Qtr. 3: Weeks 1-3 January 4 – January 25 (15 days) Grade 3 Unit 7: Represent and Solve Problems with Multiplication and Division

UNIT OVERVIEW: REPRESENT AND SOLVE PROBLEMS WITH MULTIPLICATION AND DIVISION

In this unit, students will further their understanding of multiplication & division and the relationship between the two operations. Students will solve word problems involving time on a number line.

ESSENTIAL QUESTIONS:	**KEY VOCABULARY:**
How can you use addition & subtraction of time intervals to solve word problems? What happens when you multiply two numbers and then switch the order of the factors? How can you solve problems that involve more than one step?	products, groups of, quotients, partitioned equally, multiplication, division, equal groups, group size, arrays, equations, unknown, operation, multiply, divide, factor, subtract, add, addend, sum, difference, strategies, reasonableness, mental computation, estimation, rounding, patterns, estimate, time, time intervals, minute, hour, elapsed time

Standards/Objectives	
Mastery Standards	**Standards Clarification**
[3-OA.4] Determine the unknown whole number in a multiplication or division equation relating three whole numbers. • For example, determine the unknown number that makes the equation true in each of the equations $8 \times \square = 48$, $5 = \square \div 3$, $6 \times 6 = \square$	**[3-OA.4]** Unknown whole in multiplication/division.
[3-OA.5] Apply properties of operations as strategies to multiply and divide. • 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.5]** Commutative, distributive, and associative properties.
[3-OA.6] Understand division as an unknown factor-problem. • For example, find $32 \div 8$ by finding the number that makes 32 when multiplied by 8.	**[3-OA.6]** Division as an unknown factor.

[3-OA.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.8]** Two step problems combining addition or subtraction situation with an easy/medium multiplication or division situation; use a letter to represent the unknown quantity (connect model and equation) – Assess reasonableness of answer.
[3-MD.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.	**[3-MD.1]** Solve word problems with time including the use of a number line diagram.
Opportunity for Depth Standards	**Standards Clarification**
[3-OA.3] Use multiplication within 100 to solve word problems in situations involving equal groups and arrays by using drawings and equations with a symbol for the unknown number to represent the problem.	**[3-OA.3]** Multiplication & division word problems. (all 4 types required for 3rd grade)
[3-OA.7] Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	**[3-OA.7] Instructional focus on: All Facts - BUILDING FLUENCY *NO HAND TRICKS*** *Basic Fact Assessment: Multiplication factors 0-9*
Continued (not new)	
NBT1, NBT2, NBT3, OA1, OA2, MD5, MD6, MD7 Continue for reinforcement and review	

Resources for Quarter 3 Unit 7			
Engage New York Module 1 Topic F - **(OA5, OA6, OA7, OA8)** https://www.engageny.org/resource/grade-3-mathematics-module-1 **Module 2 Topic A Lessons 4-5 – (MD1)** https://www.engageny.org/resource/grade-3-mathematics-module-2 **Module 3 Topic A, B, E – (OA4, OA7, OA8)** https://www.engageny.org/resource/grade-3-mathematics-module-3	**Georgia Standards Unit 2 – (OA3, OA4, OA5, OA6, OA7)** https://www.georgiastandards.org/Georgia-Standards/Frameworks/3rd-Math-Unit-2.pdf • **Arrays on the Farm** • **Family Reunion** • **Seating Arrangements** • **What Comes First, the Chicken or the Egg** • **Use What You Know** • **Multiplication Chart Mastery** • **Making the "Hard" Facts Easy** • **Making up Multiplication** **Unit 3 – (OA8)** https://www.georgiastandards.org/Georgia-Standards/Frameworks/3rd-Math-Unit-3.pdf • **Read all About It** • **It Takes Two!** • **Hooked on Solutions!** **Unit 6 – (MD1)** https://www.georgiastandards.org/Georgia-Standards/Frameworks/3rd-Math-Unit-6.pdf • **Let's Talk Time About Time** • **Time to Get Clean** • **Daily Schedule** • **Plane Ride**	**North Carolina – (OA3, OA4, OA5, OA6, OA7, OA8)** http://3-5cctask.ncdpi.wikispaces.net/3.OA.1-3.OA.4 http://3-5cctask.ncdpi.wikispaces.net/3.OA.5-3.OA.6 http://3-5cctask.ncdpi.wikispaces.net/3.OA.7 http://3-5cctask.ncdpi.wikispaces.net/3.OA.8-3.OA.9	**Math In Focus** **Chapter 6, 7, 8 – (OA3, OA4, OA5, OA6, OA7, OA8)** **Chapter 16 Lessons 1-4 – (MD1)**
Xtra Math https://xtramath.org/#/home/index *Free, individualized web based program that helps to build student fluency.*			
Focus Standards for Mathematical Practice			
MP.1 Make sense of problems and persevere in solving them.			

