

THIRD GRADE MATH CURRICULUM

Math Unit: Addition and Subtraction Within 1,000		Pacing Guide: September– October
Essential Questions	Enduring Understandings	Benchmark Assessment(s)
<ul style="list-style-type: none"> • How can you use properties to explain patterns on the addition table? • How can you round numbers? • How can you use compatible numbers and rounding to estimate sums? • What mental math strategies can you use to find sums? • How can you add more than two addends? • How can you use the break apart strategy to add 3-digit numbers? • How can you use place value to add 3-digit numbers? • How can you use compatible numbers and rounding to estimate differences? • What mental math strategies can you use to find differences? • How can you use place value to subtract 3-digit numbers? • How can you use the combine place values strategy to subtract to subtract 3-digit numbers. • How can you use the strategy to draw a diagram to solve one- and two-step addition and subtraction problems? 	<ul style="list-style-type: none"> • I can identify and describe whole-number patterns and solve problems. • I can round 2- and 3-digit numbers to the nearest ten or hundred. • I can use compatible numbers and rounding to estimate sums. • I can count by tens and ones, use a number line, make compatible numbers, or use friendly numbers to find sums mentally in my brain. • I can use the Commutative and Associative Properties of Addition to add more than two addends. • I can use the break apart strategy to add 3-digit numbers. 	<ul style="list-style-type: none"> • SWBAT use place value understanding in order to round whole numbers to the nearest 10 or 100 in written form. SWBAT earn a passing score of 80% or higher. (PARCC Assessments pages 19-20) 3.NBT.A.1 • SWBAT fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction by showing written responses. SWBAT earn a passing score of 80% or higher. (PARCC Assessments pages 21-22) 3.NBT.A.2

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Suggested Activities

- Show What You Know about Addition and Subtraction Within 1,000, Introduction for Chapter 1, workbook pages 3-4, independent, then check as a whole group
- Students play Going to New York City game found on workbook pages 4A-4D in groups of 2, 3, or 4. Each group will need a number cube or die, connecting cubes for playing pieces, and one copy of the Clue Cards on eTeacher Resources p. TR189.
- Shade different rows, columns, and diagonals of the addition table in order to develop a conceptual understanding of the Identity Properties of Addition.
- Discuss the problem we are trying to solve, what the pattern represents, how we know where numbers are supposed to be in a pattern, and create personal patterns.
- Lesson 1.1 Real World Video – found on thinkcentral.com, “Composing Music” view and discuss the video
- In partnerships or table groups, students can practice skip counting on a hundred chart in order to practice place value.
- Round numbers using virtual number lines or duct tape number lines on the floor. Each end of the line can become any number you wish. Ex. 0 and 100, 120 and 130, etc.
- Use meter sticks and US customary rulers or yard sticks in order to round to the nearest ten or hundred.
- Read Soccer Bash in order to find out if there’s enough money for the soccer team’s party.
- Talk about why we don’t always need to find exact answers. Using compatible numbers or rounding is sufficient.
- Make mistakes with rounding or estimating from time to time when sharing examples on the whiteboard. Students need to note common errors as they work.
- Students play Auto Addition in order to practice skills and move along a game path.
- Break apart addends in order to make them compatible with base-ten blocks and on lined paper. Practice making friendly numbers to add as well.
- Practice making simple number line jumps and hops going forward and backward on notebook paper and on mini whiteboards.
- Use a Word Web graphic organizer in order to explain vocabulary terms.
- Discuss different ways to estimate a sum.
- Partner up to practice regrouping problems for subtraction over 3-digit subtraction.
- Summarize how you know when to regroup ones, tens, and hundreds.
- *Complete online research for the length of days on different planets and find out about how much longer/shorter a year is on Earth compared to a year on other planets.*
- *Complete online research for the highest point in each state of the USA. Then, students can write questions requiring others to locate estimates comparing specific states.*
- Orally review the inverse relationship between addition and subtraction in order to compare strategies for regrouping.
- Research two of your favorite large mammals. Record the greatest recorded weight for each animal and then locate the difference of those weights.
- Use part / part/ whole diagrams in order to complete bar models for addition and subtraction.

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- Choose and explain strategies for personal reasoning.

Reinforcement	Enrichment
<p>PMT = PERSONAL MATH TRAINER</p> <ul style="list-style-type: none"> • Lesson 1.1, 3.OA.D.9 Tell whether a sum is even. PMT 3.OA.9, intervene with R-1.1 • Lesson 1.2, 3.NBT.A.1, Round to the nearest 10 or 100. PMT 3.NBT.1, R-1.2 • Lesson 1.3, 3.NBT.A.1, Estimate sums. PMT 3.NBT.1, R-1.3 • Lesson 1.4, 3.NBT.A.2, Use mental math strategies to add. PMT 3.NBT.2, R-1.4 • Lesson 1.5, 3.NBT.A.2, Identify application of the Commutative Property of Addition, PMT 3.NBT.2, R1-5 • Lesson 1.7 and 1.10, Use place value to add or subtract. PMT 3.NBT.2, R-1.7, R-1.10 • Lesson 1.8, 3.NBT.A.1, Estimate differences. PMT 3.NBT.1, R-1.8 • Lesson 1.9, 3.NBT.A.2, Use a number line model to solve a subtraction problem. PMT 3.NBT.2, R-1.9 • Lesson 1.10, 3.NBT.A.2, Use subtraction to check addition. PMT 3.NBT.2, R-1.10 • Lesson 1.11, 3.NBT.A.2, Identify and explain a subtraction error. PMT 3.NBTd.2, R-1.11 • Lesson 1.12, 3.OA.D.8, Use a bar model to solve a subtraction problem. Solve multistep addition and subtraction word problem. PMT 3.OA.8, PMT 3.NBT.2, R-1.12 • Screen and implement Tier 2 interventions • Reteach worksheet pages (chapter resources book) • Response to Intervention Activities (Think Central) • ELL Activities • Strategic Intervention Guide (Think Central) • Intensive Intervention Guide (Think Central) 	<ul style="list-style-type: none"> • Lesson 1.1, TE p. 6, Display Pascal's Triangle and ask students to look for patterns in the diagram. Challenge students to find the missing numbers using the patterns they found. • Lesson 1.1, TE p. 9, Partner up in order to create and identify patterns on a hundred chart or on plain paper. • Lesson 1.2, TE p. 12, Students read and figure out the number riddles from 3-4 clues. Then, students can write up their own riddles involving rounding of 3-digit numbers. • Lesson 1.3, TE p. 18, Students estimate sums for two 3-digit numbers, then check to see the actual sum on a calculator. Then, they use different estimation strategies to see which one works closest to the actual answer and why. • Lesson 1.4, TE p. 24, Students take a given problem that has them add two 3-digit numbers from using compatible numbers in two different ways. • Lesson 1.4, TE p. 27, Students investigate and list different ways to break apart the following addends to make compatible numbers: $153+127$. They write a summary to explain themselves. • Lesson 1.5, TE p. 30, Use the Associative Property in order to find the sum for a given problem, and then find a way to use the Commutative Property to find the sum in a different way. • Lesson 1.6, TE p. 36, Students need to find a variety of ways to have a few 3-digit numbers equal a specific sum. Then, they can form another problem for a partner to solve in a variety of ways, too. • Lesson 1.6, TE p. 39, Students locate two different 3-digit numbers that have a sum of 999. The numbers cannot have the same digit in place value spot. • Lesson 1.7, TE p. 42, What is the greatest sum of three different 1-digit numbers? What is the greatest sum of three different 2-

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digit numbers? Are there any patterns in locating your response?

- Lesson 1.8, TE p. 49, Copy Enrich 1.8 for each partnership, Students will estimate pocket change.
- Lesson 1.8, TE p. 50, Students write at least two subtraction examples for the given answers, 100, 400, and 230.
- Lesson 1.9, TE p. 56, Students partner up in order to locate two different ways to find the difference for five given problems.
- Lesson 1.10, TE p. 62, Toss a die 6 times in order to make two 3-digit numbers that can be subtracted without regrouping. Explain how you decided which place value spot each digit should go in.
- Lesson 1.11, TE p. 68, Number Cube Toss, Partners toss a die six times. They need to write two 3-digit numbers that can be subtracted using the strategy of combining the tens and ones places. Students earn a point if they can subtract by combining tens and ones.
- Lesson 1.12, TE p. 74, Students write word problems for given 3-digit numbers that ask another to add or subtract.
- Online Activities:
 - 1) Missing Digit Addition -
https://www.mathplayground.com/brain_workouts/brain_workout_01_addition.html
 - 2) Missing Digit Subtraction -
https://www.mathplayground.com/brain_workouts/brain_workout_01_subtraction.html
 - 3) World Problems -
<https://www.mathplayground.com/WordProblemsWithKatie1.html>
 - 4) Regrouping 3 Digit Video-
https://www.mathplayground.com/video_add_subtract_3_digit_numbers.html
- Classroom Activities:
 - 1) Think Central:
 - A. Up and Down • Do the Math!–Subtract

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	<p>B. Sharing the Warmth • Heat and Temperature</p> <p>C. Turn Up the Heat • Do the Math!–Read a Table</p> <p>D. Climbing High Above • Do the Math!–Estimate a Difference</p> <p>E. Going, Going, Gone • Resource Conservation</p> <p>F. Composting • Do the Math!–Use Subtraction</p> <p>G. A World of Weather • Do the Math!–Solve a Word Problem</p> <p>H. Fragile Ecosystems • Environment Changes</p> <p>I. In Our Corner of Space • Do the Math!–Calculate Distance</p> <p>2) Directed Paraphrasing</p> <p>3) Journal entries</p> <p>4) For details on 3 and 3 see https://docs.google.com/document/d/1lOMb5VKexCLrAf_Iu1Hal6yQmxFho4BwAi68yjOnYQ/edit?usp=sharing</p>
Materials and Resources	Other Assessments
<ul style="list-style-type: none"> Teacher Edition – Chapter 1 Addition and Subtraction Within 1,000 Chapter 1 Go Math workbooks for each student Getting Ready for the PARCC Assessments (pink soft covered books for each student) Grab-and-Go! Grade 3 book, p. 1, Roll to 100! card, two dice per group of 2-4 students Grab-and-Go! Grade 3 book, p. 1, Cube Fun! Card, unifix cubes Grab-and-Go! Grade 3 book, p. 2, And the Survey Says... card, lined paper Grab-and-Go! Grade 3 book, p. 3, Ready! Aim! Subtract! Card, copies of p. 49 for each student Grab-and-Go! Grade 3 book, p. 5, Super Subtraction card, p. 39 copied for each student, p. 45 copied for each student, base-ten blocks, scissors 	<ul style="list-style-type: none"> Beginning-of-Year Test, make copies from Chapter Resources book Show What You Know found in Student Edition Ch. 1 workbook pages 3-4 Chapter 1 Test, workbook pages 79-84 Performance Assessment, Real World Project, Inventing Toys, found in Student Text, pages 1-2, Rubric on Teacher Edition p. 2, 2-day project, students should earn a 2, 3, or 4. 3.MD.C.7 Relate area to the operations of multiplication and addition.

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<ul style="list-style-type: none"> Go Math Literature Connection collection 	
Suggested Websites	Suggested Materials
<ul style="list-style-type: none"> www.thinkcentral.com ISE – Interactive Student Edition PMT – Personal Math Trainer Math on the Spot Video – which helps students with problem solving work in each lesson Animated Math Models HMH – Mega Math games and extra practice iT – internet tools for math ABC – Multimedia eGlossary Real World Videos Professional Development Videos that help with teaching for depth Splash Learn www.splashlearn.com 	<ul style="list-style-type: none"> Math notebooks Grab-and-Go Super Subtraction activity card and manipulatives that can model regrouping
Standards	
<p>3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p> <p>3.OA.D.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. <i>For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.</i></p> <p>3.NBT.A.1 Use place value understanding to round whole numbers to the nearest 10 or 100.</p> <p>3.NBT.A.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.</p>	
Cross-Curricular Connections	
<p>21st Century Skills- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p> <p>Technology</p> <p>8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.</p> <p>8.1.5.F.1 Apply digital tools to collect, organize, and analyze data that support a scientific finding.</p> <p>8.2.5.D.1 Identify and collect information about a problem that can be solved by technology, generate ideas to solve the problem, and identify constraints and trade-offs to be considered.</p> <p>SEL</p> <ul style="list-style-type: none"> Identify who, when, where or how to seek help for oneself or others when needed. Utilize positive communication and social skills to interact effectively with others <p>Language Arts- RI.3.4 Determine the meaning of general academic and domain specific words and phrases in a text relevant to a grade 3 topic or subject area.</p>	

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Math Unit: Represent and Interpret Data		Pacing Guide: October– November
Essential Questions	Enduring Understandings	Benchmark Assessment(s)
<ul style="list-style-type: none"> How can you use the strategy make a table in order to organize data and solve problems? How can you read and interpret data in a picture graph? 	<ul style="list-style-type: none"> I can organize data in tables and solve problems using the strategy make a table. I can read and interpret data in a scaled picture graph. 	<ul style="list-style-type: none"> SWBAT use a frequency table in order to complete a picture graph and explain how many pictures are drawn. Students will score an 80% or higher. (PARCC Assessments pages 41-42) 3MD.B.3 SWBAT utilize a bar graph in order to solve one- and two-step problems. Students will score an 80 % or higher. (PARCC Assessments pages 41-42) 3MD.B.3

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<ul style="list-style-type: none"> • How can you draw a picture graph to show data in a table? • How can you read and interpret data in a bar graph? • How can you draw a bar graph to show data in a table or picture graph? • How can you solve problems using data represented in bar graphs? • How can you read and interpret data in a line plot and use data to make a line plot? 	<ul style="list-style-type: none"> • I can draw a scaled picture graph to show data in a table. • I can read and interpret data in a scaled bar graph. • I can draw a scaled bar graph to show data in a table or picture graph. • I can solve one- and two-step comparison problems using data represented in scaled bar graphs. • I can read and interpret data in a line plot and use data to make a line plot. 	<ul style="list-style-type: none"> • SWBAT measure to the nearest half and fourth of an inch. SWBAT use the data in order to read line plots accurately. Students will score an 80% or higher. (PARCC Assessments pages 43-44) 3.MD.B.4
<p style="text-align: center;">Suggested Activities</p>		
<ul style="list-style-type: none"> • Count It! Interactive Bulletin Board – Title can be any title students can vote on such as Types of Pets, Favorite Color, Least Favorite Vegetable, etc. Use 6 strips of ribbon for six different choices or categories, and clothespins for each student to vote with. Use the data to analyze, form, and answer questions about it. • Post It! Each student gets a post it note and lists the name of a sport they really enjoy playing. Next, ask students how to organize the display. Once it is organized, analyze the data orally and in writing. • Do mental math activities in class on a daily basis. • Practice skip counting often. Skip count by a variety of numbers forward and backward. • Play Picture It Charades in order to review and practice vocabulary terms. Students take turns choosing terms and drawing examples and pictures for them until they have at least 10 students standing to guess the vocabulary word. The correct guesser gets to be the next charades drawer. • Reflect about bar graphs and write all you know about the topic. • Write a clear explanation to another student about how to easily read a line plot. • Use graphic organizers, tables, and surveys in order to scaffold problems. • Students choose personal topics in order to gather data for four categories, then generate two types of graphs from their data. • Organize, record, and display data about animal life spans using picture graphs. (activity card 17 – Storybook Math) • Research different types of migrating butterflies. Make a tally table to show each student's answer. Then, make a frequency table to show how many more students choose one type of butterfly over another. • Share pictures of the Grand Canyon, Yellowstone National Park, and the Florida Everglades. Ask students to choose which national park they would like to visit. Generate a tally table to show answers. • Describe how to scale a picture graph, showing two votes as one whole picture, or even 5 votes equivalent to one whole picture. 		

