs-3	
		LEARN **how to** construct bar graphs and pictographs.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-data/v/creating-picture-and-bar-graphs-2-exercise-examples	
		PRACTICE constructing bar graphs and pictographs.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-data/e/creating-picture-and-bar-graphs-2	
		PRACTICE constructing and interpreting bar graphs and pictographs.		https://itunes.apple.com/us/app/kids-math-graphs-data-worksheets/id635335181?mt=8	
Translate Data	In this lesson, you will translate information from one type of graph to another. (Limit this to pictographs, tally charts, bar graphs, and tables.)	**DETERMINE** which items you would like that total less than $1000.		https://www.illustrativemathematics.org/content-standards/3/NBT/A/2/tasks/1315	Classroom Supplies
		CREATE a bar graph based on your choices from the last post.		https://itunes.apple.com/us/app/graphing-for-kids-chart-maker/id878461173?mt=8	
		PERFORM a survey and **CREATE** a graph. Then use an App to display and explain the graph. Links are for the task and rubric.		"Graphing Performance Task" and "Graphing Performance Task Rubric" PDF	

Module 7

TITLE/TOPIC	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTIONS	URL	NOTES
Grade Level Summary	In grade 3, instructional time should focus on five critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100 (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; (4) describing and analyzing two-dimensional shapes; and (5) solving problems involving measurement and estimation of intervals of time, money, liquid volumes, masses, and lengths of objects.				
Module 7 Overview	In Module 7, students describe, analyze, and compare properties of two-dimensional shapes. By now, students have done enough work with both linear and area measurement models to study that there is no relationship in general between the perimeter and area of a figure, one of the concepts of the last module. **FOCUS STANDARDS** CC.2.3.3.A.1 - Identify, compare, and classify shapes and their attributes. CC.2.3.3.A.2 - Use the understanding of fractions to partition shapes into parts with equal areas and express the area of each part as a unit fraction of the whole. CC.2.4.3.A.6 - Solve problems involving perimeters of polygons and distinguish between linear and area measures. **IMPORTANT STANDARDS** CC.2.4.3.A.1 - Solve problems involving measurement and estimation of temperature, liquid volume, mass or length. **Standards for Mathematical Practice** MP# 1. Make sense of problems and persevere in solving them. MP# 2. Reason abstractly and quantitatively. MP# 3. Construct viable arguments and critique the reasoning of others. MP# 4. Model with mathematics. MP# 5. Use appropriate tools strategically. MP# 6. Attend to precision. MP# 7. Look for and make use of structure (Deductive Reasoning). MP# 8. Look for and express regularity in repeated reasoning (Inductive Reasoning) Mathematical Practices resource page on SAS				
		ACCESS Mathematics Grade 3 Module 7 Instructional Framework		http://www.pdesas.org/module/cm/Cmap/View/16856	
Identify and Classify Shapes and Their Attributes	In this lesson, you will explain that shapes in different categories may share attributes and that the shared attributes can define a larger category. Be prepared to recognize rhombi, rectangles, and squares as examples of quadrilaterals, and/or draw examples of quadrilaterals that do not belong to any of these subcategories.	**LEARN** about properties of quadrilaterals.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-geometry/v/introduction-to-types-of-quadrilaterals	
		CATEGORIZE quadrilaterals based on their attributes.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-geometry/e/categorize-quadrilaterals	
		PRACTICE identifying shapes based on their attributes.		https://braingenie.ck12.org/skills/102384	

TITLE/TOPIC	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTIONS	URL	NOTES
		PLAY Hide and Seek and identify shapes based on their attribues.	Choose Hide and Seek	https://itunes.apple.com/us/app/cyberchase-shape-quest!/id777790860?mt=8	
		CATEGORIZE shapes by analyzing key differences to create a shape multimedia project.	Use an app such as Educreations, Book Creator, PowerPoint or Explain Everything.	"Math Shape Sort" PDF	
Partition Shapes	In this lesson, you will partition shapes into parts with equal areas and express the area of each part as a unit fraction of the whole.	**PRACTICE** partitioning shapes into halves, thirds, and sixths.	Import the task into the Show Me app	https://www.illustrativemathematics.org/content-standards/3/G/A/2/tasks/1502	Halves, Thirds, and Sixths task
		EXPLAIN and **SHOW** your thinking as you solve the task.		https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	
		PRACTICE partitioning shapes.		http://www.sheppardsoftware.com/mathgames/earlymath/fractions_shoot.swf	
Perimeter	In this lesson, you will solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, exhibiting rectangles with the same perimeter and different areas, and exhibiting rectangles with the same area and different perimeters.	**WATCH** a demonstration on how to find the perimeter of a shape.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-perimeter/v/introduction-to-perimeter	
		PRACTICE finding the perimeter of different shapes.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-perimeter/e/perimeter_1	
		PRACTICE finding unknown side lengths in different shapes.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-perimeter/e/perimeter-2	
		PRACTICE creating two dimensional figures on a geoboard.	Take a screenshot of each image.	https://itunes.apple.com/us/app/geoboard-by-math-learning/id519896952?mt=8	https://www.mathlearningcenter.org/web-apps/geoboard/
		DETERMINE the perimter of your created shapes.	Import the screenshots created in the last post into the Show Me App, determine the perimeter of each shapes and explain your thinking.	https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		EXPLORE the relationship between perimeter and area by creating rectangles with colored tiles.	Review the directions for the activity.	http://www.k-5mathteachingresources.com/support-files/rectangles-with-color-tiles.pdf	
		CONSTRUCT rectangles with area of 12 square units.	Take a screen shot of each rectangle created.	https://itunes.apple.com/us/app/color-tiles-manipulative/id656246736?mt=8	http://oame.on.ca/CLIPS/swfPlayer.html?swfURL=tools/ColourTiles1.swf&title=Colour%20Tiles
		DESCRIBE the area and perimeter of each rectangle.	Import the images into the Show Me App to describe their areas and perimeters.	https://itunes.apple.com/us/app/showme-interactive-whiteboard/id445066279?mt=8	https://play.google.com/store/apps/details?id=com.explaineverything.explaineverything&hl=en
		EXTEND learning about the relationship between area and perimeter.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-perimeter/v/comparing-area-and-perimeter	

