Quarter: 2nd

Guam District Level Lesson Plan

Content: Math	**Grade/Course**: 4th	**Timeline**: Oct. 19-23

Standard(s):

4.OA.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. (1st Qtr)

4.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Italic Information: Recursive standard – repeated in at least one other quarter

DOK 1: Solve: 124 x 7 = ____ , 53 x 25 = _____ , 2531 x 4 = ____

DOK 2: Find the product of 45 x 23 (use a strategy other than the standard algorithm

Lesson Overview:
Students will develop flexibility in breaking numbers apart to have an understanding of the properties of operations and/or the relationship between multiplication and division.

Lesson Objective(s):
In this lesson, students will be able to

- To multiply 2 Digit numbers by 1-digit numbers. (L.5.4)
- To multiply 3-digit numbers by 1-digit numbers. (L.5.5)
- To multiply 2- and 3-digit numbers by 1 digit numbers with regrouping. (L.5.7)
- To multiply 4 digit numbers by 1-digit numbers. (L.5.8)
- To solve problems, choosing a method of computation. (L5.9)

Vocabulary:

- Product
- Quotient
- Rule
- Area
- Perimeter
- factor, array, area model

Focus Question(s):

- How do you illustrate and explain multiplication calculations by using equations, rectangular arrays, and/or area models
- How do you multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations
- What ways can students illustrate and explain their use of the multiplication/division properties?

8 Mathematical Practices:	I Can Statements
☐ **1. Make sense of problems and persevere in solving them.** ☐ **2. Reason abstractly and quantitatively.** ☐ 3. Construct viable arguments and critique the reasoning of others. ☐ **4. Model with mathematics.** ☐ 5. Use appropriate tools strategically. ☐ 6. Attend to precision. ☐ 7. Look for and make use of structure. ☐ 8. Look for and express regularity in repeated	I can multiply a multi-digit number by a one-digit number. I can demonstrate multiplication of two- digit numbers using rectangular arrays, place value and/or area models.

Instructional Strategies: (EL, SIOP, SPED, Marzano)

Day 1: Lesson 5.4 Multiplying Two-digit numbers
Motivate: Cooperative Groups
Materials: For each group of 3 students – base-ten materials (option)
Students each take a problem to model. Then groups confer and explain how to find each sum.
1. 24 + 24 2. 17 + 17 + 17 3. 14 + 14 + 14 + 14
Group members discuss and answer the questions.

- What do you notice about each addition exercise? The addends in each are the same
- If the addends are the same, what other operation can be used to find the answer? Multiplication
- How can you write a multiplication exercise for each addition exercise? 2 x 24, 3 x 17, 4 x 14

Teach:
For students who would benefit from a review of multiplying 1 digit numbers with regrouping, use the Bridge lesson on pages H14-H15.

Discuss the warm up question. Elicit the following response from students: by regrouping 32 ones for 3 tens 2 ones.

Materials: Base-ten materials TR 4, 9

- How is a place value block model related to steps 1 – 3? 20 units are traded for 2 longs; 2 is regrouping over tens.
- Why is the product estimated by rounding greater than the actual product? 16 was rounded to a greater number

Critical Thinking questions:

- When does the product of two 1-digit numbers require regrouping? When the product is greater than 9 (Analysis)
- How are addition and multiplication related? Give an example. Multiplication is a shortcut for repeated addition. 4 x 16 means 16 + 16 + 16 + 16. (synthesis)

Check For understanding:
For exercises 1 – 4, tell if the actual product will be greater or less than estimate. 1 – less; 2, 3-greater
you may want students to estimate answer for exercises 5 -14

Wrap up question:
Q: When multiplying 7 x 34, how do you know when to regroup?

Summarize by discussing the wrap up question. A possible response from students: When you multiply the ones, if the product is greater than 9, you need to regroup. So, 4 X 7 = 28, which needs to be regrouped to 2 tens 8 ones.

Assessments: Independent work: # 1-30 Students work on each problem independently and correct together

Day 2: Lesson 5.5 Multiplying Three-digit numbers
Motivate: Cooperative learning
Row 1 19, 42, 51, 58
Row 2 – 2, 3, 4, 6
Student 1 chooses 1 number from Row 1 and Student 2 chooses 1 number from Row 2. Partners write as many multiplication problems as possible that require.

1. no regrouping. 2 x 42
2. regrouping of ones only. 2 x 19, 3 x 19, 4 x 19
3. regrouping of tens only. 2 x 51, 3 x 42, 3 x 51, 4 x 42, 4 x 51, 6 x 51
4. regrouping of both ones and tens. 2 x 58, 3 x 58, 4 x 58, 6 x 19, 6 x 42, 6 x 58

Teach: Discuss the warm up question. Elicit the following response from students: yes, when you round, if the digit to the right is less than 5, the front digit does not change.

Multicultural Note
Most Native American pottery was not made with a potter's wheel. Often, pottery was made by coiling, a method of rolling clay into slender strips that were laid one upon another. Another method was molding the clay. After forming a shape, the artist smoothed the sides so it could be painted. Often, the pottery was painted with geometric designs.

Read about the Pueblo pottery.

- Is the estimate for craft items entered in the art show less or more than the actual product? Why? Less; 214 was rounded down.

Have students describe more examples A-C step by step at the chalkboard. They can check the products by using the partial-product method.

- Why will example b have only two partial products? No ones

Critical Thinking Question:
What is the greatest possible number of digits in the product of a 3-digit number times a 1-digit number? 4 because 999 x 9 = 8,991 is the greatest possible 3-digit x 1-digit problem (analysis)

Check for Understanding:
Students can estimate answers before completing Exercises 1-5. Have a student describe how to multiply at each step.

Wrap up:
Q: How do you use what you know about place value to help you multiply?

Summarize by discussing the wrap up question. A possible response: You multiply the digit in the ones place, then the tens place, and then the hundreds place.

Exit question:
Have students find the product:

1. 3 x 215 =
2. 2 x 436 =
3. 4 x 204 =
4. 7 x 127 =

Assessments: Independent work: # 1- 30 Students work on each problem independently and correct together

Day 3: Lesson 5.7 Multiplying
Motivate: Cooperative Partners
Materials: Place-value mat; counters in 3 colors (optional)

- work in pairs
- Take turns modeling and recording the problems using counters. Let each color counter represent a different place value.
- Discuss the regrouping in each problem

Example: 254 See TE for details
X3

1. 47	2. 317	3. 861	4. 52
x 3	x 2	x 5	x 6

Teach:
Discuss the Warm up question. Elicit the following response from students. Estimate by front-end and by rounding. If the answer is between or close to the estimates, it is reasonable.

- Make sure students understand that 2 round trips is the same as 4 trips of 189 miles.

- Work through More Examples.

Critical Thinking Question:
Will a 2-digit number multiplies by a 1-digit number ever have more than 3 digits in the answer? How do you know? **No; because 9 x 99 = 891 and that is the greatest possible product of a 2-digit number times a 1-digit number. (Analysis)**

Multicultural note:
Most of Norway is blanketed with snow for at least 3 months of the year. In the past, Norwegians had to ski into town of get supplies. Today, they ski for fun and exercise.

Wrap Up:
Q: How does knowing 4 x 8 = 32 help you find 40 x 80?
Summarize by discussing the Wrap up question above. A possible response; use the basic fact and write the same number of zeros that are in factors in the product. So, the product is 3,200.