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- Develop meaning(s) of vocabulary, especially when there is more than one meaning for a specified term.
- Explain what you can tell just by comparing the symbols in a picture graph.
- Analyze both vertical and horizontal bar graphs in order to use critical thinking skills.
- Discuss why some scales are appropriate for bar graphs while others are not.
- Solve one and two-step problems about bar graphs.
- Practice reading a variety of line plot graphs. Discuss trends, clusters, and gaps in data.

Reinforcement	Enrichment
<ul style="list-style-type: none"> • Lesson 2.1 Organize data using tallies and frequency tables. PMT 3.MD.3, R – 2.1 • Lesson 2.2 Use picture graphs. PMT 3.MD.3, R-2.2 • Lesson 2.3 Make picture graphs. PMT 3.MD.3, R-2.3 • Lesson 2.4 Use bar graphs. PMT 3.MD.3, R-2.4 • Lesson 2.5 Make bar graphs. PMT 3.MD.3, R-2.5 • Lesson 2.6 Solve problems using data. PMT 3.MD.3, R-2.6 • Lesson 2.7 Use and make line plots. PMT 3.MD.4, R-2.7 • Screen and implement Tier 2 interventions • Reteach worksheet pages (chapter resources book) • Response to Intervention Activities (Think Central) • ELL Activities • Strategic Intervention Guide (Think Central) • Intensive Intervention Guide (Think Central) 	<ul style="list-style-type: none"> • Lesson 2.1 TE p. 88 Toss two dice (#1-6) twenty times and record the sum of the numbers in a tally table. List all of the possible combinations and outcomes there could be. Make a frequency table to show your results. • Lesson 2.2 TE p. 94 Share specific pictograph keys with the class. Challenge students to solve the problems for different amounts of the key pictures. • Lesson 2.3 TE p. 100 Provide students with a topic and data. They construct a pictograph with it. Then, if time allows, they construct a new pictograph with the same data, changing the key scale. • Lesson 2.4 TE p. 103 Ask students about their favorite stones or gemstones. Next, provide time for students to research the hardness of each of the stones. Last, generate a picture graph to display the data. • Lesson 2.5, TE p. 114 Read or share given clues with the class. Then, each child creates a bar graph from that data. • Lesson 2.6, TE p. 120 Use a 6 section spinner. Students spin 20 times and record their results in a tally chart. Generate a bar graph. How many more times did one result occur over another? • Lesson 2.7, TE p. 126, Reason about a Line Plot • Write and solve another problem using the data in one problem we did today in class. • Online Activities: <ol style="list-style-type: none"> 1) Graphing Germs - https://www.education.com/game/graphing-germs/ 2) Graphing Word Problems - https://www.education.com/game/zap-and-kreb-

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	<p><u>graphing-word-problems/</u></p> <ul style="list-style-type: none"> Classroom Activities: <ol style="list-style-type: none"> Think Central: <ol style="list-style-type: none"> Experimental Testing • The Five Steps Show Me the Evidence • Data and Empirical Evidence How to Do It! • Do the Math!–Construct Bar and Line Graphs Other Explanations • Critical Thinking What’s Energy? • Forms of Energy Use Energy • Do the Math!–Understand Data Tables Coming Down • Do the Math!–Interpret a Table Migration • Do the Math!–Make a Graph Communities of Populations • Do the Math!–Make a Bar Graph Tic- Tac- Toe Choice Board Make a Bar Graph For details on 2 and 3, see - https://docs.google.com/document/d/1lOMb5VKexCLrAf_Iu1Hal6yQmxFho4BwAi68yjOnYQ/edit?usp=sharing
Materials and Resources	Other Assessments
<ul style="list-style-type: none"> Ch. 2 Go math workbooks PARCC Assessment workbooks iStudent Edition eTeacher Edition Chapter Resources book for Reteach and Enrichment worksheets you can copy from Graph paper Branching Diagram Graphic Organizer Timer / sketch paper - Picture It activity, TE p. 86A Literature Connection booklets: <u>The Class Trip</u>, <u>Diegos’ Perfect Fit</u> Activity Card 2 (laminated)– And the Survey Says..., It’s in the 	<ul style="list-style-type: none"> Show What You know – diagnostic, workbook pages 85-86 Digital Personal Math Trainer (Assessment Animation and Assessment Video) Lesson Quick Check Mid-Chapter Checkpoint Chapter Review / Test, pages 131-134 Chapter Test Performance Assessment Task – Chapter Resources found in PMT Exercise 13, 3.MD.B.3

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Bag, and Life Span Pictographs	
Suggested Websites	Suggested Materials
<ul style="list-style-type: none"> • www.thinkcentral.com ISE – Interactive Student Edition PMT – Personal Math Trainer Math on the Spot Video – which helps students with problem solving work in each lesson Animated Math Models HMH – Mega Math games and extra practice iT – internet tools for math ABC – Multimedia eGlossary Real World Videos Professional Development Videos that help with teaching for depth • Splash Learn www.splashlearn.com 	<ul style="list-style-type: none"> • <i>It's in the Bag – Activity Card 2, collect, organize, record, and display data in bar graphs</i>
Standards	
<p>3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i></p> <p>3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units- whole numbers, halves, or quarters.</p>	
Cross-Curricular Connections	
<p>21st Century Skills- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p> <p>Technology 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems. 8.2.5.D.1 Identify and collect information about a problem that can be solved by technology, generate ideas to solve the problem, and identify constraints and trade-offs to be considered.</p> <p>SEL</p> <ul style="list-style-type: none"> • Identify who, when, where or how to seek help for oneself or others when needed. • Utilize positive communication and social skills to interact effectively with others <p>Language Arts- RI.3.4 Determine the meaning of general academic and domain specific words and phrases in a text relevant to a grade 3 topic or subject area.</p>	

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Math Unit: Understand Multiplication		Pacing Guide: December
Essential Questions	Enduring Understandings	Benchmark Assessment(s)
<ul style="list-style-type: none"> How can you use equal groups to find how many in all? How is multiplication like addition? How is it different? How can you use a number line to skip count and find how many in all? How can you use the strategy draw a diagram to solve one- and two-step problems? How can you use arrays to model multiplication and find factors? 	<ul style="list-style-type: none"> I can model and skip count objects in equal groups to find how many there are? I can write an addition sentence and a multiplication sentence for a model. I can model and skip count on a number line to find how many there are. I can solve one- and two-step problems by using the strategy draw a diagram. 	<ul style="list-style-type: none"> SWBAT represent and solve problems involving multiplication and division in writing. Students will earn an 80% or higher. (PARCC Assessments pp. 1-2) 3.OA.A.1 SWBAT represent and solve problems involving multiplication and division within 100 to solve word problems in writing. Students will earn an 80% or higher. (PARCC Assessments pp. 5-6) 3.OA.A.3 SWBAT understand properties of multiplication and the relationship between multiplication and division in writing. Students will earn an 80% or higher. (PARCC pp. 9-10) 3.OA.B.5

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<ul style="list-style-type: none"> • How can you use the Commutative Property of Multiplication to find products? • What happens when you multiply a number by 0 or 1? 	<ul style="list-style-type: none"> • I can use arrays to model products and factors. • 	
Suggested Activities		
<ul style="list-style-type: none"> • Use counters in order to show factors and products. • Model multiplication and division with pictures, diagrams, and concrete materials. • Use graphic organizers or semantic maps in order to define vocabulary. • Practice counting equal groups with counters, on paper, and mentally. • Read <u>Collections Times Four</u>, from Go Math Literature Collection, and discuss different ways to multiply by 4. • Write problems that can be solved by using equal groups. • Research clutches of eggs in nests for a variety of birds. Then students form multiplication problems from that data. • Orally review that the first factor tells the number of groups while the second factor tells the number in each group. Say, “___ groups of ___.” • Ask, “Why is it sometimes better to multiply over add?” • Draw pictures to solve multiplication problems. • Practice multiplication facts through 11 by playing BINGO. • View Math on the Spot Video and construct a viable argument in order to critique the reasoning of others. • Explain how multiplication is similar and different from addition. • Write a word problem that involves combining three equal groups. • Use a number line to review skip counting. Remind students to count spaces, not tick marks, in order to be accurate. • Write about how you can use a number line to skip count and find how many in all. • Use a bar model to visualize the operations needed to solve the problem as you determine what is missing in the model. • Describe one kind of diagram you might draw to help you solve a problem. • Share word problems orally that have different operations involved. The students determine which operation is being used and explain how they know they are correct. • Use arrays to model multiplication. • Write a word problem that can be solved by drawing an array. • State clear directions to describe how to make an array. • Explain how you can use the Commutative Property of Multiplication in order to find products. 		

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- Describe how drawing a model on grid paper to solve a multiplication problem is like making an array and how it is different.
- Explore the Identity Property of Multiplication.
- Discuss what types of problems can be solved with multiplication.

Reinforcement	Enrichment
<ul style="list-style-type: none"> • Lesson 3.1 Use equal groups to find how many in all. PMT3.OA.1, R-3.1 • Lesson 3.2 Relate addition and multiplication. PMT 3.OA.1, R-3.2 • Lesson 3.3 Multiply using a number line. PMT 3.OA.3, R-3.3 • Lesson 3.4 Use models to solve problems. PMT 3.OA.8, R – 3.4 • Lesson 3.5 Multiply using an array. PMT 3.OA.3, R-3.5 • Lesson 3.6 Use the Commutative Property of Multiplication. PMT 3.OA.5, R-3.6 • Lesson 3.7 Multiply with 1 and 0. PMT 3.OA.5, R-3.7 • Screen and implement Tier 2 interventions • Reteach worksheet pages (chapter resources book) • Response to Intervention Activities (Think Central) • ELL Activities • Strategic Intervention Guide (Think Central) • Intensive Intervention Guide (Think Central) 	<ul style="list-style-type: none"> • Lesson 3.1 TE p. 140, Use 5 section spinners and 25 counters per spinner, 1st spin = number of groups, 2nd spin equals counters per group • Lesson 3.2, TE p. 146, Repeated Addition Expressions, Students write a word problem for one of the addition expressions. • Lesson 3.3, TE p. 152, Visual Kinesthetic Partnership Number Line work • Lesson 3.4, TE p. 160, Visual Partnership work, write a word problem that can be formed from a given diagram. • Lesson 3.5, TE p. 166, Spatial Individual, Students use square tiles and 1-cm grid paper in order to make as many different arrays as they can. • Lesson 3.6, TE p. 172, Logical / Mathematical Small Group, Students write if, then statements for factors and products. • Lesson 3.7, TE p. 178, Visual Individual, Use index cards in order to write true/false statements about multiplication. • Online Activities: <ol style="list-style-type: none"> 1) Grand Prix Multiplication - https://www.mathplayground.com/ASB_GrandPrixMultiplication.html 2) Music Shop Multiplication- https://www.mathplayground.com/music_shop_multiplication.html • Classroom Activities: <ol style="list-style-type: none"> 1) Think Central: <ol style="list-style-type: none"> A. Great Balls of Fire • Brightness, Size, Color B. Small Wonders • Pollination C. A Lighted Path • Light Movement

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	<p>D. Reflection and Refraction • Do the Math!– Multiply Whole Numbers</p> <p>2) Exploration Activity</p> <p>3) Use Multiplication Properties</p> <p>4) For details on 2 and 3 see - https://docs.google.com/document/d/1lOMb5VKexCLrAf_Iu1Hal6yQmxFho4BwAi68yjOnYQ/edit?usp=sharing </p>
Materials and Resources	Other Assessments
<ul style="list-style-type: none"> • iStudent Edition Go Math • eTeacher Edition Go Math • Personal Math Trainer • Chapter 3 student workbooks • Reteach and Enrich in Chapter Resources • Grab-and-Go Centers Kit • Counters • Blank BINGO cards / copies • Go Math Literature Collection <u>Collections Times Four</u> <u>The Workshop</u> <u>Here's What I Do</u> 	<ul style="list-style-type: none"> • Show What You Know • Digital Personal Math Trainer • Lesson Quick Check (built into lessons) • Mid-Chapter Checkpoint • Assessment Animation (PMT) • Chapter 3 Review / Test • Vocabulary Quiz • Performance Assessment Task
Suggested Websites	Suggested Materials
<ul style="list-style-type: none"> • www.thinkcentral.com ISE – Interactive Student Edition PMT – Personal Math Trainer Math on the Spot Video – which helps students with problem solving work in each lesson Animated Math Models HMH – Mega Math games and extra practice iT – internet tools for math ABC – Multimedia eGlossary Real World Videos 	<ul style="list-style-type: none"> • Line 'Em Up Activity Card 7, play money nickels from Grab-and-Go kit • Diamond Derby Activity Card 15, practice multiplication facts through 10 by 10. • Hurray for Arrays Activity Card 15, using arrays to model multiplication facts • Factor Spin Activity Card 7, using randomly generated factors to practice multiplication facts for 1, 2, 4, and 5.