MP.4 Model with mathematics.
MP.7 Look for and make use of structure.

Qtr. 3: Weeks 4-6
Qtr. 3: Weeks 4-6 **January 26 – February 22 (15 days)** **Quarter 3 Unit 8: Develop an Understanding of Fractions as Numbers**

UNIT OVERVIEW: DEVELOP AN UNDERSTANDING OF FRACTIONS AS NUMBERS
Grade 3 expectations are limited to fractions with denominators 2, 3, 4, 6, 8. Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole.

ESSENTIAL QUESTIONS:	KEY VOCABULARY:
ESSENTIAL QUESTIONS: How can you partition shapes into equal parts and name each area as a fraction? How can you find & write fractions on a number line? How can you write a fraction to name part of a whole?	**KEY VOCABULARY:** operation, multiply, divide, factor, product, quotient, subtract, add, addend, sum, difference, equation, patterns, partition(ed), equal parts, fraction, equal distance (intervals), equivalent, equivalence, reasonable, denominator, numerator, comparison, compare, ‹, ›, = , justify

Standards/Objectives	
Mastery Standards	**Standards Clarification**
[3-OA.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.	**[3-OA.9]** Examine patterns connected to place-value and multiplication.
[3-NF.1] Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a/b* as the quantity formed by *a* parts and size 1/*b*.	**[3-NF.1]** Fractions (<1 and >1) - partitioning, equal shares, area models, number lines – set models (parts of a group) are not introduced in 3rd grade.
[3-NF.2] Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line. b. Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.	**[3-NF.2]** Fractions on the number line, iteration, unit fractions.

Opportunity for Depth Standards	Standards Clarification
[3-OA.7] Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	**[3-OA.7] Instructional focus on: <u>All Facts - BUILDING FLUENCY</u> *NO HAND TRICKS*** *Basic Fact Assessment: Multiplication factors 0-9*

Supporting Standards	Standards Clarification
[3-G.2] Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. • Example: Partition a shape into 4 parts with equal area, and describe the area of each part as $^1/_4$ of the area of the shape.	**[3-G.2]** Partition shapes into parts with equal areas / express area as a unit fraction.

Resources for Quarter 3 Unit 8

Engage New York Module 5 Topic A, B, C, D – (NF1, NF2, G2) https://www.engageny.org/resource/grade-3-mathematics-module-5	**Georgia Standards Unit 3– (OA9)** https://www.georgiastandards.org/Georgia-Standards/Frameworks/3rd-Math-Unit-3.pdf • **Skip Counting Patterns** • **Take the Easy Way Out** **Unit 4 – (G2)** https://www.georgiastandards.org/Georgia-Standards/Frameworks/3rd-Math-Unit-4.pdf • **Pattern Block Fractions** • **Picture Pie** • **I Have, Who Has?** ***Resources continued on next page***	**North Carolina – (NF1, NF2, G2, OA9)** http://3-5cctask.ncdpi.wikispaces.net/3.NF.1-3.NF.3 http://3-5cctask.ncdpi.wikispaces.net/3.G.1-3.G.2 http://3-5cctask.ncdpi.wikispaces.net/3.OA.8-3.OA.9	**Math In Focus** **Chapter 14 Lessons 1 and 2 – (NF1, NF2)** **Chapter 14 Lesson 6 – (G2) (OA9)** **Lesson 6a – (NF1, NF2)**

	Unit 5 – (NF1, NF2) https://www.georgiastandards.org/Georgia-Standards/Frameworks/3rd-Math-Unit-5.pdf • **Exploring Fractions** • **Candy Crush** • **Using Fraction Strips to Explore Number Line** • **Repeating Fractions on a Number Line** • **Patter Block Fractions Revisited** • **Party Tray** • **Make a Hexagon Game**		
FAL: *Fraction on a Number Line –* **(NF2)** http://education.ky.gov/curriculum/conpro/Math/Documents/3_KDE_Representing_Fractions_on_a_Number_Line_Grade_3.pdf	**FAL:** *Fraction on a Number Line –* **(NF2)** http://education.ky.gov/curriculum/conpro/Math/Documents/3_KDE_Representing_Fractions_on_a_Number_Line_Grade_3.pdf	**FAL:** *Fraction on a Number Line –* **(NF2)** http://education.ky.gov/curriculum/conpro/Math/Documents/3_KDE_Representing_Fractions_on_a_Number_Line_Grade_3.pdf	**FAL:** *Fraction on a Number Line –* **(NF2)** http://education.ky.gov/curriculum/conpro/Math/Documents/3_KDE_Representing_Fractions_on_a_Number_Line_Grade_3.pdf

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Focus Standards for Mathematical Practice
MP.7 Look for and make use of structure.
MP.8 Look for and express regularity in repeated reasoning.