Independent work: #1-32 Students work on each problem independently and correct together

Day 4: Lesson 5.8 Multiplying larger numbers
Motivate: Whole Class
Materials: 4 number cards: 2,000; 4,000; 6,000; 8,000

All students write a 4-digit numbers. Show number card 2,000 to students. List on the whiteboard some numbers that students write. Conclude that any 4-digit number from 1,500 to 2,499 rounds to 2,000. Continue with other number cards. Numbers that round to 4,000: 3,500 to 4,499; 5,500 to 6,499: 8,000: 7,500 to 8,499

Critical Thinking questions:
- Will the product of a 4-digit number times a 1-digit number ever have more than 5 digits? **No, because 9 x 9,999 = 89,991 and that is the greatest possible product of a 4-digit number times a 1-digit number.** (Analysis)
- When will a 4-digit number times a 1-digit number have a 5-digit product? **The product will have 5 digits if the 1-digit number times the digit in the thousands place plus any regrouped number s greater than 9.** (synthesis)

Check for understanding:
Have students use both methods of estimation for Exercises 1-8. Check product with a calculator (optional)

Wrap up:
Q: Why is estimation important when you use a calculator?
Summarize by discussing the wrap up question. A possible response from students: it is easy to press the wrong keys. Therefore, you need an estimate to check the reasonable of your answer.

Exit question: Have students find the product
1. 2,176 2. 5,398 3. 8 x 7,026 = 56,208

x 4	x 6
8,704	32,388

Assessments: Independent work #1-27 Students work on each problem independently and correct together.

Day 5: Lesson 5.9 – Problem Solving - Choose the Method of computation
Motivate: Cooperative Groups
Students take turns estimating how many beans are in the jar without opening the jar and counting. After sufficient time, have each group decide on one answer and tell

1. How many beans are in the jar.
2. Methods used to determine the number of beans.

Discuss that more than one method was used to determine the number of beans in a jar. Point out that sometimes more than one method can be used to solve problems in math.

Teach:
Discuss through the 4-step process.

Understand - Have students restate the problem in their own words.

Plan – Have students discuss the operation necessary to solve the problem and the appropriate number sentence.

Solve – Discuss each of the 4 methods listed. Have students tell how each method can be used to solve the problem

- Suppose Nancy uses estimation to determine if she has enough money for camp. Will the estimate give her the information she needs? **No, because 3 x $80 = $240; the estimate is too high.**
- Is finding an exact answer a better choice for Nancy? **Yes**
- How much more money does Nancy have than she needs for camp? **$323 - $228 = $4**

Review:
Students can check the answer with a calculator. Talk about the conditions that were changed in the What if question.

- What method will you most likely use? Why? **Mental math, because the number is a multiple of $100**
- What if she saves twice as much money and wants to go to camp for 5 weeks at $100 a week? Will she have enough money? **No, 2 x $232 = $464 saved; 5 x $100 = $500 cost for camp.**

Apply
Have students explain to the class the methods they used to find the answers for exercises 1 – 2.

Wrap up
Challenge students to describe how to determine the method of computation to solve a problem.

- Identify the numbers in the problem.
- Restate the question in your own words.

- Determine the operations to use.
- Choose the method that is easiest for you to use to solve the problem.

Assessment – Exit Question
Have students solve

- Pedro wants to buy a skateboard. It costs $59.95. He saves $5 a week for 12 weeks. Will he be able to buy the skateboard? **Yes; 5 x 12 = 60, and 60 > 59.95.**

Summative Assessments: Chapter Test pg. 170 – 171 # 1 – 40
Cumulative Review pg. 175 # 1 - 12

Accommodations/Modifications:
Peer tutoring, extend time for completion,
Simplified instructions
Modified assessments

Resources (Textbook and Supplemental):
Resources & Links to Technology

Support for 4.NBT.5 This site contains multiple sources and Web sites to support multiplication.

Support for 4.NBT.6 This site contains multiple sources and Web sites to support division.

Support for 4.MD.3 This site will support building ideas for perimeter and area in this grade.

Quotient Cafe This is an application on finding quotients.

Math Playground Tutorials and examples of key concepts

Mathematics Plus

Lesson 5.4 pg. 154-155

Lesson 5.5 pg.156 – 157

Lesson 5.7 pg. 162 – 163

Lesson 5.8 pg 164 – 165

Lesson 5.9 pg. 166 - 167

Quarter: 2nd

Guam District Level Lesson Plan

Content: Math	**Grade/Course**: 4th	**Timeline**: Oct. 26-30

Standard(s):

4.NBT.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

DOK 1: Solve: 491÷7 = _____. 6063 ÷ 9 = _____.

DOK 2: Jenny has 36 brownies. She would like to share them with her 6 friends. Which operation shows how many brownies each friend will receive?

DOK 2: Henry had 491 baseball cards. He wanted to split them equally between his 5 friends. How many would each friend get, and is there a remainder?

Mathematical Practices: 2. Reason abstractly and quantitatively, 4. Model with mathematics

Lesson Overview:	**Lesson Objective(s)**: I CAN….
In this lesson, students focus on applying their understanding of the concept of multiplication to divide whole numbers. Students are continuing to build their understanding of division as they use an array to divide.	In this lesson, students will be able to Use the relationship between multiplication and division to find whole-number quotients. Lesson 8.1 I CAN use place-value materials to model division patterns in multiples of 10, 100, and 1,000. Lesson 8.2 I CAN relate division and multiplication as inverse operations. Lesson 8. 3 I CAN use place-value materials to explore division. Lesson 8.5 I CAN solve problems by choosing a strategy. Lesson 8.6 I CAN divide a 2-digit number by a 1-digit number. Lesson 8.7 I CAN divide a 3-digit number by a 1-digit number

	Lesson 8.9 I CAN divide amounts of money.
Vocabulary: • Product • Quotient • Rule • Divisor • Dividend **8 Mathematical Practices:** ☐ **1. Make sense of problems and persevere in solving them.** ☐ **2. Reason abstractly and quantitatively.** ☐ 3. Construct viable arguments and critique the reasoning of others. ☐ **4. Model with mathematics.** ☐ 5. Use appropriate tools strategically. ☐ 6. Attend to precision. ☐ 7. Look for and make use of structure. ☐ 8. Look for and express regularity in repeated	**Focus Question(s)**: • How do you illustrate and explain multiplication calculations by using equations, rectangular arrays, and/or area models • How do you multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations • What ways can students illustrate and explain their use of the multiplication/division properties? **I Can Statements** I can demonstrate division of a multi-digit number using place value, rectangular arrays and/or area models.

Instructional Strategies: (EL, SIOP, SPED, Marzano)

Anticipatory Set:

Give students a multiplication problem to solve, such as 23 8 and ask them to draw an array that represents this problem. Have them explain their thinking as they solve the problem. Discuss that they can use what they know about multiplication to help them solve division problems.

Instruction and Strategies:

Present students with a division problem with a 3-digit dividend and 1-digit divisor, with no remainder. Show an array of objects, as in the example below, with the columns arranged in groups equal to the divisor. Explain to students that when they multiply, they are finding the total number of things in the array, or the product, but when we divide, we already know the total number. Remind students that division is about breaking a set into in equal sized groups or equal numbers of groups.