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<p>Professional Development Videos that help with teaching for depth</p> <ul style="list-style-type: none"> Splash Learn www.splashlearn.com 	
Standards	
<p>3.OA.A.1 Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. For example, describe and/or represent a context in which a total number of objects can be expressed as 5×7.</p> <p>3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.</p> <p>3.OA.B.5 Apply properties of operations as strategies to multiply and divide. Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.)</p> <p>3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p>	
Cross-Curricular Connections	
<p>21st Century Skills- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</p> <p>Technology- 8.2.5.D.3 Follow step by step directions to assemble a product or solve a problem.</p> <p>SEL</p> <ul style="list-style-type: none"> Identify who, when, where or how to seek help for oneself or others when needed. Utilize positive communication and social skills to interact effectively with others <p>Language Arts- RI.3.4 Determine the meaning of general academic and domain specific words and phrases in a text relevant to a grade 3 topic or subject area.</p>	

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Math Unit: Multiplication Facts and Strategies		Pacing Guide: January
Essential Questions	Enduring Understandings	Benchmark Assessment(s)
<ul style="list-style-type: none"> • How can you multiply with 2 and 4? • How can you multiply with 5 and 10? • What are some ways to multiply with 3 and 6? • How can you use the Distributive Property to find products? • What strategies can you use to multiply with 7? • How can you use the Associate Property of Multiplication to find products? • How can you use properties to explain patterns on the multiplication table? • What strategies can you use to multiply with 8? 	<ul style="list-style-type: none"> • I can count by 2s, or use doubles to multiply with the factors of 2 and 4. • I can skip-count, use a number line, or a bar model to multiply with the factors 5 and 10. • I can draw a picture, use 5s facts and addition, doubles, or a multiplication table to multiply with the factors 3 and 6. • I can use the Distributive Property to find products by breaking apart arrays. • I can use the Commutative or 	<ul style="list-style-type: none"> • SWBAT solve problems involving the four operations, and identify and explain patterns in arithmetic in writing. Students will score an 80% or higher in order to be proficient. (PARCC Assessments pp. 17-18) 3.OA.D.9

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<ul style="list-style-type: none"> • What are some strategies for multiplying by 9? • How can you use the strategy make a table to solve multiplication problems? 	<p>Distributive Property or known facts to multiply with the factor 7.</p> <ul style="list-style-type: none"> • I can use the Associative Property of Multiplication to multiply with three factors. • I can identify and explain patterns on the multiplication table. • I can use a number line or the Associative Property of Multiplication to multiply with the factor 8. • I can use the Distributive Property with addition or subtraction or patterns to multiply with the factor 9. • I can solve multiplication problems by using the strategies make a table. 	
<p style="text-align: center;">Suggested Activities</p>		
<ul style="list-style-type: none"> • Use counters in order to show factors and products. • Model multiplication and division with pictures, diagrams, and concrete materials. • Use graphic organizers or semantic maps in order to define vocabulary. • Discuss how knowing X2 helps make X4 simpler. 		

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- Write a story and draw a picture about a bird gathering a certain number of acorns for a certain number of days. Share stories orally.
- Orally review factor and product.
- Model repeated addition in order to locate unknown factors.
- Explain how you can use doubles when multiplying with 4 to find 4×8 .
- Partner up and explain how you can multiply with 5 and 10.
- Make a large number line across the floor and put ticks in it with rulers. Make each tick worth whatever interval you choose such as 3, 4, 5, or even 6. Practice skip counting on a large level.
- White out some answers on a multiplication table and ask students how to figure out what is missing. Use the ELMO camera to enlarge the table.
- Construct cardstock analog clock models. Practice multiplying by five with an analog clock.
- Research arthropods to find out more about them. Find out how many more times their mass an ant can carry on its back. Then, write and solve word problems about this data.
- Compare the value of the United States dollar to the Mexican peso. (online station)
- Present multiple strategies for multiplying by 3 such as drawing triangles to remind students to count by 3s, or knowing your doubles and adding one more group.
- Share information about the Morse code with the class. Give some sample Morse code math problems, then ask them to create their own Morse code math problems for a partner.
- Model the Distributive Property with counters in order to develop a better understanding of concepts.
- Break apart a given array to make it a distributed one.
- Distribute a factor incorrectly so that students can explain how to fix it and why it has to be corrected.
- Explain why you would break apart an array into two smaller arrays.
- Draw an array for a specific multiplication fact and compare it to a buddy's at your table.
- Explain how you would use the Commutative Property of Multiplication in order to solve 7×3 .
- Explain why grouping factors doesn't change a product.
- Write why you use the Associative Property of Multiplication to solve $(10 \times 4) \times 2$. Share how you would regroup the factors.
- Regularly discuss patterns students see on a multiplication table. It helps students see relationships among the facts they might not see if they only look at it once in the unit.
- Complete timed multiplication quizzes one time per week in order to promote written fluency.
- Draw a picture to show two examples of products when you have two even number factors.
- Hold a discussion to talk about how $\times 4$ and $\times 8$ are similar.
- Read Party Plans by the Numbers!, a Go Math Literature Collection book in order to discuss party planning strategies that include multiplication and division.
- Journal about what two facts can be doubled in order to find a solution for 4×8 .
- Read tables in order to solve word problems.
- Write a problem you can use a table to solve multiplication problems.

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Reinforcement	Enrichment
<ul style="list-style-type: none"> • 4.1 3.OA.A.3 Multiply with 2 and 4. R-4.1 • 4.2 3.OA.A.3 Multiply with 5 and 10. R-4.2 • 4.3 3.OA.A.3 Multiply with 3 and 6. R-4.3 • 4.4 3.OA.B.5 Use the Distributive Property. R-4.4 • 4.5 3.OA.C.7 Multiply with 7. R-4.5 • 4.6 3.OA.B.5 Use the Associative Property of Multiplication. R-4.6 • 4.7 3.OA.D.9 Use patterns in the multiplication table. R-4.7 • 4.8 3.OA.C.7 Multiply with 8. R-4.8 • 4.9 3.OA.C.7 Multiply with 9. R-4.9 • 4.10 3.OA.D.8 Use multiplication to solve problems. R-4.10 • Screen and implement Tier 2 interventions • Reteach worksheet pages (chapter resources book) • Response to Intervention Activities (Think Central) • ELL Activities • Strategic Intervention Guide (Think Central) • Intensive Intervention Guide (Think Central) 	<ul style="list-style-type: none"> • 4.1 TE p. 192, Logical Math in Partnerships, Digit Cards, share products and numbers times 2 and 4 • 4.2 TE p. 198, Visual Individual, Analog Clockface in order to practice X5 facts. • 4.3 TE p. 204, Logical Math, Students fill in the missing operation in a variety of math sentences. • 4.4 TE p. 210, Logical Math, Students apply the Distributive Property by breaking one factor into 3 addends. • 4.5 TE p. 216, Auditory Math, How many min. or hours do you spend doing the following activity per day, and in one week? • 4.6 TE p. 224, Visual Individual, Multiplication Grid • 4.7 TE p. 230, Verbal Linguistic, 6 index cards per student, 3 with the term even and 3 with the term odd on them. Students read the word they turn over then make a multiplication fact that matches that answer or product. • 4.8 TE p. 236, Logical, Find the missing factor or addend in given equations. • 4.9 TE p. 242, Logical, Multiplication Riddle answers and formations • 4.10 TE p. 248, Logical, Create titles for a given table. Challenge students to write a word problem that can also be solved by this table, too. • Online Activities: <ol style="list-style-type: none"> 1) Multiplication Snake - https://www.mathplayground.com/multiplication_snake.html 2) Find Patterns in the Multiplication Chart - https://www.mathplayground.com/interactive_multiplication_chart.html 3) Treasure Quest Multiplication - https://www.mathplayground.com/treasure_quest_multiplication_chart.html • Classroom Activities:

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	<p>1) Think Central:</p> <p>A. Plant Facts • Do the Math!–Solve a Word Problem</p> <p>B. Big Changes: Fire, Water, Mud • Do the Math!–Skip Count By 5s</p> <p>2) Four Corners- Details see - https://docs.google.com/document/d/1lOMb5VKexCLrAfIu1Hal6yQmxFho4BwAi68yjOnYQ/edit?usp=sharing</p>
Materials and Resources	Other Assessments
<ul style="list-style-type: none"> • iStudent Edition Go Math • eTeacher Edition Go Math • Personal Math Trainer • Chapter 4 student workbooks • Reteach and Enrich in Chapter Resources • Grab-and-Go Centers Kit • Hurray for Arrays! Activity Card 15, use arrays to model multiplication facts • <u>Party Plans by the Numbers!</u> Go Math Literature Connection book • Guess My Number Go Math game 	<ul style="list-style-type: none"> • Show What You Know • Digital Personal Math Trainer • Lesson Quick Check (built into lessons) • Mid-Chapter Checkpoint 3.OA.B.5, 3.OA.3, 3.OA.7 • Assessment Animation (PMT) • Chapter 4 Review / Test • Vocabulary Quiz • Performance Assessment Task –Assign PMT Exercise 22, Students will model and solve a multiplication problem. 3.OA.D.9
Suggested Websites	Suggested Materials
<ul style="list-style-type: none"> • www.thinkcentral.com ISE – Interactive Student Edition PMT – Personal Math Trainer Math on the Spot Video – which helps students with problem solving work in each lesson Animated Math Models HMH – Mega Math games and extra practice iT – internet tools for math ABC – Multimedia eGlossary Real World Videos Professional Development Videos that help with teaching for depth 	<ul style="list-style-type: none"> • <u>Collections Times Four</u> from Go Math Literature Collection • Story Time Activity Card 7 by using repeated addition and multiplication facts • Line ‘Em Up Activity Card 7 by using nickels to practice counting by 5s • Factor Spin Activity Card 7 by using randomly generated factors to practice multiplication facts for 1, 2, 4, and 5. • Diamond Derby Activity Card 15 by practicing multiplication facts through 10 by 10. • Sum Sentences Activity Card 15 by practicing multiplication facts through 10 by 10.

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- Splash Learn www.splashlearn.com

Standards

3.OA.A.1 Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. *For example, describe and/or represent a context in which a total number of objects can be expressed as 5×7 .*

3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

3.OA.B.5 Apply properties of operations as strategies to multiply and divide. *Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.)*

3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ and $40 \div 5 = 8$) or properties of operations. By the end of Grade 3. Know from memory all products of two one-digit numbers.

3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

3.OA.D.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*

Cross-Curricular Connections

21st Century Skills- CRP4. Communicate clearly and effectively and with reason.

Technology- 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

SEL

- Identify who, when, where or how to seek help for oneself or others when needed.
- Utilize positive communication and social skills to interact effectively with others

Language Arts- RI.3.4 Determine the meaning of general academic and domain specific words and phrases in a text relevant to a grade 3 topic or subject area.

THIRD GRADE MATH CURRICULUM

Math Unit: Use Multiplication Facts		Pacing Guide: February
Essential Questions	Enduring Understandings	Benchmark Assessment(s)
<ul style="list-style-type: none"> What are some ways you can describe a pattern in a table? How can you use an array or a multiplication table to find an unknown factor or product? How can you use the strategy draw a diagram to multiply with multiples of 10? What strategies can you use to multiply with multiples of 10? How can you model and record multiplying by 1-digit whole numbers multiples of 10? 	<ul style="list-style-type: none"> I can identify and describe a number pattern in a function table. I can model with arrays or a multiplication table in order to find an unknown factor. I can use base-ten blocks, a number line, or place value to multiply with multiples of 10. I can model and record multiplication with multiples of 10. 	<ul style="list-style-type: none"> SWBAT represent and solve problems involving multiplication and division in writing. Students will score an 80% or higher in order to be proficient. (PARCC Assessments pages 7-8) 3.OA.A.4 SWBAT use place value understanding and properties of operations to perform multi-digit arithmetic in writing. Students will score an 80% or higher in order to be proficient. (PARCC Assessments pages 23-24) 3.NBT.A.3
Suggested Activities		
<ul style="list-style-type: none"> Use counters in order to show factors and products. Model multiplication and division with pictures, diagrams, and concrete materials. Use graphic organizers or semantic maps in order to define vocabulary. On a daily basis, review the Distributive Property. Ex. $9 \times 45 = 9(40+5)$ or $(9 \times 40) + (9 \times 5)$. The key is to break apart one factor in a helpful way. Ask questions such as, "What is a multiple of 7? Why?" Draw dot arrays on mini whiteboards in order to answer basic multiplication facts. Play "Pick It" game on p. 260A. It is similar to Go Fish. Students each get 5 cards. The player with the most pairs wins the game. A few times per week, write about math vocabulary. Two sentences is plenty, but students need to be able to explain their reasoning. 		

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Begin with a choice of the following phrases: “I learned that I ...”, “I was surprised that I...”, “I noticed that I...”, or “I discovered ...”.