TITLE/TOPIC	MESSAGE	ASSIGNMENT (CALL TO ACTION)	CONTENT DIRECTIONS	URL	NOTES
		COMPARE the area and perimeter of two shapes.		https://www.khanacademy.org/math/cc-third-grade-math/cc-third-grade-measurement/cc-third-grade-perimeter/e/comparing-area-and-perimeter	
		UNDERSTAND the relationship between area and perimeter of a rectangle to solve problems.		https://braingenie.ck12.org/skills/101737	
				https://www.mathplayground.com/PartyDesigner/PartyDesigner.html	
				https://www.mathplayground.com/area_blocks.html	

Teacher Resources

TOPIC/TITLE	MESSAGE	ASSIGNMENT (CALL TO ACTION)	URL	NOTES
3rd Grade Number Activities	This page provides examples of 3rd grade number activities suitable for use in math centers, small group or whole class settings and are designed to elicit a range of responses and provide opportunities for students to communicate their reasoning and mathematical thinking.	INCORPORATE literature-based math activities and lessons.	http://www.k-5mathteachingresources.com/3rd-grade-number-activities.html	
National Library of Virtual Manipulatives	A library of uniquely interactive, web-based virtual manipulatives or concept tutorials for mathematics instruction.	APPLY math skills and strategies using online manipulatives.	http://nlvm.usu.edu/en/nav/grade_g_2.html	Requires Flash
Utah Education Network 3-6 Student Interactives	Math interactives for basic math skills.	PRACTICE math skills with these online games.	http://www.uen.org/3-6interactives/math.shtml	Many Flash based activities.
Kids.gov	Collections of videos for math concepts.	EXPLORE math concepts with these collections of math videos.	http://kids.usa.gov/watch-videos/math/index.shtml	
Interactive Assessment Technology Enchanced Questions: Assessing students in the 21st Century	Interactive assessment questions for grade 3 math topics.	ASSESS learning with these fun interactive actitivies.	http://www.allenteachers.com/interactive/mathematics/grade-3/	
Soft Schools Site	Math worksheet generator	CREATE practice pages for 3rd grade math skills.	http://www.softschools.com/grades/3rd_grade/math/	Some flash
Math Playground	Math topic videos	WATCH videos to learn or reinforce math concepts/ skills.	http://www.mathplayground.com/mathvideos.html	Flash
Interactive Sites for Education	Interactive games for math topics	PRACTICE basic skills in each standard area.	http://interactivesites.weebly.com/math.html	Flash
Math Play 3rd Grade Math Games		PRACTICE basic skills in each standard area.	http://www.math-play.com/3rd-grade-math-games.html	Flash
Illuminations Resources for Teaching Math	Geometry problems and interactives	EXTEND learning with these lesson plans and activities.	http://illuminations.nctm.org/Search.aspx?view=search&type=ls_ac&st=g&gr=3-5	
Illuminations Resources for Teaching Math	Measurement problems	EXTEND learning with these lesson plans and activities.	http://illuminations.nctm.org/Search.aspx?view=search&type=ls_ac&st=m&gr=3-5	
Book Creator App	Create your own beautiful iBooks, right on the iPad.	ASSESS math knowledge when students create a book demonstrating math concepts and skills.	Book Creator Free - https://itunes.apple.com/app/id661166101?mt=8&&referrer=click%3Ddf0649a9-a0ee-46d1-840c-0d498e6da35	
Educreations App	Interactive whiteboard and screencasting tool that's simple, powerful, and fun to use. Annotate, animate, and narrate content as the concept is explained.	ASSESS math knowledge when you make a video to explain your math thinking.	Educreations Interactive Whiteboard - https://itunes.apple.com/us/app/educreations-interactive-whiteboard/id478617061?mt=8	
Illuminations Resources for Teaching Math	Projects for numbers and operations	EXTEND learning with these lesson plans and activities.	http://illuminations.nctm.org/Search.aspx?view=search&type=ls_ac&st=n&gr=3-5	
Illuminations Resources for Teaching Math	Multiplcation Stories and games	CREATE multiplication stories where one factor is 6 or 7, and play a multiplication game to help them master their multiplication facts.	http://illuminations.nctm.org/LessonDetail.aspx?ID=L529	