Demonstrate how to use the array to find the quotient of the two numbers such as 120 ÷ 8. Work a couple of problems this way. Then have students solve another problem, this time with a larger 3-digit dividend. *Ask students to explain to a partner when the strategy of using an array might become difficult.*

Day 1: Lesson 8.1 Patterns in Division

Motivate: Small Groups
Materials: Division fact cards for groups of 4

Review basic division facts. Let one student in each group show all 20 cards to the others in the group. The first student to give each correct quotient receives that card. When all cards have been shown, the student with the most cards shows all the cards for the next round. Groups trade cards for each round.

Teach: Multicultural Note – technology is speeding up delivery of the morning newspaper. USA Today sends its early morning international edition to most European cities using a satellite that orbits 22,000 miles above the equator. But in the end, newspapers still have to be hand-delivered to homes and newsstands.

Building Understanding
Materials: Place-value materials

Have students work in cooperative groups to complete the tasks on page 242. Then have each group report its discoveries. Conclude the discussion with the item at the top of the next page.
Explain how to use mental math to divide when the dividend is a multiple of 10. Possible answer: Use a basic fact and look for a pattern in the zeros.

Making the connection: Discuss the examples and the recording of the quotients on the place-value chart. Give another example on the whiteboard. Use the pattern of 30 ÷ 5, and extend the chart to the ten-thousands.

- How do the zeros affect the value of the digits? **Each zero makes the value of the digit 10 times greater.**

Critical Thinking question: What rule can you write about the pattern of zeros in the quotient and the dividend? **The quotient will be the basic division fact followed by the number of zeros in the dividend.**

Check for understanding: Have students work in pairs or independently to complete exercises 7-17.

Closure: Summarize by asking students to explain why it is helpful to know how to predict the number of digits that will be in a quotient. A possible response from students is that it is one way to check whether the quotient they get is reasonable.

Assessment:
1. 420 ÷ 6 = 2. 350 ÷ 7= 3. 1,200 ÷ 4 = 4. 24,000 ÷ 6 =

Day 2: Lesson 8.2 Connecting Multiplication and Division

Motivate: Whole Class discussion

Have a student distribute the 25 pencils equally among 6 students.

- How many pencils will each student receive? **(4 pencils)** How many pencils are left? (**1 pencil)**
- What mathematical operation did (student's name) show? Division
- Write a number sentence to show what was done. **25 divide by 6 = 4 r1**

Developing Algebraic thinking:
If students can find a missing factor in a multiplication equation, they can solve the related division equation.

Discuss the WARM UP question. Elicit the following response from students: the remainder.
Wrap up question: Explain why the remainder should be less than the divisor.

Read about Mr. Hunt and the fax machine. Review the terms ***dividend, divisor, and quotient***.
Emphasize the use of ***n*** as a variable.

- Is the order of numbers important in the division sentence? Yes is 43 divide by 6 the same as 6 divide by 43? **No**
- Is finding a missing factor the same as finding a quotient? **Yes**
- How do you check division when there is a remainder? **(quotient x divisor) + remainder = Dividend**

Critical Thinking Questions:
- What is the dividend if the divisor is 4, the quotient is 9, and the remainder is the largest number

possible? **39** (synthesis)

- Suppose the divisor always a 1 digit number, the quotient is always 9, and the remainder is always the largest number possible. Can you find a rule to tell how to find the dividend? **(10 x divisor) – 1 = dividend** (evaluation)

Check for Understanding:
Have students explain the division for exercise 1-3 at the whiteboard.
How does knowing multiplication facts help to solve division problems? Possible answer: The quotient is a missing factor.

INDEPENDENT WORK: PG. 244-245 # 1-16

Wrap up summary/ evaluations;
Summarize by discussing the WRAP UP question. A possible response is that if the remainder was equal to or greater than the divisor, the quotient would have to be increased.

Check student independent work and fix up errors.

Extra Practice: Lesson 8.2, page H62

Day 3: Lesson 8.3 Exploring Division pg. 246-247

Quick Check: Use multiplication to find the quotient.

1. 34 ÷ 8 = _____
2. 65 ÷ 9 = _____
3. 57 ÷ 6 = _____
4. 46 ÷ 5 = _____

Teach: Developing Algebraic thinking
Understanding the different roles of variables is critical to success in algebra.

Have students work in cooperative groups. Have each group record and report its responses to ***talk about it.*** Conclude the discussion by having a student model this problem.

- *Suppose 32 programs are produced on the 3 soundstages. How many programs will be produced on each stage?* ***10 programs with 2 left***
- *Is it necessary to regroup the tens?* ***NO.*** *Why?* ***NO TENS ARE LEFT OVER****. Are there enough ones to share?* ***NO*** *. What digit indicates " no ones"?* ***ZERO*** *how many are left?* ***2 ONES.***

Making the connection: Discuss the example.

- How many pennies are in 1 dollar? 100 pennies
  Have students share their models for exercises 1 and 2 once completed with independent work.

Check for understanding: Independent work Pg. 246 – 247 # 1-9 Group activity and sharing of answer once completed.

Summarize: **Wrap up!**
Summarize by asking students to tell how they know how to answer a division word problem having a remainder. Guide students to conclude that it may mean either that one or more groups will not be even with the others, or that there will be an additional group in the answer.

Day 4: Lesson 8.5 Problem Solving Choose a Strategy! Pg. 250 -251

Motivate: Whole Class
Have 5 students act out the following situations.

- Five girls ran a race. Sara came in first. Mary came in last. If Tina was ahead of Joan, and Betty was just behind Joan, who came in second? ***TINA***

Instruction:
Talk through the 4 steps process discussed in the TE of page. 250 or Student book pg. 250.

Understand - Have students restate the problem in their own words.

Plan - Discuss why ***draw a picture*** and ***act it*** out are good strategies to solve the problem.

- Can your write a number sentence to solve the problem? Explain. **NO NUMBERS ARE NOT GIVEN.**
- Which of the strategies would you choose if you were to solve the problem independently? ***DRAW A PICTRUE.***

Solve – Point out that sometimes a problem sounds complicated if it is read all at once. Remind students to read 1 sentence at a time to arrange the children.

- What kind of numbers are used to describe each child's position in line? ***ORDINAL***
- Have students look at the strategies listed in the box on page 251 and explain why the other strategies could not be used to solve the problem. ***ANSWERS WILL VARY.***

Look Back - HAVE STUDENTS SUGGGEST WAYS TO CHECK the answer. Read the sentences from last to first to check the order.

Talk about the WHAT IF question.

- What is Gilbert's position in line? **1st** Why? **James was first, so if Gilbert gets in front of him, Gilbert becomes first.**
- Suppose Megan decides to move between Gilbert and James. In what order are the children standing in line? **Gilbert, Megan, James, Miguel, kim**

Wrap Up:
Challenge students to describe the steps needed to choose a strategy.

- Read the problem carefully
- Determine the information given.
- Determine the question to answer.
- Review the problem-solving strategies.

- Choose the most efficient strategy to answer the question.

Exit Assessment question:

- There are 4 books on a shelf. The adventure book is between the biography and sports book. The action book is to the left of the biography. The biography is not at either end. Which book is at the right-hand end? Sports book

Day 5: Lesson 8.6 Dividing by two digit numbers pg. 252 – 253

Cooperative Partners: Motivate
Materials: For each group of students – 7 paper plates and 84 counters

Student 1 will use counters to model the problem:

- Jose sends a newsletter to each of the 84 members of a computer group. He addresses the same number of newsletters each day for 7 days. How many does he address in a day? **12 newsletters.**

Student 2 will write a number sentence to solve the problem. $84 \div 7 = 12$

Partners write an answer to this question.
How is division used in the problem? **To find how many in each group.**

Teach: This lesson continues to help students understand the different roles of variables, which is critical to their success in algebra.