- Show and manipulate a variety of input and output tables. Start with numbers in both the in and out boxes.
- Make multiplication spinners. Use paper plates and divide them into 8 equal sections by drawing a plus sign and a multiplication sign on them. Then, students write any numbers from 1-11 in the eight sections. Next, they roll a number cube and that is one factor they are multiplying with. They can make a spinner with the plate, a pencil, and a paperclip. Students spin and multiply.
- Discuss how we know a pattern is present.
- Define pattern, array, and equation.
- Discuss why we must test a pattern with at least 3 numbers before believing it is a good fit.
- Play Multiplication Bingo, Multiplication Baseball, Multiplication Football, Multiplication Basketball, or Multiplication Tic Tac Toe to reinforce memorization.
- Shade in arrays on grid paper in order to visualize the process of multiplication and form stronger mental images.
- Model language orally: say, “Number of rows X number in each row = number in all or total.
- Ask what an equal sign really means.
- Read The Homework Table from Go Math Literature Collection, then discuss how multiplication and division are related. (You may use the book with an ELMO camera or find the book online at thinkcentral.com)
- Practice multiplication facts between 1-11 by guessing the factors to make a given product. (class game with whiteboards) The teacher states a product and students list as many factor combinations as they can to get that product. Students give themselves a point for each correct combination.
- Draw a model to show how many stamps are in a collection if you have 6 sheets with 20 stamps on each sheet.
- Write a word problem about a garden with a specific number of rows and 40 plants in each row.
- Answer the Essential Question orally or in writing as often as possible.
- Summarize how the Associative Property helps them multiply with multiples of 10. Ex. $4 \times 20 =$, $20 = 2 \times 10$, so $4 \times 2 \times 10$ is the same as 4×20 .
- Draw quick pictures of base-ten blocks, then multiply the ones first, then the tens place. Sticks equal tens, dots equal ones.
- View Math on the Spot Video Tutor when Think Smarter problem is tricky for your class.
- Play Multiplication Math-O (memory) Students must locate multiplication facts with their products.

Reinforcement	Enrichment
<ul style="list-style-type: none"> • Lesson 5.1 Describe and complete patterns in tables. PMT 3.OA.9, R-5.1 • Lesson 5.2 Find an unknown factor or product. PMT3.OA.4, R-5.2 • Lesson 5.3 Use the Distributive Property to solve problems. PMT 3.NBT.3, R-5.3 	<ul style="list-style-type: none"> • Lesson 5.1 TE p. 262, Pass out an index card to each student. Explain that students will have a partner. One partner will say a rule such as multiply by 3. The other partner says a number less than 12. The first partner uses mental math to figure out the product.

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- Lesson 5.4 Use strategies to multiply with multiples of 10. PMT3.NBT.3, R-5.4
- Lesson 5.5 Multiply 1-digit numbers by multiples of 10. PMT3.NBT.3, R-5.5
- Diagnostic Assessment for Show What You Know – See TE p. 259.

- Lesson 5.2 TE p. 268, Show 5-10 problems in which one factor is named with a letter instead of a blank line. Students figure out the missing factor and write a related multiplication fact.
- Lesson 5.3 TE p. 276, Show base-ten grid on Smartboard. Have students find all the possible ways to break apart a factor into multiples of 10 for $4 \times 60 = \underline{\hspace{1cm}}$.
- Lesson 5.4 TE p. 282, Students record three multiplication facts, 2-digit multiple of 10 \times 1 digit number, then explain what the basic fact is and how they know it.
- Lesson 5.5 TE p. 288, Provide students with the following products: 200, 240, 360. Challenge them to write a multiplication fact with one factor that is a 1-digit number and the other being a multiple of ten.
- Discuss the benefits of using a letter or symbol in a pattern to predict the number of wheels on 50 bikes or 100 bikes. Discuss how to make strong predictions for a topic like this.
- Online Activities:
 - 1) Missing Digit Multiplication - https://www.mathplayground.com/brain_workouts/brain_workout_01_multiplication.html
 - 2) Otters Missing Factors - https://www.mathplayground.com/ASB_Swimming_Otters.html
 - 3) Algebraic Reasoning - https://www.mathplayground.com/algebraic_reasoning.html
- Classroom Activities:
 - 1) Think Central:
 - Staying Safe • Defense Adaptation
 - Stargazing • Do the Math!–Solve a Word Problem
 - 2) Design your own
 - 3) Make a Connection
 - 4) For details on 2 and 3 see - https://docs.google.com/document/d/1lOMb5VKexCLrAf_Iu1Hal6yQmxFho4BwAi68yjOnYQ/edit?usp=sharing

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Materials and Resources	Other Assessments
<ul style="list-style-type: none"> • iStudent Edition Go Math • eTeacher Edition Go Math • Personal Math Trainer • Chapter 5 student workbooks • Reteach and Enrich in Chapter Resources • Grab-and-Go Centers Kit • Base-ten blocks • Screen and implement Tier 2 interventions • Reteach worksheet pages (chapter resources book) • Response to Intervention Activities (Think Central) • ELL Activities • Strategic Intervention Guide (Think Central) • Intensive Intervention Guide (Think Central) 	<ul style="list-style-type: none"> • Show What You Know • Digital Personal Math Trainer • Lesson Quick Check (built into lessons) • Mid-Chapter Checkpoint • Assessment Animation (PMT) • Chapter 5 Review / Test • Vocabulary Quiz • Performance Assessment Task – Assign Exercise 16 in PMT – Students will model and solve a multiplication with multiples of 10 problem. 3.NBT.A.3
Suggested Websites	Suggested Materials
<ul style="list-style-type: none"> • www.thinkcentral.com ISE – Interactive Student Edition PMT – Personal Math Trainer Math on the Spot Video – which helps students with problem solving work in each lesson Animated Math Models HMH – Mega Math games and extra practice iT – internet tools for math ABC – Multimedia eGlossary Real World Videos Professional Development Videos that help with teaching for depth • Splash Learn www.splashlearn.com 	<ul style="list-style-type: none"> • Basketball or kickball for Multiplication game, recycling can for a hoop • Football field paper with 10 yard lines marked, when students play Multiplication Football, two players play against each other. One student rolls two dice, multiplies, and if he/she says the correct answer, then he/she moves 10 yards. As soon as a mistake is made, the other player gets to move along his/her yard lines toward the goal. • In / Out robot drawing or poster to aid in discussion for how a number can change if a rule is applied to it starting at the in or the out and going backwards. • Math Word Wall for Multiplication terms
Standards	
<p>3.OA.D.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. <i>For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.</i></p> <p>3.OA.A.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers. <i>For example, determine the unknown</i></p>	

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number that makes the equation true in each of the equations $8x=48$, $5=\square \div 3$, $6 \times 6=?$.

3.NBT.A.3 Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.

Cross-Curricular Connections

21st Century Skills- CRP4. Communicate clearly and effectively and with reason.

Technology- 8.1.5.A.3 Use a graphic organizer to organize information about problem or issue.

SEL

- Identify who, when, where or how to seek help for oneself or others when needed.
- Utilize positive communication and social skills to interact effectively with others

Language Arts- SL3.6 Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

Math Unit: Understand Division		Pacing Guide: February–March
Essential Questions	Enduring Understandings	Benchmark Assessment(s)
<ul style="list-style-type: none"> • How can you use the 	<ul style="list-style-type: none"> • I can act out division 	<ul style="list-style-type: none"> • SWBAT represent and solve problems involving multiplication

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<p>strategy “act it out” to solve problems with equal groups?</p> <ul style="list-style-type: none"> • How can you model a division problem to find how many are in each group? • How can you model a division problem to find out how many equal groups there are? • How can you use bar models to solve division problems? • How is division related to subtraction? (Division is repeated subtraction.) • How can you use arrays to solve division problems? • How can you use multiplication to divide? • How can you write a set of related multiplication and division facts? • What are the rules for dividing with 1 and 0? 	<p>problems in order to solve them. (small groups, whole class, or by drawing pictures)</p> <ul style="list-style-type: none"> • I can use models to explore the meaning of partitive, or sharing, division. • I can use models to explore the meaning of quotative, or measurement, division. • I can show division by using equal groups and bar models. • I can use repeated subtraction and a number line in order to relate subtraction to division. • I can model division by using arrays and by thinking about how multiplication is the inverse operation of division. • I can use bar models to relate multiplication and division as inverse operations. • I can write related fact families for multiplication and division. • I can divide using the rules for 1 and 0. 	<p>and division in writing. Students will earn an 80% or higher in order to earn a proficient mark. (PARCC Assessments book pages 3-4) 3.OA.A.2</p> <ul style="list-style-type: none"> • SWBAT understand properties of multiplication and the relationship between multiplication and division in writing. Students will earn an 80% or higher in order to earn a proficient mark. (PARCC Assessments book pages 11-12) 3.OA.B.6 • SWBAT fluently multiply and divide 20 facts each within 100 in writing. Students will earn an 80% or higher in order to earn a proficient mark. (40 Question Multiplication and Division Quiz) 3.OA.B.7
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THIRD GRADE MATH CURRICULUM

	<ul style="list-style-type: none"> I can define and explain the Identity Property of Multiplication. 	
Suggested Activities		
<ul style="list-style-type: none"> Multiplication Puzzles – Make a Tic Tac Toe board on your mini whiteboard. Put a X and / sign in the top left box. Put in a few numbers, either factors, or products, and students fill in the empty boxes, then partner check their answers. (See TE p. 299I) Use counters to model given word problems for division. On a daily basis, ask, “What do we need to know?” Provide student friendly explanations of chapter vocabulary terms: divide, dividend, divisor, factor, and related facts. Play Vocabulary BINGO in groups of 4 with one caller. The caller states the definitions and gives examples. In writing, explain the meaning of equal groups and how they relate to division. Write a division word problem using the following numbers: ____ and _____. (Students must locate one number on their own. Pretend you write advice about hard math problems online for other kids your age. Help a troubled 3rd grader understand how to divide by 1. Exaggerate acting out $20 / 4$ with the entire class getting involved in groups. Then, switch it up to $20 / 2$ and see if the students can get into 2 equal groups quickly. Last, ask them if there are any other ways to break 20 into equal groups. Discuss how division is used in gym class and in sports, too. Discuss common errors in oral explanations when they show up. For example, a student may draw three circles with four dots in each one, then say there are three in each group. Ask if this makes sense and why/why not. Ask students to reread the problem aloud again, and to check what they stated. Take out a handful of play money nickels. Ask students to show different division problems with it. Have them explain what they model. Write a division problem that describes a large garden with a given amount of rows and a given amount of plants per row. Ask, “What is division?” Write about how you can model a division problem to find out how many are in each group. Locate more than one way to divide a total of 16 items into equal groups. Draw bar models and use them in order to write equations. Read and discuss Go Math Literature Connection story, <u>Corey’s Cookie Caper</u>. Research or discuss how a chef or baker uses division in real life. Practice drawing simple number lines in order to show repeated subtraction. Students partner up to read Go Math Literature Connection story, <u>The Garden Fence</u>. Review the meaning of inverse operations. Practice writing all facts for multiplication and division fact families. Ask students to form a Division Dilemma story. Share it with another student to see if he/she can solve the problem/dilemma. 		

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Reinforcement	Enrichment
<ul style="list-style-type: none"> • Lesson 6.1 Model division. PMT 3.OA.3, R-6.1 • Lesson 6.2 Find how many in each group. PMT 3.OA.2, R-6.2 • Lesson 6.3 Find how many equal groups. PMT 3.OA.2, R-6.3 • Lesson 6.4 Use models to solve division problems. 3.OA.A.2, R-6.4 • Lesson 6.5 Relate subtraction and division. 3.OA.3, R-6.5 • Lesson 6.6 Use arrays to solve division problems. 3.OA.3, R-6.6 • Lesson 6.7 Relate multiplication and division. 3.OA.6, R-6.7 • Lesson 6.8 Write related multiplication and division facts. 3.OA.7, R-6.8 • Lesson 6.9 Divide with 0 and 1. 3.OA.5, R-6.9 • Screen and implement Tier 2 interventions • Reteach worksheet pages (chapter resources book) • Response to Intervention Activities (Think Central) • ELL Activities • Strategic Intervention Guide (Think Central) • Intensive Intervention Guide (Think Central) 	<ul style="list-style-type: none"> • Lesson 6.1 TE p. 302, Use three square pieces of paper and an equal number of counters on each one in order to display a multiplication / division problem. Then, ask students to write a two-step word problem that can be solved by that model. • Lesson 6.2 TE p. 308, Take a handful of counters and make 2 equal groups. If you can't do you have an even number of counters or odd number? • Lesson 6.3 TE p. 314, Write a word problem about finding how many are in each group. Next, write another one about finding the number of groups. Last share and solve your problems with a partner. • Lesson 6.4 TE p. 320, Draw all the possible bar models with 12 as a dividend. (Work in partnerships.) • Lesson 6.5 TE p. 326, Type some clues on the Smartboard, students should list the division equation you are representing. • Lesson 6.6 TE p. 334, Choose one of 4 two-digit numbers. Draw as many arrays as possible to represent that number on grid paper. Then, write a corresponding division equation for each array. • Lesson 6.7 TE p. 340, Students copy equations in which the +, -, X, and / signs are left blank. They figure out which signs are missing and check with their table group. • Lesson 6.8 TE p. 346, Show two square arrays. Ask students to draw other square numbers, then to explain what a square number is. • Lesson 6.9 TE p. 352, Share Mystery Operations work with the class. Then, ask each student to write their own mystery operations exercise for a buddy in our class. • Online Activities: <ol style="list-style-type: none"> 1) Math Monster Division - https://www.mathplayground.com/math_monster_division.html 2) Drag Race Division - https://www.mathplayground.com/ASB_DragRaceDivisi

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	<p>on.html</p> <ul style="list-style-type: none"> Classroom Activities: <ol style="list-style-type: none"> Think Central: <ol style="list-style-type: none"> Just Add Heat! • Predict Changes in State Natural Resources • Renewable Resources The Water Cycle • Precipitation and Evaporation Cool! It's Freezing! • Do the Math!–Solve a Story Problem Exploration Activity - see detail - https://docs.google.com/document/d/1lOMb5VKexCLrAf_Iu1Hal6yQmxFho4BwAi68yjOnYQ/edit?usp=sharing
Materials and Resources	Other Assessments
<ul style="list-style-type: none"> iStudent Edition Go Math eTeacher Edition Go Math Personal Math Trainer Chapter 6 student workbooks Reteach and Enrich in Chapter Resources Grab-and-Go Centers Kit Mini whiteboards and dry erase markers / erasers Grid paper Counters Play money nickels 	<ul style="list-style-type: none"> Show What You Know Digital Personal Math Trainer Lesson Quick Check (built into lessons) Mid-Chapter Checkpoint Assessment Animation (PMT) Chapter 6 Review / Test Vocabulary Quiz Performance Assessment Task – Assign students PMT Exercise 17. 3.OA.B.7
Suggested Websites	Suggested Materials
<ul style="list-style-type: none"> www.thinkcentral.com ISE – Interactive Student Edition PMT – Personal Math Trainer Math on the Spot Video – which helps students with problem solving work in each lesson Animated Math Models HMH – Mega Math games and extra practice 	<ul style="list-style-type: none"> Blank BINGO sheets / copies Notebook