Qtr. 3: Weeks 7-9
February 23 – March 16 (16 days)
Quarter 3 Unit 9 Fractions and Data

UNIT OVERVIEW: FRACTIONS AND DATA

In this unit students will continue to explore multiplication and division, as well as complete problem solving situations involving addition and subtraction as they explore area of two-dimensional or plane figures. Students will continue to work with fractions and represent fractions on a number line.

ESSENTIAL QUESTIONS:	**KEY VOCABULARY:**
How can you compare fractions with the same denominator? How can you compare fractions with the same numerator? How can you compare fractions on a number line? How can you use data in a chart or graph?	operation, multiply, divide, factor, product, quotient, subtract, add, addend, sum, difference, equation, patterns, partition(ed), equal parts, fraction, equal distance (intervals), equivalent, equivalence, reasonable, denominator, numerator, comparison, compare, ‹, ›, = , justify, scale, scaled picture graph, scaled bar graph, line plot, data

Standards/Objectives	
Mastery Standards	**Standards Clarification**
[3-NF.1] Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a/b* as the quantity formed by *a* parts and size 1/*b*.	**[3-NF.1]** Fractions (<1 and >1) - partitioning, equal shares, area models, number lines – set models (parts of a group) are not introduced in 3rd grade.
[3-NF.2] Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line. b. Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.	**[3-NF.2]** Fractions on the number line, unit fractions.
[3-MD.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. • For example, draw a bar graph in which each square in the bar graph might represent 5 pets.	**[3-MD.3]** Picture/bar graphs representing data *word problems using graphs (make connections to fractions).

Opportunity for Depth Standards	Standards Clarification
[3-NF.3] Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. b. 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. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram. d. 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.	**[3-NF.3]** Equivalent fractions, compare fractions.
Supporting Standards	**Standards Clarification**
[3-MD.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.	**[3-MD.4]** Collect, Analyze, Interpret data (measurement context) connect to fractions.

Resources for Quarter 3 Unit 9			
Engage New York Module 5 - (NF1, NF2, NF3) https://www.engageny.org/resource/grade-3-mathematics-module-5 **Module 6 – (MD3, MD4)** https://www.engageny.org/resource/grade-3-mathematics-module-6	**Georgia Standards Unit 1 – (MD3, MD4)** https://www.georgiastandards.org/Georgia-Standards/Frameworks/3rd-Math-Unit-1.pdf **Information Station** **It's a Data Party** **What's Your Favorite?** **Cut and Plot** **Unit 3 – (MD3, MD4)** https://www.georgiastandards.org/Georgia-Standards/Frameworks/3rd-Math-Unit-3.pdf **Subject to Interpretation** **Measure and Plot** **Unit 4 – (MD3, MD4)** https://www.georgiastandards.org/Georgia-Standards/Frameworks/3rd-Math-Unit-4.pdf **Measure My Shapes** **Pattern Block Graphing** **Unit 5 – (NF1, NF2, NF3, MD3, MD4)** https://www.georgiastandards.org/Georgia-Standards/Frameworks/3rd-Math-Unit-5.pdf	**Howard County (NF1, NF2, NF3)** https://hcpss.instructure.com/courses/97/pages/3-dot-nf-dot-3-about-the-math-learning-targets-and-rigor **(MD3)** https://hcpss.instructure.com/courses/97/pages/3-dot-md-dot-3-about-the-math-learning-targets-and-rigor **(MD4)** https://hcpss.instructure.com/courses/97/pages/3-dot-md-dot-4-about-the-math-learning-targets-and-rigor	**Math In Focus** **Chapter 14 Lessons 1 and 2 – (NF1, NF2)** **Chapter 14 Lessons 3 and 4 – (NF3)** **Chapter 13 Lessons 1 and 2 – (MD3)** **Chapter 13 Lesson 3 – (MD4)**
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Focus Standards for Mathematical Practice			
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MP.4 Model with mathematics.			
MP.7 Look for and make use of structure.			