Discuss the warm up questions. Guide students to conclude that one must multiply the quotient by the divisor and the answer should match the dividend. Read about making communication collages. Discuss Steps 1- 4.

How can you tell how many digits will be in a quotient? **Determine where to start, and then place a digit over number thereafter.**

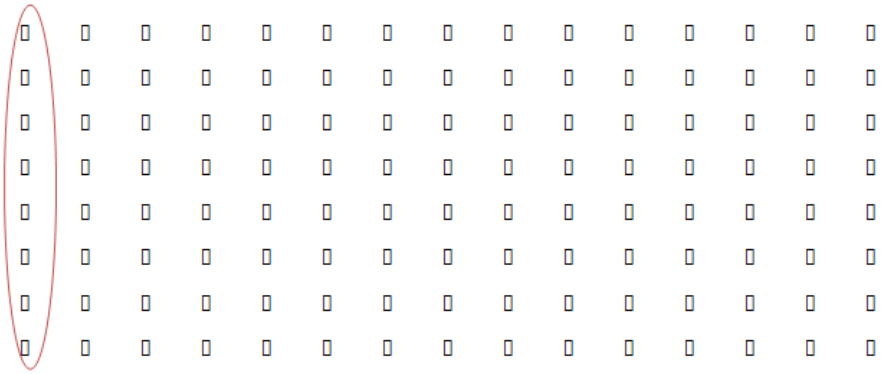
Have students explain the following division problems step-by-step at the chalkboard.

a. $4 \div 48 = 12$ b. $3 \div 51 = 17$ c. $7 \div 94 = 13$ r.3

Check for understanding: For exercises 5-8 you may want students to check their quotients by using a calculator.

Wrap up:
Summarize by discussing the wrap up question. A possible response from students. You add the remainder to the product. If that total is the same as the dividend, you know the quotient is correct.

Instructional Strategies:



(Marzano: Pair/Share) Students should recognize that as the dividend gets larger, the array method will be more and more difficult.

Present another problem, this one with a 4-digit dividend and 1-digit divisor; for example, 1,284 ÷ 3. Tell students that it takes too much time to draw an array for thousands of things. Ask if they can think of a way to use what they know about multiplication to solve the problem; *have them discuss some questions they might ask to solve the problem.* After having students share some ideas, help them think about the division problem by asking, "How many groups of 3 are in 1,284?" Ask students to write this as a multiplication equation (1,284 = *n* ⍰*Ask them to find the number of groups using what they know about multiplication and division.*

You can also use objects to represent different place values. For example, 1,284 could be represented using a triangle as 1,000, a square for each hundred, a stick or rod for each ten, and dots for each one. How would this be divided into 3 equal groups? (An illustration follows the lesson plan.) Students need to see several representations of what it means to divide prior to working with the algorithm.

Provide one other example like the one above. Be sure you identify problems that have no remainder. At this grade level and at this time of the year, students need multiple opportunities to use drawings and representations.

Guided Practice:

Students should complete three or four problems like those above, two involving 3-digit dividends and one or two with 4-digit dividends. Work through the problems using the strategies presented above.

Formative Assessment:

Revisit the Focus Question with students. *Have them explain to a partner how to use their understanding of multiplication to solve a division problem. Ask them to include an example to explain their thinking.*

Closure:

Explain to students that there are many ways we can show a division problem using pictures, arrays, or other models. *Have them record and discuss the methods they've used to this point, providing an example of each.*

Assessment:
Chapter Test pg. 254 # 1-24

Accommodations/Modifications:
For students who are struggling with the concepts in the lesson, provide problems with smaller numbers and have them work with counters or other manipulatives to better understand the concept before moving to larger dividends.

For students in need of extension, have them try to apply their understanding from this lesson to problems with 2-digit divisors. Students could also try to apply the area model of multiplication to the division problems.

Peer tutoring, extend time for completion,
Simplified instructions
Modified assessments

Resources (Textbook and Supplemental):

Division with Arrays Video

Support for 4.NBT.5 This site contains multiple sources and Web sites to support multiplication.

Support for 4.NBT.6 This site contains multiple sources and Web sites to support division.

Support for 4.MD.3 This site will support building ideas for perimeter and area in this grade.

Quotient Cafe This is an application on finding quotients.

Math Playground Tutorials and examples of key concepts

Mathematics Plus:
Lesson 8.1 pg. 242-243
Lesson 8.2 pg. 244-245
Lesson 8.3 pg. 246-247
Lesson 8.5 pg. 250-251
Lesson 8.6 pg. 252-253
Lesson 8.7 pg. 256-257
Lesson 8.8 pg. 258-259
Lesson 8.9 pg. 260-261

Quarter: 2nd

Guam District Level Lesson Plan

Content: Math	**Grade/Course**: 4th	**Timeline**: week 3

Standard(s):

4.MD.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor

DOK 1: Find the area of a regular polygon with length and width given.

DOK 2: The rectangular sign has an area of 32 in. The length of the sign is 8 in. How wide is the sign?

DOK 3: Create 2 different polygons with an area of 64 in.

I can…

I can find the area of rectangles when either the length or the width is missing.

I can find the perimeter of rectangles when one side length is missing.

I can solve real world problems involving perimeters and areas of rectangles.

I can explore perimeter, using nonstandard units of length.

Lesson Objective(s):

In this lesson, students will be able to

- Students will develop flexibility in breaking numbers apart to have an understanding of the properties of operations and/or the relationship between multiplication and division.
- To find the perimeter of an object, using the metric units.

Vocabulary:

- Product
- Quotient
- Rule
- Area
- perimeter

Focus Question(s):

- What ways can students illustrate and explain their use of the multiplication/division properties?
- How do you apply the area and perimeter formulas for rectangles in real world and mathematical problems?

8 Mathematical Practices:	
☐ 1. Make sense of problems and persevere in solving them. ☐ 2. Reason abstractly and quantitatively. ☐ 3. Construct viable arguments and critique the reasoning of others. ☐ 4. Model with mathematics. ☐ 5. Use appropriate tools strategically. ☐ 6. Attend to precision. ☐ 7. Look for and make use of structure. ☐ 8. Look for and express regularity in repeated	

Instructional Strategies (EL, SIOP, SPED, Marzano)

Introduction Lesson: https://learnzillion.com/lesson_plans/5194

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Motivate: Cooperative Partners
Materials: 6 square tiles, dot paper (optional)

Tell students that each side of the square is 1 unit long. Therefore, the distance around the square is 4 units.
Have students work in pairs to arrange the 6 tiles so that distance around the figure is 10 units; 24 units. Have partners draw the figures on dot paper.

Teach: Have students work in cooperative groups to complete the tasks on page 218. Have each group report its findings. Conclude the discussion with the question.

- In everyday life, when may it be necessary to find a perimeter? **Possible responses: to fence a yard, frame a picture, put moulding around a room.**

Making the Connection: You may want students to work with a partner to complete exercises 1-2. Discuss the different rectangles.