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iT – internet tools for math ABC – Multimedia eGlossary Real World Videos Professional Development Videos that help with teaching for depth <ul style="list-style-type: none"> Splash Learn www.splashlearn.com 	
Standards	
<p>3.OA.A.2 Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares; or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. <i>For example, describe and/or represent a context in which a number of shares or a number of groups can be expressed as $56 \div 8$.</i></p> <p>3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.</p> <p>3.OA.B.5 Apply properties of operations as strategies to multiply and divide. <i>Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.)</i></p> <p>3.OA.B.6 Understand division as an unknown-factor problem. <i>For example, find $32 \div 8$ by finding the number that makes 32 when multiplied by 8.</i></p> <p>3.OA.B.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ and $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, Know from memory all products of two one-digit numbers.</p>	
Cross-Curricular Connections	
<p>21st Century Skills- CRP4. Communicate clearly and effectively and with reason.</p> <p>Technology- 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.</p> <p>SEL- Identify who, when, where or how to seek help for oneself or others when needed. Utilize positive communication and social skills to interact effectively with others</p> <p>Language Arts- SL3.6 <i>Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.</i></p>	

Math Unit: Division Facts and Strategies		Pacing Guide: April
Essential Questions	Enduring Understandings	Benchmark Assessment(s)
<ul style="list-style-type: none"> What does dividing by 2 mean? What strategies can you use to divide by 10? What does dividing by 5 mean? What strategies can you use 	<ul style="list-style-type: none"> I can use models to represent division by 2. I can use repeated subtraction, a number line, or a multiplication table to divide by 10. I can count up by 5s, 	<ul style="list-style-type: none"> SWBAT multiply and divide within 100 in writing. Students will score an 80% or higher in order to be proficient. (PARCC Assessments pages 13-14) 3.O.A.C.7 SWBAT solve problems involving the four operations, and identify and explain patterns in arithmetic. Students will score an 80% or higher in order to be proficient. (PARCC Assessments

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<p>to divide by 3?</p> <ul style="list-style-type: none"> • What strategies can you use to divide by 4? • What strategies can you use to divide by 6? • What strategies can you use to divide by 7? • What strategies can you use to divide by 8? • What strategies can you use to divide by 9? • How can you use the strategy act it out in order to solve two-step problems? • Why are there rules such as the order of operations? 	<p>count back on a number line, or use 10s facts and doubles to divide by 5.</p> <ul style="list-style-type: none"> • I can use equal groups, a number line, or a related multiplication fact to divide by 3. • I can use an array, equal groups, factors, or a related multiplication fact to divide by 4. • I can use equal groups, a related multiplication fact, or factors to divide by 6. • I can use an array, a related multiplication fact, or equal groups to divide by 7. • I can use repeated subtraction, a related multiplication fact, or a multiplication table to divide by 8. • I can use equal groups, factors, or a related multiplication fact to divide by 9. • I can solve two-step problems by using the act it out strategy. • I can perform operations in order from left to right when 	<p>pages 15-16) 3.O.A.D.8</p>
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	there are no parentheses.	
Suggested Activities		
<ul style="list-style-type: none"> • Discuss relationship between division and multiplication. • Illustrate division with arrays. • Use the KIM Chart / Graphic Organizer – Key Idea, Information, Memory Clue chart for vocabulary reinforcement, see TE p. 363H. • Share counters equally within small groups. • Model with arrays on paper or with counters. • Play Division Concentration game. See TE p. 364A • Explain why to division problems such as $18/2$ and $2/18$ do not have the same quotient. • Explain the Order of Operations in your own words. • Model Partitive Division showing equal groups with each group unknown. • Model Quotative Division showing equal groups when the number of groups unknown. • Use repeated subtraction to divide by 10. • Model how a factor tree works. • Write and solve a word problem that involves dividing by 10. • Practice division with number line repeated subtraction diagrams. • Explain the method you divide 5 by and why you like it. • Research and locate the names of five whales. Next, locate their lengths at birth. Compare them with division to the length of an average baby in America. • Draw and label strategies that can be used in order to divide by 3. • Draw specific numbers of counters, then circle sets of a particular number, and discuss the quotient. • Investigate word problems in order to determine whether multiplication or division is needed as the operation. Explain your reasoning. • Create a number puzzle in which another student can answer 5 division sentences across and 5 division answers that can go down. • Share what strategies you can use to divide by 6. • Write division word problems about the number of seeds in different plants or pods. (Students can make up numbers of seeds.) • Determine how to find the number of weeks equal to 56 days. • Explain how repeated subtraction will change for $24/3$ instead of $24/8$. • Discuss strategies for dividing by 8. • Practice fluency of division facts with fact triangle practice individually or in partnerships. • Explain which division facts were easiest for your to learn. Share why. • Act out division word problems. • Investigate the less than, greater than, and equal to sign, and how they compare to two equations. 		

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- Students point out the part of the equation that must be completed first, and explain how they know they are correct.
- Give a description of the rules for the order of operations in your own words. Create a new acronym for PEMDAS. (parentheses, exponents, multiplication, division, addition, subtraction)

Reinforcement	Enrichment
<ul style="list-style-type: none"> • Lesson 7.1. Divide by 2. PMT 3.OA.3, R-7.1 • Lesson 7.2 Divide by 10. PMT 3.OA.7, R-7.2 • Lesson 7.3 Divide by 5. PMT 3.OA.3, R-7.3 • Lesson 7.4 Divide by 3. PMT 3.OA.7, R-7.4 • Lesson 7.5 Divide by 4. PMT 3.OA.7, R-7.5 • Lesson 7.6 Divide by 6. PMT 3.OA.7, R-7.6 • Lesson 7.7 Divide by 7. PMT 3.OA.3, R-7.7 • Lesson 7.8 Divide by 8. PMT 3.OA.4, R-7.8 • Lesson 7.9 Divide by 9. PMT 3.OA.7, R-7.9 • Lesson 7.10 Solve two-step problems. PMT 3.OA.8, R-7.10 • Lesson 7.11 Use the order of operations. PMT 3.OA.8, R-7.11 • Screen and implement Tier 2 interventions • Reteach worksheet pages (chapter resources book) • Response to Intervention Activities (Think Central) • ELL Activities • Strategic Intervention Guide (Think Central) • Intensive Intervention Guide (Think Central) 	<ul style="list-style-type: none"> • Lesson 7.1 TE p. 366, Logical Math, Take any 3 even numbers. Divide them by 2. What do you notice about the quotients? • Lesson 7.2 TE p. 372, Logical Math, Factor Trees • Lesson 7.3 TE p. 378, Visual Kinesthetic, Complete the Table about nickels, dimes, and quarters • Lesson 7.4 TE p. 384, Visual Individual, • Lesson 7.5 TE p. 390, Verbal Linguistic, Write a word problem that has to do with a multiple of 4. • Lesson 7.6 TE p. 396, Visual, Multiples of 2 • Lesson 7.7 TE p. 404, Mathematical Logical, Days / Weeks T-chart • Lesson 7.8 TE p. 410, Verbal, Division Equation with Unknown number • Lesson 7.9 TE p. 416, Verbal Linguistic, Determine if statements are true or false. Explain how you know you are correct. • Lesson 7.10 TE p. 422, Logical, Use play coins to write word problems related to division. • Lesson 7.11 TE p. 428, Logical, Use three spinners to form equations involving division. • Online Activities: <ol style="list-style-type: none"> 1) Puzzle Pic Division - https://www.mathplayground.com/puzzle_pics_division.html 2) Demolition Division - https://www.mathplayground.com/ASB_DemolitionDivision.html • Classroom Activities: <ol style="list-style-type: none"> 1) Think Central: <ol style="list-style-type: none"> A. Erosion Motion • Do the Math!–Solve a Word

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	<p>Problem</p> <p>B. Chemical Changes • Do the Math!–Solve a Two Step Problem</p> <p>2) Design your own - see detail - https://docs.google.com/document/d/1lOMb5VKexCLrAf_Iu1Hal6yQmxFho4BwAi68yjOnYQ/edit?usp=sharing</p>
Materials and Resources	Other Assessments
<ul style="list-style-type: none"> • iStudent Edition Go Math • eTeacher Edition Go Math • Personal Math Trainer • Chapter 7 student workbooks • Reteach and Enrich in Chapter Resources • Grab-and-Go Centers Kit • Mini whiteboards and dry erase markers / erasers • Grid paper • Counters • <u>Corey's Cookie Caper</u> Go Math Literature Connection story • Division Math-O, Activity Card 9 	<ul style="list-style-type: none"> • Show What You Know • Digital Personal Math Trainer • Lesson Quick Check (built into lessons) • Mid-Chapter Checkpoint • Assessment Animation (PMT) • Chapter 7 Review / Test • Vocabulary Quiz
Suggested Websites	Suggested Materials
<ul style="list-style-type: none"> • www.thinkcentral.com ISE – Interactive Student Edition PMT – Personal Math Trainer Math on the Spot Video – which helps students with problem solving work in each lesson Animated Math Models HMH – Mega Math games and extra practice iT – internet tools for math ABC – Multimedia eGlossary Real World Videos Professional Development Videos that help with teaching for depth • Splash Learn www.splashlearn.com 	<ul style="list-style-type: none"> • Blank BINGO sheets / copies • Notebook • Comparing 2 and 5 Activity Card 9 to model and compare division facts for 2 and 5. • Dividing Nickels Activity Card 5, using play nickels to show division • Division Cover Up Go Math Game • <u>The Garden Fence</u> Go Math Literature Collection story • <u>On the Menu: Bamboo, Figs, and Other Tasty Treats</u> Go Math Literature Collection story • Division Mystery Activity Card 19 by solving division problems to answer a riddle • Missing Sides Activity Card 19 by using division to find the length of a missing side.

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Standards
<p>3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.</p> <p>3.OA.A.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers. <i>For example, determine the unknown number that makes the equation true in each of the equations $8x=48$, $5=\square \div 3$, $6x6=?$.</i></p> <p>3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ and $40 \div 5 = 8$) or properties of operations. By the end of Grade 3. Know from memory all products of two one-digit numbers.</p> <p>3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p>
Cross-Curricular Connections
<p>21st Century Skills- CRP4. <i>Communicate clearly and effectively and with reason.</i></p> <p>Technology- 8.1.5.A.1 <i>Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.</i></p> <p>SEL</p> <ul style="list-style-type: none"> Identify who, when, where or how to seek help for oneself or others when needed. Utilize positive communication and social skills to interact effectively with others <p>Language Arts- SL3.6 <i>Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.</i></p>

Math Unit: Understand Fractions		Pacing Guide: May
Essential Questions	Enduring Understandings	Benchmark Assessment(s)
<ul style="list-style-type: none"> What are equal parts of a whole? Why do you need to know how to make equal shares? What do the top and bottom numbers of a fraction tell? How does a fraction name part of a whole? How can you represent and locate fractions on a number line? 	<ul style="list-style-type: none"> I can explore and identify equal parts of a whole. I can divide models to make equal shares. I can use a fraction to name one part of a whole that is divided into equal parts. I can read, write, and model fractions that represent more than 	<ul style="list-style-type: none"> SWBAT develop understanding of fractions as numbers in writing. Students will score an 80% or higher in order to be proficient. (PARCC Assessments pages 25-26) 3.NF.A.1 SWBAT develop understanding of fractions as numbers in writing. Students will score an 80% or higher in order to be proficient. (PARCC Assessments pages 33-34) 3.NF.A.3c

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<ul style="list-style-type: none"> • When might you use a fraction greater than 1 or a whole number? • How can a fraction name part of a group? • How can a fraction tell how many are in part of a group? • How can you use the strategy “draw a diagram” to solve fraction problems? 	<p>one part of a whole that is divided into equal parts.</p> <ul style="list-style-type: none"> • I can read, write, and model fractions that represent more than one part of a whole that is divided into equal parts. • I can represent and locate fractions on a number line. • I can relate fractions and whole numbers by expressing whole numbers as fractions and recognizing fractions that are equivalent to whole numbers. • I can read and write fractional parts of a group. • I can find fractional parts of a group using unit fractions. 	
<p style="text-align: center;">Suggested Activities</p>		
<ul style="list-style-type: none"> • Discuss relationship between division and multiplication. • Illustrate division with arrays. • Use the KIM Chart / Graphic Organizer – Key Idea, Information, Memory Clue chart for vocabulary reinforcement, see TE p. 363H. • Share counters equally within small groups. • Model with arrays on paper or with counters. • Play Division Concentration game. See TE p. 364A • Explain why to division problems such as $18/2$ and $2/18$ do not have the same quotient. 		

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- Explain the Order of Operations in your own words.
- Model Partitive Division showing equal groups with each group unknown.
- Model Quotative Division showing equal groups when the number of groups unknown.
- Use repeated subtraction to divide by 10.
- Model how a factor tree works.
- Write and solve a word problem that involves dividing by 10.
- Practice division with number line repeated subtraction diagrams.
- Explain the method you divide 5 by and why you like it.
- Research and locate the names of five whales. Next, locate their lengths at birth. Compare them with division to the length of an average baby in America.
- Draw and label strategies that can be used in order to divide by 3.
- Draw specific numbers of counters, then circle sets of a particular number, and discuss the quotient.
- Investigate word problems in order to determine whether multiplication or division is needed as the operation. Explain your reasoning.
- Create a number puzzle in which another student can answer 5 division sentences across and 5 division answers that can go down.
- Share what strategies you can use to divide by 6.
- Write division word problems about the number of seeds in different plants or pods. (Students can make up numbers of seeds.)
- Determine how to find the number of weeks equal to 56 days.
- Explain how repeated subtraction will change for $24/3$ instead of $24/8$.
- Discuss strategies for dividing by 8.
- Practice fluency of division facts with fact triangle practice individually or in partnerships.
- Explain which division facts were easiest for you to learn. Share why.
- Act out division word problems.
- Investigate the less than, greater than, and equal to sign, and how they compare to two equations.
- Students point out the part of the equation that must be completed first, and explain how they know they are correct.
- Give a description of the rules for the order of operations in your own words. Create a new acronym for PEMDAS. (parentheses, exponents, multiplication, division, addition, subtraction)

Reinforcement	Enrichment
<ul style="list-style-type: none"> • Lesson 8.1. Identify and name equal parts of a whole. PMT 3.NF.1, R-8.1 • Lesson 8.2 Make equal shares. PMT 3.NF.1, R-8.2 • Lesson 8.3 Write a unit fraction to name part of a whole. PMT 3.NF.1, R-8.3 • Lesson 8.4 Name a fraction of a whole. PMT 3.NF.1, R-8.4 	<ul style="list-style-type: none"> • Lesson 8.1 TE p. 444, Kinesthetic, Draw 4X4 squares on cm grid paper, divide the squares into 4 equal parts • Lesson 8.2 TE p. 450, Kinesthetic, Sharing Money Equally • Lesson 8.3 TE p. 456, Kinesthetic, Dividing Hexagons into equal fractions • Lesson 8.4 TE p. 462, Verbal, $1/3$ flag designs

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<ul style="list-style-type: none"> • Lesson 8.5 Represent and locate fractions on a number line. PMT 3.NF.2a, 3.NF.2b R-8.5 • Lesson 8.6 Relate fractions and whole numbers. PMT 3.NF.3c , R-8.6 • Lesson 8.7 Name a fraction of a group. PMT 3.NF.1, R-8.7 • Lesson 8.8 Find part of a group using unit fractions. PMT 3.NF.1 , R-8.8 • Lesson 8.9 Find the whole group using unit fractions. PMT 3.NF.1, R-8.9 • Screen and implement Tier 2 interventions • Reteach worksheet pages (chapter resources book) • Response to Intervention Activities (Think Central) • ELL Activities • Strategic Intervention Guide (Think Central) • Intensive Intervention Guide (Think Central) 	<ul style="list-style-type: none"> • Lesson 8.5 TE p. 468, Visual, Use fraction strips to show distance • Lesson 8.6 TE p. 476, Visual, Auditory, fourths in circles, fraction sets • Lesson 8.7 TE p. 482, Visual, Fraction of a Total • Lesson 8.8 TE p. 488, Visual, Fractions of Time • Lesson 8.9 TE p. 494, Visual, Solve a fraction word problem • Online Activities: <ol style="list-style-type: none"> 1) Missing Digit Division - https://www.mathplayground.com/brain_workouts/brain_workout_01_division.html • Classroom Activities: <ol style="list-style-type: none"> 1) Think Central: <ol style="list-style-type: none"> A. Using Machines • Simple and Compound Machines B. Reasons for Seasons • Do the Math!–Use a Data Table C. Water Moves All Around • Do the Math!–Find the Fraction 2) Imposter Fraction - see detail - https://docs.google.com/document/d/1lOMb5VKexCLrAf_Iu1Hal6yQmxFho4BwAi68yjOnYQ/edit?usp=sharing
Materials and Resources	Other Assessments
<ul style="list-style-type: none"> • iStudent Edition Go Math • eTeacher Edition Go Math • Personal Math Trainer • Chapter 8 student workbooks • Reteach and Enrich in Chapter Resources • Grab-and-Go Centers Kit • Mini whiteboards and dry erase markers / erasers • Counters 	<ul style="list-style-type: none"> • Show What You Know • Digital Personal Math Trainer • Lesson Quick Check (built into lessons) • Mid-Chapter Checkpoint • Assessment Animation (PMT) • Chapter 8 Review / Test • Vocabulary Quiz

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Suggested Websites	Suggested Materials
<ul style="list-style-type: none"> • www.thinkcentral.com ISE – Interactive Student Edition PMT – Personal Math Trainer Math on the Spot Video – which helps students with problem solving work in each lesson Animated Math Models HMH – Mega Math games and extra practice iT – internet tools for math ABC – Multimedia eGlossary Real World Videos Professional Development Videos that help with teaching for depth • Splash Learn www.splashlearn.com 	<ul style="list-style-type: none"> • Blank BINGO sheets / copies • Notebook • Comparing 2 and 5 Activity Card 9 to model and compare division facts for 2 and 5. • Dividing Nickels Activity Card 5, using play nickels to show division • Division Cover Up Go Math Game • <u>The Garden Fence</u> Go Math Literature Collection story • <u>On the Menu: Bamboo, Figs, and Other Tasty Treats</u> Go Math Literature Collection story • Division Mystery Activity Card 19 by solving division problems to answer a riddle • Missing Sides Activity Card 19 by using division to find the length of a missing side.
Standards	
<p>3.NF.A.1 Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.</p> <p>3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram. b. Represent a fraction $\frac{a}{b}$ on a number line diagram by marking off a lengths $\frac{1}{b}$ from 0. Recognize that the resulting interval has size $\frac{a}{b}$ and that its endpoints locates the number $\frac{a}{b}$ on the number line.</p> <p>3.NF.A.3c Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. <i>Examples: Express 3 in the form $3 = \frac{3}{1}$; recognize that $\frac{6}{1} = 6$; locate $\frac{4}{4}$ and 1 at the same point of a number line diagram.</i></p>	
Cross-Curricular Connections	
<p>21st Century Skills- CRP4. Communicate clearly and effectively and with reason.</p> <p>Technology- 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.</p> <p>SEL</p> <ul style="list-style-type: none"> • Identify who, when, where or how to seek help for oneself or others when needed. • Utilize positive communication and social skills to interact effectively with others <p>Language Arts- SL3.6 Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.</p>	

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Math Unit: Compare Fractions		Pacing Guide: May
Essential Questions	Enduring Understandings	Benchmark Assessment(s)
<ul style="list-style-type: none"> • How can you use the strategy “act it out” to solve comparison problems? • How can you compare fractions with the same denominator? • How can you compare fractions with the same numerator? • What strategies can you use to compare fractions? • How can you compare and order fractions? • How can you use models to find equivalent fractions? • How can you use models to 	<ul style="list-style-type: none"> • I can solve comparison problems by using the strategy “act it out”. • I can compare fractions with the same denominator by using models and reasoning strategies. • I can compare fractions with the same numerator by using models and reasoning strategies. • I can compare fractions by using models and strategies involving the size of the pieces in the 	<ul style="list-style-type: none"> • SWBAT Students will score an 80% or higher in order to be proficient. (PARCC Assessments pages) 3.NF.A.3a • SWBAT Students will score an 80% or higher in order to be proficient. (PARCC Assessments pages) 3.NF.A.3b • SWBAT develop understanding of fractions as numbers. Students will score an 80% or higher in order to be proficient. (PARCC Assessments pages 35-36) 3.NF.A.3d

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name equivalent fractions?	<p>whole</p> <ul style="list-style-type: none"> • I can compare and order fractions by using models. • I can model equivalent fractions by folding paper, using area models, and using number lines. 	
Suggested Activities		
<ul style="list-style-type: none"> • Use plastic fraction strips in order to make equivalent chains. • Compare unit fractions using fraction strips. Reminder: unit fractions always have a 1 in the denominator. • Locate a variety of strategies to make equivalent fractions. • Play Fraction Card Go Fish game • Write about yourself swimming two different distances. Make sure the denominator is the same for both but the denominator is different. Compare your distances. When did you swim further? • Explain how to compare two fractions that have the same numerator. • Explain how to compare two fractions that have the same denominator. • Write two examples of equivalent fractions and explain how you know they are equivalent. • Solve fraction comparison problems by acting them out. • Discuss the meanings of “compare” and “comparison.” • Use greater than, less than, and equivalent signs to compare equations with fractions. • Fraction Action Go Math game in order to compare fractions • Compare $\frac{1}{4}$ and $\frac{1}{6}$ and justify your reasoning. • Find out how many states begin with each letter in the alphabet and make a list. Write fractions for how many states begin with each letter. • List activities you can complete in less than a $\frac{1}{4}$ hour. • Use more than one method in order to compare two fractions with the same numerator and different denominators such as $\frac{2}{3}$ and $\frac{2}{6}$. • Write brief instructions for a friend to answer how he/she can compare fractions with the same denominator. • List four fractions with denominators between 1-10. All four fractions must also have the same numerator. List the fractions from least to greatest, and greatest to least. • Discuss where fractions occur in real life. • Explain how the number of pieces in the whole relates to the size of each piece. 		

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- Create word problems and posters to show fractions of foods we like.
- Draw and color an Equivalent Fraction Poster
- Compare and order fraction strips from least to greatest.
- Illustrate one particular fraction in at least three of the following ways: fraction strips, dividing a shape, number line, measuring cup, or sandwich fractions.
- Write a word web for the term, equivalent.
- Explain how you can use equivalent fractions to compare two fractions with different denominators.

Reinforcement	Enrichment
<ul style="list-style-type: none"> • Lesson 9.1. Compare fractions to solve problems. PMT 3.NF.3d R-9.1 • Lesson 9.2 Compare fractions with the same denominator. PMT 3.NF.3d R-9.2 • Lesson 9.3 Compare fractions with the same numerator. PMT 3.NF.3b • Lesson 9.4 Compare fractions. PMT 3.NF.3d • Lesson 9.5 Compare and order fractions. PMT 3.NF.3d • Lesson 9.6 Use models to find equivalent fractions. • Lesson 9.7 Name equivalent fractions. PMT 3.NF.3d • Screen and implement Tier 2 interventions • Reteach worksheet pages (chapter resources book) • Response to Intervention Activities (Think Central) • ELL Activities • Strategic Intervention Guide (Think Central) • Intensive Intervention Guide (Think Central) 	<ul style="list-style-type: none"> • Lesson 9.1 TE p. 508, Kinesthetic, Fraction Strip work • Lesson 9.2 TE p. 514, Verbal Linguistic, Square shapes folded into fractions • Lesson 9.3, TE p. 520, Visual Kinesthetic, Pizza Fractions Lesson 9.4, TE p. 526, Word Problem Rationale • Lesson 9.5, TE p. 534, Order Several Fractions • Lesson 9.6, TE p. 540, Logical Draw a Picture to solve the fraction problem • Lesson 9.7, TE p. 546, Logical, Equivalent Fractions • Online Activities: <ol style="list-style-type: none"> 1) Pizza Pandas - https://www.mathplayground.com/ASB_PizzaPandas.html 2) Visual Fractions - https://www.mathplayground.com/visual_fractions.html • Classroom Activities: <ol style="list-style-type: none"> 1) Think Central: <ol style="list-style-type: none"> A. Using Machines • Simple and Compound Machines B. Using a Wheel-and-Axle • Circular Motion 2) Discuss and Teach to a Peer - see details - https://docs.google.com/document/d/1lLOMb5VKexCLrAf_Iu1Hal6yQmxFho4BwAi68yjOnYQ/edit?usp=sharing

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Materials and Resources	Other Assessments
<ul style="list-style-type: none"> • iStudent Edition Go Math • eTeacher Edition Go Math • Personal Math Trainer • Chapter 9 student workbooks • Reteach and Enrich in Chapter Resources • Grab-and-Go Centers Kit • Mini whiteboards and dry erase markers / erasers • Counters • <u>The Whole Picture</u> Go Math Literature Connection story • Fraction Action Go Math game • <u>Pizza Parts</u> Go Math Literature Connection story 	<ul style="list-style-type: none"> • Show What You Know • Digital Personal Math Trainer • Lesson Quick Check (built into lessons) • Mid-Chapter Checkpoint • Assessment Animation (PMT) • Chapter 9 Review / Test • Vocabulary Quiz
Suggested Websites	Suggested Materials
<ul style="list-style-type: none"> • www.thinkcentral.com ISE – Interactive Student Edition PMT – Personal Math Trainer Math on the Spot Video – which helps students with problem solving work in each lesson Animated Math Models HMH – Mega Math games and extra practice iT – internet tools for math ABC – Multimedia eGlossary Real World Videos Professional Development Videos that help with teaching for depth • Splash Learn www.splashlearn.com 	<ul style="list-style-type: none"> • Notebook • Who's the Greatest Activity Card 11 using fraction tiles to compare and order fractions. • Fraction Action Activity Card 11 by finding fractional parts of a group of pattern blocks.
Standards	
<p>3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</p> <ol style="list-style-type: none"> Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. Recognize and generate simple equivalent fractions, e.g., $1/2=2/4$, $4/6=2/3$. Explain why the fractions are equivalent, e.g., by using a visual fraction model. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using 	

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a visual fraction model.

Cross-Curricular Connections

21st Century Skills- CRP4. Communicate clearly and effectively and with reason.

Technology- 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

SEL

- Identify who, when, where or how to seek help for oneself or others when needed.
- Utilize positive communication and social skills to interact effectively with others

Language Arts- SL3.6 Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

Math Unit: Time, Length, Liquid Volume, and Mass		Pacing Guide: May
Essential Questions	Enduring Understandings	Benchmark Assessment(s)
<ul style="list-style-type: none"> • How can you tell time to the nearest minute? • How can you tell when to use A.M. and P.M. with time? • How can you measure elapsed time in minutes? • How can you find a starting time or an ending time when you know the elapsed time? • How can you use the strategy “draw a diagram” to solve problems about time? • How can you generate measurement data and show the data on a line 	<ul style="list-style-type: none"> • I can tell time to the nearest minute. • I can tell when to use A.M. and P.M. with time. • I can measure elapsed time in minutes. • I can find a starting time or an ending time when you know the elapsed time. • I can use the strategy “draw a diagram” to solve problems about time. • I can generate measurement data and show the data on a line plot. • I can estimate and measure liquid volume in 	<ul style="list-style-type: none"> • SWBAT complete a practice test that requires them to solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects with 80% accuracy (PARCC test prep workbook pgs. 37-40) 3.MD.A.1 and 3.MD.A.2 • SWBAT complete a practice test that requires them to represent and interpret data with 80% accuracy (PARCC test prep workbook pgs. 43-44) 3.MD.B.4

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<p>plot?</p> <ul style="list-style-type: none"> • How can you estimate and measure liquid volume in metric units? • How can you estimate and measure mass in metric units? • How can you use models to solve liquid volume and mass problems? 	<p>metric units.</p> <ul style="list-style-type: none"> • I can estimate and measure mass in metric units. • I can use models to solve liquid volume and mass problems. 	
<p>Suggested Activities</p>		
<ul style="list-style-type: none"> • Repeatedly talk about how to tell time to the nearest five minutes and minute. • Share different ways to announce the same time. Ex. Quarter to 12 or 11:45, ten after ten or 10:10. • Practice elapsed time problems with analog clocks. • Practice finding beginning times if you know the elapsed time and ending time. • Model how to find elapsed time when no clock is present. • Share activities we complete in the AM and others we do in the PM hours. • How do we know if midnight is AM or PM? Hold a discussion. • Draw diagrams in order to figure out elapsed time or starting times when elapsed time and ending times are known. • Provide measurement data for fictitious lengths students “measured accurately.” Transfer this data to line plots as a whole group, then in partnerships. • Collect plastic bottles of all shapes and sizes for approximately one week. Take off any labels and label them with capital letters A-____. Fill them with water and challenge the students to put the labeled containers in order from least to greatest volume. Last, check volumes by measuring, one-by-one. • Take out gram pieces from FOSS science units in order to practice locating mass of specific items chosen by the student, teacher, or a combination thereof. • Practice measuring liquid amounts at eye level, viewing them at the meniscus. 		
<p>Reinforcement</p>		<p>Enrichment</p>
<ul style="list-style-type: none"> • Lesson 10.1 Tell time to the minute. PMT 3.MD.1, R-10.1. • Lesson 10.2 Write time using A.M. and P.M. PMT 3.MD.1 and 		<ul style="list-style-type: none"> • Lesson 10.1 TE p. 562, Have students write and solve problems using time to the minute. Present example problems as models

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R-10.2.