- Can you find a pattern to help find the 6 rectangles? **Yes, start with a length of 11 and a width of 1. For each new rectangle, decrease the length by 1 unit and increase the width by 1 unit.**

Critical Thinking Question:
- How many addends describe the perimeter of a triangle shape? **3** an octagonal shape? **8** Explain. **There is 1 addend for each side of the shape.**

Independent work: Students work on problems #3-16. Work together to correct after completing and

fix up errors.

Wrap up: Summarize by challenging students with this question: If you know the perimeter of a square, how can you find the length of each side? Guide students to conclude that you can divide the perimeter by 4.
Extra practice or homework: Workbook practice Lesson 7.5 / Reteaching WB Lesson 7.5/ Worksheets Common core connections.

Day 2: Lesson 9.3 pg. 280-282 Exploring Area / Perimeter

Quick Check questions: Review : Find the Perimeter of each figure / Draw

- Rectangle: 5cm by 3cm _____ (16cm)
- Square: Side of 7 cm _____ (28 cm)
- Rectangle: 6cm by 4 cm is _____ (20 cm)
- Pentagon: each side 5 cm _____ (25 cm)

Materials: square tile or pieces of tagboard

Have students work in cooperative groups to complete the tasks on pages 280-281. Have each group explain how to find area.

- For which figures was it possible to multiply to find area? **For rectangular figures**
- When is it necessary to count square units to find area? **When figures are irregularly shaped**
- In everyday life, when may it be necessary to find area? **Possible answers: to paint walls, buy carpet, plant grass seed, purchase fertilizer**

Independent work: pg. 282 # 5- 21

Day 3: Analyze Data: pg. 291 Group activity

Motivate: Write this situation on the chalkboard.

- Mr. Brophy wants to enlarge his garden. His present garden is square and has an area of 4 square feet. What size square should he make to increase his garden area to 16 square feet? **4ft x 4 ft**
- How does doubling the sides of a square affect its area? Area becomes 4 times greater.
- If the length and width of any rectangle is doubled, will the area always be 4 times greater? **Yes.**

Teach: Cooperative partners

Independent work: Have pairs of students complete pg. 291 and discuss their solution with the class.

Pairs can check their solution by comparing different rectangles with other pairs of students.

Wrap up: Why is it important to analyze data to solve a problem? **Possible answer: to make the best decision for the situation based on the given information.**

What are the situations in your everyday life that might require you to analyze data? **Possible answer:**

Comparison shopping, materials and time required for home projects, reading bus schedules to determine when to leave for bus.

Day 4-5: Exploring Perimeter H20 – H21

Motivate: Whole Class Activity

Mark a chalk line across the front of the classroom. Ask each student to estimate how many walking steps long the line is; then have several volunteers "walk the line" to test their estimates.

Discuss why measurements in walking steps vary.

- When would that be a good way to measure length? **To find an approximate distance, or to compare distances**
- When would it be a poor way? **To find a careful measurement, as for carpeting needed**

Teach:
Have students make chains of paper clips to approximate the first measurement.

You may wish students to work with partners to complete the activities on page H20 and exercises 1-3 on page H21. Before they begin, help them plan how to record results.

After students complete pages H20 – H21, establish with students that they used nonstandard units of measure to help them understand the process of measuring PERIMETER.

- Why did you use the width of your hand instead of connecting cubes to measure your desk? **The larger unit was better.**
- When are small units better? **When the length to be measured is short.**
- In particular, discuss exercise 4.

Wrap up:
Materials: paper clips, connecting dots

Have students hold up a YES or NO response card.

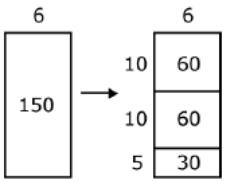
1. Would you measure perimeter if you wanted to know how far it is ACROSS the playground? **NO**
2. Would you measure perimeter to find how far it is AROUND the playground? **YES**
3. Can you always add to find PERIMETER? **YES**

There is an emphasis in this Big Idea on the use of models, in particular the area model, to build an understanding of the concepts. It may be necessary to introduce the area model with smaller numbers, especially for students who are struggling to model multiplication and division. This may extend down as far as 1-digit by 1-digit numbers as necessary. For larger numbers, students might be encouraged to decompose the numbers into their place values (expanded form); as such, it may be beneficial to use a place value chart to help students in this process. You can use examples such as Using Area to Multiply to show multiplication using and area. These are some additional sources: Classroom Video for Multiplying 2 Digit by 1 Digit Using Area , Classroom Core Lesson on Using Area to Multiply , Using Area to Multiply.

Division is much harder for students as they move beyond the simple facts. It is important for students to have models and strategies that complement and use place value well before they ever move into the standard algorithm. Students should have experiences with base-ten blocks, models using place value, and building connections to multiplication to build the meaning of division. Look at these examples as examples of division models.

Here is an example of division using area and division as repeated subtraction.

150 ÷ 6



a. 150 $\qquad$ 150 ÷ 6 = 10 + 10 + 5 = 25

- 60 (6 x 10)
90
- 60 (6 x 10)
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- 30 (6 x 5)
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You can further explore division using these resources: Dividing by Single Digit Divisors Using Area and Multiplying and Dividing Using Area PowerPoint

As students explore the geometry concepts in this unit, they should be encouraged to draw models to represent the problems and label them carefully. Some students will want to make their drawings perfect scale representations of the problem; this is to be discouraged, and while some scale is reasonable, they are simply quick representations that will help identify what is known and what is unknown.

Instructionally, graph paper is a must so that students are connecting that perimeter is the line around the shape while area is the space inside the perimeter. They trace the perimeter with a pencil, and this is linear and can be added. Area is colored in and fills a space.

Student 1	**Student 2**	**Student 3**
592 divided by 8 There are 70 8's in 560 592 - 560 = 32 There are 4 8's in 32 70 + 4 = 74	592 divided by 8 I know that 10 8's is 80 If I take out 50 8's that is 400 592 - 400 = 192 I can take out 20 more 8's which is 160 192 - 160 = 32 8 goes into 32 4 times I have none left I took out 50, then 20 more, then 4 more That's 74	I want to get to 592 8 x 25 = 200 8 x 25 = 200 8 x 25 = 200 200 + 200 + 200 = 600 600 - 8 = 592 I had 75 groups of 8 and took one away, so there are 74 teams

592	
−400	50
192	
−160	20
32	
−32	4
0	

Mathematical Practices

Make sense of problems and persevere in solving them: Solving multi-digit multiplication and division problems requires students to both apply their understanding of the underlying concepts, and then to stick with the problem until they find the solution. This can be challenging, especially for students who are struggling with the concepts, but perseverance is a skill that is critical to success in mathematics (MP 1).

Reason abstractly and quantitatively: Here, again, students must apply their understanding of the concepts in a coherent manner, using both concrete and abstract models (MP 2).

Model with mathematics: Students will use models as they explore and solve problems involving multiplication, division, area, and perimeter (MP 4).

Look for and express regularity in repeated reasoning: The repetition in the process of multiplying and dividing larger numbers is an opportunity for students to develop this important skill (MP 8).

Accommodations/Modifications:
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Resources (Textbook and Supplemental):
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Support for 4.NBT.5 This site contains multiple sources and Web sites to support multiplication.

Support for 4.NBT.6 This site contains multiple sources and Web sites to support division.

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Quotient Cafe This is an application on finding quotients.