- Lesson 10.3 Measure elapsed time in minutes PMT 3.MD.1 and R-10.3.
- Lesson 10.4 Find a start or end time given the elapsed time. PMT 3.MD.1, R-10.4.
- Lesson 10.5 Solve Problems about time. PMT 3.MD.1, R- 10.5.
- Lesson 10.6 Measure Length. PMT 3.MD.4, R 10.6.
- Lesson 10.7 Estimate and measure liquid volume. PMT 3.MD.2, R-10.7.
- Lesson 10.8 Estimate and measure mass. PMT 3.MD.2, R-10.8.
- Lesson 10.9 Solve Problems about Liquid Volume and Mass. PMT 3.MD.2, R-10.9.
- Screen and implement Tier 2 interventions
- Reteach worksheet pages (chapter resources book)
- Response to Intervention Activities (Think Central)
- ELL Activities
- Strategic Intervention Guide (Think Central)
- Intensive Intervention Guide (Think Central)

for students to solve. Have students write similar problems. Then have them exchange with a partner and solve.

- Lesson 10.2 TE p. 568, Tell students that people in the military and in emergency services, such as firefighters and police, use a 24-hour system of time without A.M. and P.M. Explain that midnight in military time is written 0000 and A.M. times are the same as in the 12-hour system, or standard time. Ask students to write some times that they do activities using standard times. Then have students change their times to military time.
- Lesson 10.3 TE p. 574, Display the flight schedule. Discuss reasons for differences in travel times, such as taking a different route or traveling at a different speed. Have students find the unknown times. Which flight is the longest? The shortest?
- Lesson 10.4 TE p. 580, Display a multi-step problem. Have students solve the problem and write a description of how they found the solution. Have partners share their work with one another. Then challenge students to write a problem similar to the one above. Students can trade problems with a partner to solve.
- Lesson 10.5 TE p. 586, Give students starting and ending times for a class party. Have students make a table listing party activities, such as movies, games, or singing, and times for each activity. Ask students to use their understanding of elapsed time to write an elapsed time problem that can be solved by using information in the table and acting it out. Have students exchange tables and problems and solve the problems.
- Lesson 10.6 TE p. 594, Write instructions on the board, and have students draw lines that fit the descriptions. Check students' drawings and line plots. Have students measure each of the lines to the nearest fourth inch and make a line plot of the data.
- Lesson 10.7 TE p. 600, Have students create a new unit of measure for liquid volume. Have them name their unit, such as a sindler. Have students draw a picture of their new unit. Then have students tell whether common containers, such as a baby bottle, small lunch milk carton, and bathroom sink will hold

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more than, less than, or about the same amount as their unit of liquid volume.

- Lesson 10.8 TE p. 606, Have students estimate the mass of each coin in grams: dime, nickel, penny, and quarter. Have students record their estimates for the mass of each coin in a table. Then students can use the pan balance and gram masses to measure the mass of each coin. Have students record their measurement of the mass of each coin. Students should compare their measurements with their estimates and describe whether any of their findings were unexpected.
- Lesson 10.9 TE p. 612, Have students work in pairs. Each partner chooses a number of gram masses. Each student places his or her gram masses on one pan of the balance. Then each student writes and solves an equation for how many more grams are on one pan than the other. Students need to count the gram masses in order to write the numbers in their equation. Have students share their equations and solutions. Then have students write a word problem about the gram masses they modeled.
- Online Activities:
 - 1) Girrafe Pull Time -
https://www.mathplayground.com/ASB_Giraffe_Pull_Time.html
 - 2) Puzzle Pic Clocks -
https://www.mathplayground.com/puzzle_pics_clocks.html
 - 3) Rock Star Measurements -
<https://www.education.com/game/rock-star-ruler-measurement/>
- Classroom Activities:
 - 1) Think Central:
 - A. Technology and Society • Problems and Solutions
 - B. Properties Matter! • Physical Properties
 - C. Insect Life Cycles • Do the Math!–Measure in Millimeters
 - D. Measure It! • Do the Math!–Subtract Units
 - 2) Measurement Stations - see details

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	https://docs.google.com/document/d/1lOMb5VKexCLrAf_Iu1Hal6yQmxFh04BwAi68yjOnYQ/edit?usp=sharing
Materials and Resources	Other Assessments
<ul style="list-style-type: none"> • iStudent and eTeacher Edition Go Math • Personal Math Trainer • Chapter 6 student workbooks • Reteach and Enrich in Chapter Resources • Grab-and-Go Centers Kit • Mini whiteboards and dry erase markers / erasers • Counters • Plastic analog clocks and On-line analog clocks • Gram pieces from FOSS science box, placed in 4-5 baggies so each table group has one with a variety of pieces 	<ul style="list-style-type: none"> • Show What You Know • Digital Personal Math Trainer • Lesson Quick Check (built into lessons) • Mid-Chapter Checkpoint • Assessment Animation (PMT) • Chapter 10 Review / Test • Vocabulary Quiz • Performance Assessment Task
Suggested Websites	Suggested Materials
<ul style="list-style-type: none"> • www.thinkcentral.com ISE – Interactive Student Edition PMT – Personal Math Trainer Math on the Spot Video – which helps students with problem solving work in each lesson Animated Math Models HMH – Mega Math games and extra practice iT – internet tools for math ABC – Multimedia eGlossary Real World Videos Professional Development Videos that help with teaching for depth • Splash Learn www.splashlearn.com 	<ul style="list-style-type: none"> • Notebook
Standards	
<p>3.MD.A Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.</p> <p>3.MD.A.1 Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.</p> <p>3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or</p>	

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divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

3.MD.B Relate and interpret data.

3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units- whole numbers, halves, or quarters.

Cross-Curricular Connections

21st Century Skills- *CRP2. Apply appropriate academic and technical skills., CRP4. Communicate clearly and effectively and with reason., CRP6. Demonstrate creativity and innovation., CRP8. Utilize critical thinking to make sense of problems and persevere in solving them., CRP11. Use technology to enhance productivity.*

Technology- *8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems., 8.1.5.A.3 Use a graphic organizer to organize information about problem or issue., 8.1.5.D.4 Understand digital citizenship and demonstrate an understanding of the personal consequences of inappropriate use of technology and social media., 8.2.5.C4 Collaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models.*

SEL- *Identify who, when, where or how to seek help for oneself or others when needed., Utilize positive communication and social skills to interact effectively with others*

Language Arts- *SL3.6 Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.*

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Math Unit: Perimeter & Area		Pacing Guide: June
Essential Questions	Enduring Understandings	Benchmark Assessment(s)
<ul style="list-style-type: none"> • How can you find the perimeter? • How can you measure perimeter? • How can you find the unknown lengths of a side in a plane figure when you know its perimeter? • How is finding the area of a figure different from finding the perimeter of a figure? • How can you find the area of a plane figure? • Why can you multiply to find the area of a rectangle? • How can you use the strategy “find a pattern” in order to solve area problems? • How can you break apart a figure to find the area? • How can you use area to compare rectangles with the same perimeter? • How can you use perimeter to compare rectangles with 	<ul style="list-style-type: none"> • I can explore the perimeter of polygons by counting units on grid paper or on geoboards. • I can estimate and measure the perimeter of polygons using inch and centimeter rulers. • I can find the unknown length of a side of a polygon when you know its perimeter. • I can explore the perimeter and area as attributes of polygons. • I can estimate and measure area of plane figures by counting unit squares. • I can relate area to addition and multiplication by using area models. • I can solve area problems by using the strategy “find a pattern”. • I can apply the 	<ul style="list-style-type: none"> • SWBAT show comprehension of area and relate area to multiplication and division with 80% accuracy. (PARCC test prep workbook pgs. 45-46) 3.MD.C.5a and 3.MD.C.5b • SWBAT demonstrate knowledge of concepts of area and relate area to multiplication and division with 80% accuracy. (PARCC test prep workbook pgs. 47-48) 3.MD.C.6 • SWBAT relate area to multiplication and division with 80% accuracy. (PARCC test prep workbook pgs. 49-56) 3.MD.C.7abcd • SWBAT recognize perimeter as an attribute of plane figures and distinguish between linear and area measures with 80% accuracy. (PARCC test prep workbook pgs. 57-58) 3.MD.D.8 •

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the same area?	<p>Distributive Property to area models and to find the area of combined rectangles.</p> <ul style="list-style-type: none"> • I can compare areas of rectangles that have the same perimeter. • I can compare perimeters of rectangles that have the same area. 	
Suggested Activities		
<ul style="list-style-type: none"> • Construct a Monster Inch on a sheet of 9”X12” paper. Exaggerate the $\frac{1}{2}$ in. mark and trace it on your huge inch. Then, add $\frac{1}{4}$, $\frac{2}{4} = \frac{1}{2}$, and $\frac{3}{4}$ markings. After that, add $\frac{1}{8}$ in. markings. Measure items in the classroom to the nearest $\frac{1}{8}$ of a monster inch. • Measure Races – Students find as many items as they can that measure very close to one inch in one minute. You can apply this activity to any measurement. • Measure Perimeters – Measure the perimeters of table tops, classroom windows, doors, bulletin boards, the teachers desk, etc. in order to practice accurate measurements to the nearest in. or cm. • Discuss different ways to order addends when adding them to determine the perimeter. Always remind students to find numbers that make sums of 10. • Discuss similarities and differences of perimeter and area. • Draw pictures to show what is measured for perimeter and area. • Explain how you know the length of a missing side of a rectangle or square when you know three of the side measurements. • Generate a Venn Diagram or T-chart comparing perimeter and area. • Share a list of common vocabulary terms that go with perimeter, area, and geometry. Then, without telling your partner, choose one and draw it out. Keep drawing until your partner guesses which vocabulary term you are showing. Correct guesses earn one point. Take turns drawing. The first person with 5 points wins. • Define perimeter in your own words, using complete sentences. • Write two things you are sure of about area. • Explain how two rectangles can have the same area, yet different perimeter. Draw examples to prove it. • Play Guess What’s on Your Back game with Perimeter and Area vocabulary. About five students wear index cards with one vocabulary term taped to the back of their shirt. The students with terms on them stand in front of the classroom and show us their backs. We give each student three clues. They get a small prize if they can figure out which term is on their back. 		

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- Model perimeter by walking around the outside edge of the classroom, the school (if possible), and by walking your fingers around the outside edge of shapes on geoboard models, too.
- Use a Semantic Map to provide more connections to the term, perimeter.
- Read and discuss James' Frames, a Literature Connection story from Go Math, in order to find out how much wood is needed in order to make picture frames.
- Draw two different four sided shapes on grid paper. Describe how to find the perimeter of both figures.
- Discuss strategies for finding the perimeter for polygons in which all sides are the same length.
- Ask students why we often make estimates prior to finding actual or exact measurements.
- Ask students how you might find perimeter without using grid paper.
- Discuss what to look at on rulers so that you always measure accurately. (where is the zero located?)
- Draw two different polygons that have the same perimeter. (Grid paper is a good idea to use.)
- Describe real life scenarios in which perimeter is necessary to know.
- Discuss how string can be used in order to locate the perimeter of an object.
- Explain how to find the area of a figure using tiles.
- Locate and describe real life situations in which knowing a specific area is helpful.
- Practice finding area using half unit squares on geoboards.
- Ask why you can multiply in order to find the area of a rectangle.
- Ask if a rectangle with whole number side lengths can have an areas of 9 square units AND a side length of 2 units? Why / why not?
- Summarize the differences between perimeter and area.