Math Playground Tutorials and examples of key concepts

Quarter: 2nd

Guam District Level Lesson Plan

Content: Math	**Grade/Course**: 4th	**Timeline**: week 4 Nov. 9-13

Standard(s):

4.MD.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor

DOK 1: Find the area of a regular polygon with length and width given.

DOK 2: The rectangular sign has an area of 32 in. The length of the sign is 8 in. How wide is the sign?

DOK 3: Create 2 different polygons with an area of 64 in.

I can…

I can find the area of rectangles when either the length or the width is missing.

I can find the perimeter of rectangles when one side length is missing.

I can solve real world problems involving perimeters and areas of rectangles.

I can explore perimeter, using nonstandard units of length.

Lesson Objective(s):

In this lesson, students will be able to

- Students will develop flexibility in breaking numbers apart to have an understanding of the properties of operations and/or the relationship between multiplication and division.
- To find the perimeter of an object, using the metric units.

Vocabulary:

- Product
- Quotient
- Rule
- Area
- perimeter

Focus Question(s):

- What ways can students illustrate and explain their use of the multiplication/division properties?
- How do you apply the area and perimeter formulas for rectangles in real world and mathematical problems?

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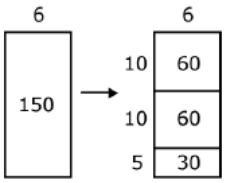

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Quotient Cafe This is an application on finding quotients.

Math Playground Tutorials and examples of key concepts

Quarter: 2nd

Guam District Level Lesson Plan

Content: Math	**Grade/Course**: 4th	**Timeline**: NOV. 16- 20

Standard(s):

4.OA.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. **DOK 1: A pattern is created with a number by adding 6 each time. Which of these number patterns follows that rule?**

DOK 2: Predict the next three numbers in the pattern using the rule add 3.

DOK 3: Given the rule "multiply by 2" and the starting number 2, predict the first 5 terms in the pattern and identify features of those terms.

4.NF.1 Explain why a fraction *a*/*b* is equivalent to a fraction (*n* × *a*)/(*n* × *b*) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

DOK 1: Name the equal parts of each figure. Shade in 1/6. 4.NF.1

DOK 2: Model two fractions that are equivalent to 1/2.

Look at the fractions below.

½ = 2/4 = 6/12

Which comparison of the fractions is true.

a. 1/2>2/4
b. 2/4 < 6/12
c. 1/2 = 6/12
d. 2/4>1/2

DOK 3: Explain how the two fractions are equivalent. 3/5 = 18/30

Lesson Overview:	**Lesson Objective(s)**:
Students have previously explored most of the concepts in this Big Idea. They will be familiar with multiplication and division of smaller numbers, and also with the ideas of area and perimeter.	In this lesson, students will be able to • To use the fractions to represent part of a whole or part of a group. • To read and write a fraction as a part of a whole
Vocabulary: • Fraction • equivalent	**Focus Question(s)**:

• fractions • numerator • denominator • whole • part • number line • line plot **8 Mathematical Practices:** ☐ 1. Make sense of problems and persevere in solving them. ☐ 2. Reason abstractly and quantitatively. ☐ 3. Construct viable arguments and critique the reasoning of others. ☐ 4. Model with mathematics. ☐ 5. Use appropriate tools strategically. ☐ 6. Attend to precision. ☐ 7. Look for and make use of structure. ☐ 8. Look for and express regularity in repeated	• How will students know what technique to use to add, subtract, compare, and find equivalent fractions? • Will students be able to turn a fraction into decimals and put decimals on a number line? • How will students know what technique to use to add, subtract, compare, and find equivalent fractions? • Will students be able to turn a fraction into decimals and put decimals on a number line? Essential Questions: • How can I represent fractions in multiple ways? • Why is it important to compare fractions as representations of equal parts of a whole or of a set? • Why is it important to understand and be able to use equivalent fractions in mathematics or real life? • How are equivalent fractions generated? • How will my understanding of whole number factors help me understand and communicate equivalent fractions? • How are different fractions compared? • Fractions are numbers. • Fractions are an integral part of our daily life and an important tool in solving problems. • Fractions are an important part of our number system. • Fractions can be used to represent numbers equal to, less than, or greater than 1. • There is an infinite number of ways to use fractions to represent a given value. • A fraction describes the division of a whole (region, set, segment) into equal parts. • Fractional parts are relative to the size of the whole or the size of the set. • The more fractional parts used to make a

	whole, the smaller the parts.

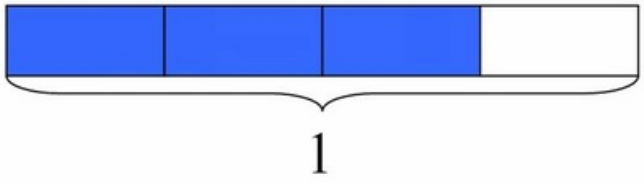
Instructional Strategies: (EL, SIOP, SPED, Marzano)

Online Video Introduction to Fractions:

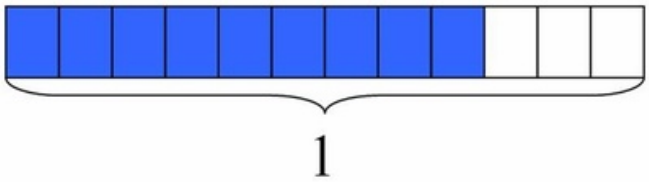
https://learnzillion.com/lesson_plans/9049-recognize-equivalent-fractions-using-area-models

Task

a. The rectangle below has length 1. What fraction does the shaded part represent?



b. The rectangle below has the same length as the rectangle above. What fraction does the shaded part represent?



c. Use the pictures to explain why the two fractions represented above are equivalent.

Questions to ask:

- What are the two fractions?
- What is the relationship between the two fractions?
- How did you use the visual to compare each fraction? >
- Why are you able to use the models to compare the fractions? (Refers to the same whole)

Pull out a scholar's explore work that had unequal parts OR used a different sized in their visual for Part B.

- Looking at the scholar's visual, what do we notice about their representation? (If not, push to – are the parts of the visual equal? Are they referring to the same whole?
- **(Teacher corrects misconception by drawing visuals with different sized wholes and same shaded parts – e.g.: 1/3 of different sized whole)**
- \

Today, we're going to be playing Capture Fractions. This game is modeled on the familiar game of War. In this version, the person with the larger fraction wins each round. Show the directions to the class on the ELMO and begin playing with co-teacher. When each person turns, their card, present it in the form of a problem like the one below so that scholars practice using the inequality signs.

Compare and $\frac{5}{6}$ using >,<, or =.

After teachers are done modeling, pose the following questions:

- **How do the visuals help you compare the fractions?**
- **How did the teacher know that one fraction was greater than the other? (MUST REFER TO THE SAME WHOLE and there was more shaded in one fraction than the other)**

Model using the visuals on the back of the cards to solve.

As students play, tell them they will be recording equivalent fractions that come up during the game on SAB pg. 33.

Apply:

Have fraction tiles at hand for this activity to supplement the fraction cards.
Students play capture fractions.

Strategic Interruption during Apply: Put up two cards that kids were able to compare without the pictures and have them quickly explain why. (*take student responses*) You're not always going to have visuals in front of you to use (and even so, we know visuals are sometimes tricky because…) As we continue through this investigation, we're going to be thinking about other strategies to use. As you continue to play, think of other ways you could determine which fraction was larger if you didn't have a visual to look at.

Exit questions:

Quickly ask students what equivalent fractions they found. **How do you know they are equivalent, aside from looking at the pictures?**

Today, we primarily used visuals to compare fractions.
What other strategies might you use to compare fractions? *(Start a poster titled "Strategies for Comparing Fractions")*
Were there any challenging fractions to compare? How did you and your partner decide which fraction was greater?

Over the next few days, we'll think about other mathematical ways to compare fractions.

Day 2-3: Exploring Fractions Lesson 10.1 pg. 318 – 319 Textbook Mathematics Plus (orange book)

I can use fractions to represent part of a whole or part of a group (write on the board)

THINK PAIR SHARE: How many times do you fold a piece of paper to get: Materials: Paper

1. 2 equal sections? (1 time)
2. 8 equal sections? (3 times)
3. 4 equal sections? (2 times)
4. 16 equal sections? (4 times)

Motivate: Cooperative Partners:
Materials: Unlined paper, blue crayon

Have students fold a sheet of paper into 2 equal parts and color 1 part blue.

- What part of the paper is shaded blue? (1 half)

Partners take turns folding sheets of paper into equal parts, coloring 1 part blue, and recording the results in the table

Number of folds	Parts blue	Total parts	fractions
1	1	2	½
2	1	**4**	**¼**
3	1	**8**	**1/8**
4	1	**16**	**1/16**

Teach: Read about Miss Allen's bulletin Board. (TE pg. 318)

Below the title, how many equal parts are there in Miss Allen's bulleting board? (4 equal parts)

Building Understanding:

Materials: For each group of students – paper, scissors

Have students work in cooperative groups to complete the task on page. 318. Have each group report its findings. Conclude the discussions with these questions.

- What fraction shows 4 out of 4 parts shaded? 4/4
- What does 4/4 equal? **1 whole**
- To find a fraction of a whole, the parts must be the same size. Is this true of parts of a group?

Explain. **(Not necessarily; the baby is ¼ of a family of 4)**

Making the Connection: Have students read and write the fractions for examples a-d.

Critical thinking question: When a fraction names part of a whole or part of a group, how does the numerator compare to the denominator? **The numerator can never be greater than the denominator.**

Independent work: Students work on page. 319 # 1-11 Go over the answers together as a group

Summarize/ assessments: Summarize by asking students to explain the difference between fractions representing part of a whole and part of a group.

Extra Practice: Lesson 10.1 / pg. H70

Day 4: Lesson 10.2 Fractions Part of a whole (pg. 320 – 321)
Motivate: Paper strip, blue and red crayons

Have students fold the paper strip into 4 equal parts and color 1 part blue and 1 part red.

- What fraction names the part colored blue? **¼ red? ¼**
- What fraction names the parts not colored? **2/4**
- What fraction names the parts that are colored red or blue? **2/4**
- How many parts are not colored red? ¾ not colored blue? **¾**
- Are the parts colored equal to the parts not colored? **Yes**

Teach: Discuss the warm up questions. Elicit from students that the pizzas be different sizes.

Read about the pizza.

- What does the denominator tell you? **Number of equal parts the whole pizza is divided into the numerator? Number of pieces of pizza each person eats.**
- A medium size pizza is divided into 6 equal pieces. If 3 people share the pizza equally, what fraction of the pizza will each get? **2/6** What fraction will 2 people get? **4/6**

Cooperative learning Groups:
Check for understanding: Discuss answers for exercises 1-7

For exercises 1-4. Which figures have the same number of parts shaded as not shaded? (THINK PAIR SHARE) **Figures in exercises 1and 4** (students explain their answers to each other)

Summary Wrap up: Summarize by discussing the WRAP UP questions. A possible response is that there are 4 equal parts the size of ¼ that together form a whole.

Independent work: Exercises #8-27 with critical thinking (pair with someone to solve)

Exit questions:
Look at the figure in Exercise 23.

1. What part is shaded? 4/6
2. What part is not shaded? 2/6
3. What fraction names the whole figure? 6/6

Day 5: Review and assessments:
Lesson 10.1 / Lesson 10.2 Pg. H70
See worksheets attachments for additional review/ assessments.

Accommodations/Modifications:
Peer tutoring, extend time for completion,
Simplified instructions
Modified assessments

Resources (Textbook and Supplemental):

Lesson 10.1 Pg. 318-319 Exploring Fractions
More Practice Lesson 10.1, pg. H70 (use as assessment)
Lesson 10.2 Fractions Part of a Whole
Extra Practice: Lesson 10.2 pg. H70 (use as assessment)

Resources & Links to Technology

Illuminations: Equivalent Fractions

Finding Equivalent Fractions

Decimal Number Unit of Study

Another Online Fraction Strip Interactive model that can be used to show equivalence

Fraction Models Lessons that connect decimals and fractions

Quarter: 2nd

Guam District Level Lesson Plan

Content: Math	**Grade/Course**: 4th	**Timeline**: Week 6 Nov. 23-27

Standard(s):

4.NF.5 Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.[4] For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.

- **DOK 1: 3/10 = ?/100 (30)**

Lesson Overview:
This lesson builds on students' work with generating equivalent fractions as a strategy to add fractions with denominators of 10 and 100. Students are presented with different fractions of a pound of various candies at The Sweet Tooth candy store where they must brainstorm different combinations of candies while staying within the weight limit. By generating equivalent fractions, students will be able to find common denominators and add fractions. This lesson builds toward students' work with fractions in grade 5.

Lesson Objective(s):
In this lesson, students will be able to

- To read and write a fraction as part of a group (lesson 10.3)
- To find a fractional part of a group (L 10.4)
- To explore equivalent fractions, using models (L 10.6)

Vocabulary:

8 Mathematical Practices:

☐ 1. Make sense of problems and persevere in solving them.
☐ 2. Reason abstractly and quantitatively.
☐ 3. Construct viable arguments and critique the reasoning of others.
☐ 4. Model with mathematics.
☐ 5. Use appropriate tools strategically.
☐ 6. Attend to precision.
☐ 7. Look for and make use of structure.
☐ 8. Look for and express regularity in repeated

Focus Question(s):

- How will students know what technique to use to add, subtract, compare, and find equivalent fractions?
- Will students be able to turn a fraction into decimals and put decimals on a number line?
- How will students know what technique to use to add, subtract, compare, and find equivalent fractions?
- Will students be able to turn a fraction into decimals and put decimals on a number line?

Instructional Strategies: (EL, SIOP, SPED, Marzano)

Using Online Lesson Task

https://learnzillion.com/lesson_plans/65-add-two-fractions-with-denominators-of-10-and-100-using-equivalent-fractions

Strategies to use before the Lessons: Day 1 Introduction activity

Possible Guiding Questions:

- What do you know about fractions that might help you solve this task?
- What kinds of models or strategies could we use to help us solve this task? Explain your thinking.
- What do you notice about the fractions on this "Specialties" menu? How could this help you solve the task?
- Do you think equivalent fractions could help you solve this task? Explain your thinking.
- Can you name an example of a combination of candy that Hunter and Dan could choose? How much would it weigh? Explain your thinking.

(After writing down some combinations): Who can name a combination of candies where Hunter's candy weighs more than Dan's candy? Who can name a combination of candies where Dan's candy weighs more than Hunter's candy?