Reinforcement	Enrichment
<ul style="list-style-type: none"> • Lesson 11.1 Use a model to find perimeter. PMT 3.MD.8, R-11.1. • Lesson 11.2 Find the perimeter of a figure. PMT 3.MD.8, R-11.2. • Lesson 11.3 Combine rectangles to find area. PMT 3.MD.8, R-11.3. • Lesson 11.4 Use concepts of area. PMT 3.MD.5 and 3.MD.5a, R-11.4. • Lesson 11.5 Use a model to find the area of a figure. PMT 3.MD.5b and 3.MD.6, R- 11.5. • Lesson 11.6 Find the area of a rectangle. PMT 3.MD.7 and 3.MD7a, R 11.6. • Lesson 11.7 Solve area problems. PMT 3.MD.7b, R-11.7. • Lesson 11.8 Find an unknown side length given the perimeter. PMT 3.MD.7c and 3.MD.7d, R-11.8 	<ul style="list-style-type: none"> • Lesson 11.1 TE p. 626, Logical, Visual, Find the perimeter of five classroom objects in both US Cust. Units as well as in metric units. Discuss which object has the smallest perimeter. • Lesson 11.2 TE p. 632, Visual, Draw at least three different rectangles with a given perimeter. Ask students if a perimeter of a rectangle can ever be an odd measurement. • Lesson 11.3 TE p. 638, Visual, Algebraic notation in rectangles, locate the missing lengths of sides when they are labeled with a letter. • Lesson 11.4 TE p. 644, Logical, Students find the perimeter and area of given figures that are already provided on grid paper. • Lesson 11.5 TE p. 650, Visual, Spatial, Draw figures with half unit squares and determine the area. Check with a classmate to make

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<ul style="list-style-type: none"> • Lesson 11.9 Find rectangles that have the same perimeter, but different areas. PMT 3.MD.8, R-11.9 • Lesson 11.10 Find rectangles that have the same area, but different perimeter. PMT 3.MD.8, R-11.10 Screen and implement Tier 2 interventions • Reteach worksheet pages (chapter resources book) • Response to Intervention Activities (Think Central) • ELL Activities • Strategic Intervention Guide (Think Central) • Intensive Intervention Guide (Think Central) 	<p>sure you are correct.</p> <ul style="list-style-type: none"> • Lesson 11.6 TE p. 656, Visual, Spatial, Students estimate the area of several objects. Then, they locate exact area measurements. • Lesson 11.7 TE p. 664, Visual, Students draw a rectangle and label with length and width with given measurements. Then, they figure out the effect on the area when the width is multiplied by 2, 3, and 4. • Lesson 11.8 TE p. 670, Visual, Students draw figures on grid paper that have the same area, yet look different. • Lesson 11.9 TE p. 676, Logical, See directions about comparing perimeter and areas for given rectangles on teacher page. • Lesson 11.10 TE p. 682, Visual, Provide given lengths and widths for three different rectangles. Then, students look for patterns. • Online Activities: <ol style="list-style-type: none"> 1) Perimeter Snatch - https://www.mathplayground.com/perimeter_snatch_jr.html 2) Party Designers - https://www.mathplayground.com/PartyDesigner/index.html • Classroom Activities: <ol style="list-style-type: none"> 1) Think Central: What's the Volume? • Do the Math!–Find the Volume 2) Pool Designer - See details - https://docs.google.com/document/d/1lOMb5VKexCLrAf_Iu1Hal6yQmxFho4BwAi68yjOnYQ/edit?usp=sharing
Materials and Resources	Other Assessments
<ul style="list-style-type: none"> • iStudent Edition Go Math • eTeacher Edition Go Math • Personal Math Trainer • Chapter 11 student workbooks • Reteach and Enrich in Chapter Resources • Grab-and-Go Centers Kit • Mini whiteboards and dry erase markers / erasers 	<ul style="list-style-type: none"> • Show What You Know • Digital Personal Math Trainer • Lesson Quick Check (built into lessons) • Mid-Chapter Checkpoint • Assessment Animation (PMT) • Chapter 11 Review / Test • Vocabulary Quiz

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<ul style="list-style-type: none"> • Grid paper or dot paper • <u>James' Frames</u>, Go Math Literature Collection story • Geoboards and rubberbands • Virtual geoboard and bands • Square tiles • Plastic polygon shapes for tiling area (squares, triangles, rhombi, trapezoids) 	<ul style="list-style-type: none"> • Performance Assessment Task
Suggested Websites	Suggested Materials
<ul style="list-style-type: none"> • www.thinkcentral.com ISE – Interactive Student Edition PMT – Personal Math Trainer Math on the Spot Video – which helps students with problem solving work in each lesson Animated Math Models HMH – Mega Math games and extra practice iT – internet tools for math ABC – Multimedia eGlossary Real World Videos Professional Development Videos that help with teaching for depth • Splash Learn www.splashlearn.com 	<ul style="list-style-type: none"> • Notebook • Jump to 9 Activity Card 6 by measuring and then adding lengths • Perimeter Parade Activity Card 10 by finding the perimeter of pattern blocks • Roll to 100! Activity Card 1 by finding the sum of three numbers • <u>The Class Party</u>, a Go Math Literature Collection story • <u>Busy Bees</u>, a Go Math Literature Collection story • Classification Act Activity Card 18 by classifying two-dimensional shapes based on their attributes
Standards	
<p>3.MD.C.5 Recognize area as an attribute of plane figures and understand concepts of area measurement.</p> <ol style="list-style-type: none"> A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units. <p>3.MD.C.6 Measure areas by counting unit squares (square cm, square m, square in, square ft, and non-standard units).</p> <p>3.MD.C.7 Relate area to the operations of multiplication and addition.</p> <ol style="list-style-type: none"> Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b+c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of non-overlapping parts, applying this technique to solve real world problems. 	

THIRD GRADE MATH CURRICULUM

3.MD.D.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Cross-Curricular Connections

21st Century Skills

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP11. Use technology to enhance productivity.

Technology

8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

8.1.5.A.3 Use a graphic organizer to organize information about problem or issue.

8.2.5.C4 Collaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models.

SEL

- Identify who, when, where or how to seek help for oneself or others when needed.
- Utilize positive communication and social skills to interact effectively with others

Language Arts- *SL3.6 Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.*

Math Unit: Two-Dimensional Shapes		Pacing Guide: June
Essential Questions	Enduring Understandings	Benchmark Assessment(s)

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<ul style="list-style-type: none"> • What are some ways to describe two-dimensional shapes? • How can you describe angles in plane shapes? • How can you use line segments and angles to make polygons? • How can you describe line segments that are sides of polygons? • How can you use sides and angles to help you describe quadrilaterals? • How can you draw quadrilaterals? • How can you use sides and angles to help you describe triangles? • How can you use the strategy “draw a diagram” in order to classify plane shapes? • How can you divide shapes into parts with equal areas and write the area as a unit fraction of the whole? 	<ul style="list-style-type: none"> • I can identify and describe attributes of plane shapes. • I can describe angles in plane shapes. • I can determine if lines or line segments are intersecting, perpendicular, or parallel. • I can describe, classify, and compare quadrilaterals based on their sides and angles. • I can draw quadrilaterals that are regular and irregular. • I can describe and compare triangles based on the number of sides that have equal length and by their angles. • I can solve problems by using the strategy draw a diagram to classify plane shapes. • I can partition shapes into parts with equal areas and express the area as a unit fraction of the whole. 	<ul style="list-style-type: none"> • SWBAT reason with shapes and their attributes with 80% accuracy. (PARCC test prep workbook pgs. 59-62) 3.G.A.1 and 3.G.A.2
<p style="text-align: center;">Suggested Activities</p>		
<ul style="list-style-type: none"> • Create a geometric mosaic that includes squares, rectangles, and triangles. See TE pages 693-694 for project and rubric ideas. 		

THIRD GRADE MATH CURRICULUM

- Design a stained glass window template shaped like a trapezoid or hexagon. Use a design that has at least one line of symmetry.
- Ask students to draw examples and non-examples of rectangles, squares, rhombi, and quadrilaterals in order to examine each shape and define its attributes.
- Construct triangles and quadrilaterals with straws and pipe cleaner pieces in order to discuss attributes of these polygons while holding them.
- Use quantifiers such as all, some, or none, in order to focus on the attributes of the shapes we are studying.
- Create shapes we are studying on geoboards and discuss how we know a shape is a closed shape, a polygon, and how we know that some closed shapes are not polygons.
- Complete an online sort of shapes that are polygons with shapes that are not.
- Cut out triangles, squares, rectangles, and rhombi that are all on one sheet of cardstock. Hold two different shapes and compare similarities/differences of sides, angles, and vertices.
- Partition shapes into equal parts and name the unit fraction for each. $\frac{1}{N}$
- Play Going to an Art Museum Game, see directions on TE pgs. 696A-696B. See student workbook pages 696B-696C for game board.
- In two minutes, draw and label as many examples of polygons that you can. Then, draw a picture of each.
- Illustrate parallel, intersecting, and perpendicular lines and line segments.
- Discuss how road maps show parallel, intersecting, and perpendicular line segments.
- Discuss places in real life where there are parallels, intersections, and perpendiculars.
- Discuss the different meanings of plane and how the term relates to geometry.
- Draw shapes on paper and then describe your shape using mathematical terms.
- Take students on a nature walk in order to find polygon shapes in nature and take a photo of them.
- Explain why a ray has only one arrow while a line goes in both directions infinitely.
- Compare lines and line segments.
- Write about how a ray and a line segment are alike.
- Draw an open shape and a closed shape and label them. Explain how you know you are correct.
- Reflect on how we can describe two-dimensional shapes.
- Discuss prior knowledge on what diameter, radius, and circumference are while reading and discussing Sir Cumference and the First Round Table by, Cindy Neuschwander and Wayne Geehan.
- Draw right angles, straight angles, acute angles, and obtuse angles. Act them out with our arms and legs, and by playing games like Simon Says with Angles.
- Draw pictures of angles that are less than a right angle and greater than a right angle.
- Draw an example of a shape that has at least one right angle, one angle less than a right angle, and one angle greater than a right angle. Then, label the angles.
- Research sails on sailboats. Draw the different types of sails you see. Classify each sail by its polygon name.
- Research your favorite city in the USA. While looking at photographs of it, locate polygons you can see in the buildings found there. Print out the picture and label the polygons you see.
- Draw a T-chart that compares polygons with parallel sides and polygons with perpendicular sides.

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- Provide real-life examples of perpendicular lines outside your classroom.
- Use a flashlight and mirrors in order to make the light look like it makes a right angle and an acute angle.
- Explain how a trapezoid and rectangle are different.
- Draw four shapes and ask students which one doesn't belong and explain why it doesn't fit in with the other shapes.

Reinforcement	Enrichment
<ul style="list-style-type: none"> • Lesson 12.1 Describe two-dimensional shapes. PMT 3.G.1, R-12.1. • Lesson 12.2 Describe angles in plane shapes. PMT 3.G.1, R-12.2. • Lesson 12.3 Identify polygons. PMT 3.G.1, R-12.3. • Lesson 12.4 Describe sides of polygons. PMT 3.G.1, R-12.4. • Lesson 12.5 Classify quadrilaterals. PMT 3.G.1, R-12.5. • Lesson 12.6 Draw quadrilaterals. PMT 3.G.1, R-12.6. • Lesson 12.7 Describe triangles. PMT 3.G.1, R-12.7. • Lesson 12.8 Classify plane shapes. PMT 3.G.1, R-12.8. • Lesson 12.9 Relate shapes, fractions, and area. PMT 3.G.2, R-12.9. • Screen and implement Tier 2 interventions • Reteach worksheet pages (chapter resources book) • Response to Intervention Activities (Think Central) • ELL Activities • Strategic Intervention Guide (Think Central) • Intensive Intervention Guide (Think Central) 	<ul style="list-style-type: none"> • Lesson 12.1 TE p. 698, Visual, Describing shapes by line segments, curves, or a combination of both • Lesson 12.2 TE p. 704, Visual, Spatial, Use pattern blocks in order to record observations about attributes of them • Lesson 12.3 TE p. 710, Logical, Write true and false statements about polygons so that they can meet up in small groups to answer them. • Lesson 12.4 TE p. 716, Kinesthetic, Sort pattern blocks based on if they have parallel sides or perpendicular sides. • Lesson 12.5 TE p. 724, Visual, On dot paper, draw quadrilaterals to special rules, then write directions for how to form another polygon. • Lesson 12.6 TE p. 730, Visual, Write a description of a quadrilateral without naming the shape. Pass your paper to another student so he/she can draw the shape you described. • Lesson 12.7 TE p. 736, Verbal, Linguistic, Draw polygons and connect one vertex to all of the other ones in its shape. Discuss the relationship between the new shapes formed. • Lesson 12.8 TE p. 742, Visual, Venn Diagram, Polygons with Equal Side Lengths and Polygons with Parallel Sides, how many shapes can you fit in each section? • Lesson 12.9 TE p. 748, Visual, Kinesthetic, Trace pattern blocks and cut them into equal parts. Name the fractions made. • Online Activities: <ol style="list-style-type: none"> 1) Geo Boards - https://www.mathplayground.com/geoboard.html 2) Pattern Blocks - https://www.mathplayground.com/patternblocks.html

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	<ul style="list-style-type: none"> Classroom Activities: <ol style="list-style-type: none"> Think Central: <ol style="list-style-type: none"> Moving Up, Digging In • Inclined Plane and Wedge People in Science • Moon Mission Planning and Building • The Design Process Math Connection Tetrominoes Cover-Up For details on 2 and 3 see - https://docs.google.com/document/d/1lOMb5VKexCLrAf_Iu1Hal6yQmxFho4BwAi68yjOnYQ/edit?usp=sharing
Materials and Resources	Other Assessments
<ul style="list-style-type: none"> iStudent Edition Go Math eTeacher Edition Go Math Personal Math Trainer Chapter 12 student workbooks Reteach and Enrich in Chapter Resources Grab-and-Go Centers Kit Mini whiteboards and dry erase markers / erasers Grid paper or dot paper Geoboards and rubberbands Virtual geoboard and bands Square tiles Plastic polygon shapes for tiling area (squares, triangles, rhombi, trapezoids) Classification Act Activity Card 18 – classify 2-dimensional shapes <u>Sir Cumference and the First Round Table</u> by, Cindy Neuschwander and Wayne Geehan 	<ul style="list-style-type: none"> Show What You Know Digital Personal Math Trainer Lesson Quick Check (built into lessons) Mid-Chapter Checkpoint Assessment Animation (PMT) Chapter 12 Review / Test End-of-Year Game Creation
Suggested Websites	Suggested Materials

THIRD GRADE MATH CURRICULUM

- www.thinkcentral.com
ISE – Interactive Student Edition
PMT – Personal Math Trainer
Math on the Spot Video – which helps students with problem solving work in each lesson
Animated Math Models
HMH – Mega Math games and extra practice
iT – internet tools for math
ABC – Multimedia eGlossary
Real World Videos
Professional Development Videos that help with teaching for depth
- Splash Learn www.splashlearn.com

- Notebook
- Figure It Out Activity Card 18 by identifying two-dimensional shapes by their attributes.
- The Whole Picture, a Go Math Literature Collection story

Standards

3.G.A.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

3.G.A.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as $\frac{1}{4}$ of the area of the shape.*

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