Task:

Students are expected to engage in productive struggle as they work to brainstorm different weight combinations of candy by adding them together using equivalent fractions. These questions are intended to be used with individual students or small groups as they work on the task.

General Task Questions:

- What is the task asking you to do?
- What information do you have?
- What do you know about fractions that might help you solve this task?
- How might you organize your work so you could explain your solutions to a classmate?
- Explain how you know the combinations you chose do not go over the weight limit.
- What might be another combination Hunter or Dan could purchase? Explain.

Task-Specific Questions:

- What types of models might help you if you get stuck when you are adding the weights together?
- What steps should you take to add your fraction weights together?
- Would it help us to think about how many hundredths are in one tenth when we are trying to add our fraction combinations together?
- How could you keep track of the different candy weight combinations you make for Hunter and Dan?
- What could you do if you add two candy weights together, but then add a third weight and it goes over your limit?
- Are there some candy weight combinations that go over the weight limit of 90/100? Explain with at least one example.
- Are than any candy weights that are equivalent with one another? If so, what are they and how do you know they are equivalent?

Extension: Could Hunter and Dan get more than one serving of a particular type of candy, but still have three different total kinds of candy and stay in the weight limit of 90/100? Explain your thinking with more than one example.

Common Misconceptions/Errors:

- Students may add the numerators and denominators when adding their weight combinations (for example, 6/10 + 20/100 + 5/10 = 31/120).
- Students may think they can add the numerators without thinking about the denominators, for example, 20/100 + 2/10 = 22/100.
- Students may add a zero to the denominator, but not to the numerator when converting from a fraction with a 10 in the denominator to a 100, for example, they may say that 1/10 = 1/100.

Students may think that they can not do anything to make it so they can add a fraction with a denominator of 10 and a fraction with a denominator of 100. In this case, they would need more practice generating equivalent fractions with denominators of 10 and 100. They would also benefit from using the Model Exploration Mat to help them discover that a fraction with a denominator of 10 and a fraction with a denominator of 100 can be added when a common denominator is found.

Possible Solution Paths:

- Hunter could choose: Jellybeans 6/10 kg, Gummy Worms 20/100 kg, and Candy Hearts 1/10 kg.
  Since 6/10 = 60/100 and 1/10 = 10/100, we can replace these fractions with an equivalent fraction so all the fractions have a denominator of 100. 60/100 + 20/100 + 10/100 = 90/100.
- Hunter could choose: Candy Corn 5/10 kg, Chocolate Hearts 1/10 kg, and Cinnamon Bites 9/100 kg.

Since 5/10 = 50/100 and 1/10 = 10/100, we can replace these fractions with an equivalent fraction so all the fractions have a denominator of 100. 50/100 + 10/100 + 9/100 = 69/100 kilograms.

- Dan could choose: Fruit Chews 2/10 kg, Cinnamon Bites 9/100 kg, and Peanut Butter Cups 38/100 kg.

  Since 2/10 = 20/100, we can replace 2/10 with its equivalent fraction 20/100 so all the fractions have a denominator of 100. 20/100 + 9/100 + 38/100 = 67/100 kilograms.
- Dan could choose: Chocolate Hearts 1/10 kg, Candy Corn 5/10 kg, and Fruit Chews 2/10 kg.

  Since 1/10 = 10/100, 5/10 = 50/100, and 2/10 = 20/100, we can replace these fractions with an equivalent fraction so all the fractions have a denominator of 100. 10/100 + 50/100 + 20/100 = 80/100 kilograms.
- Some students may find it easier to add two fractions at a time and then add the third fraction to that sum, for example, in the problem 60/100 + 20/100 + 10/100, students may add 60/100 + 20/100 = 80/100, then take 80/100 + 10/100 = 90/100 kilograms.
- Some students may need access to the Exploration Mat where they can use the grids or number lines to help them figure out equivalent fractions.

Some students may use the grids or number lines to help them add the fractions together and make sure they do not go over the limit of 90/100.

Task Debrief

Use the debrief to facilitate classroom discussion about the task, and share student approaches to the task. A possible task solution is included.

Possible Guiding Questions:

- How did you organize your work to keep track of the different combinations of candies for Hunter and Dan?
- What did you do to make sure you did not go over the weight limit of 90/100?
- What models or strategies did you use to add the candy weights together?
- Did you find any candy combinations that went over the weight limit? If so, what did you do try doing next?

Are there other possible candy combinations that Hunter and Dan could choose and still stay within the weight limit?

Big Idea(s)

The intent of the Big Idea(s) is to summarize the important mathematical concepts the task is meant to elicit. Consider asking students to explain the concepts on each slide in their own words and to connect each to the relevant part of the task.

Closing

Indicators of understanding:

-
- Understands that finding a common denominator helps to add fractions with denominators of 10 and 100.
- Understands that when adding fractions with denominators of 10 and 100, a strategy for finding a common denominator is to replace a fraction with a denominator of 10 with an equivalent fraction with a denominator of 100, so that both fractions will have a denominator of 100.
- Recognizes that finding a common denominator is important because if a common denominator is not found, the fractions being added represent parts of different wholes.

Recognizes that 1/10 is equal to 10/100 and this fact can be applied when converting from tenths to hundredths.

Slide 14/20

Formative Assessment

Success criteria:

- Recognizes that generating equivalent fractions is one strategy that can be used to add fractions.
- Understands that a common denominator must be determined in order to add fractions.
- Recognizes that "sum" is the answer to an addition problem, so they must add each answer to choice in order to find all the fractions with a sum less than 65/100.
- Understands that 1/10 = 10/100 and applies this when converting from fractions with a denominator of 10 to fractions with a denominator of 100.
- Understands that when adding fractions the numerators can be added if they have the same denominator, but denominators are not added since a denominator represents how many parts make up the whole for a particular fraction.

Day 2: Lesson 10. 3 Fractions Part of a group (pg. 322-323)
Cooperative Groups: Students work in groups of various sizes. Have each group use fractions to describe the part of their group consisting of boys, girls, students wearing shorts, and so on. Then write 3 questions that can be answering using the fractions.

Group present their questions to the class and have volunteers respond.

Multicultural note: The people of Finland use their skiing skills in a game called Orienteering players find their way through the wilderness to an objective miles away, taking only a compass, a map, and some food. The game requires strength, speed, and intelligence.

Teach: Discuss the WARM UP question. Students should conclude that it represents the total number of parts.

Read about the ski race. Emphasize that a fraction can name part of a group as well as part of a whole.

- What fraction of classmates entered the ski race? 7/7
- Suppose 3 more girls enter the ski race. What fraction of the skiers would be girls? 7/10

Independent work: Have students also write a fraction for the part not shaded for exercises 1-4. Have students compare their drawings for exercises 5-8 . Work on #9-32 and discuss their answers

Day 3: L.10.4 Exploring – Finding a fraction of a number pg. 324 – 325

Quick Check: Copy on the board and have students solve the problems (3 min activity)
Write the fraction:

1. three fourths
2. four sevenths
3. six ninths
4. one third

Cooperative partners:
Materials: 12 counters for each pair (or group)
Partners work together to make models of all of the different ways to separate 12 counters into equal groups. Take turns drawing pictures of the models and writing a fraction for one of the equal groups.

Teach:
Materials – Counters
Read about the 5 basic food groups. Have volunteers explain into which food groups the foods thye had for breakfast fall.

Building understandings:
Have students work in cooperative groups to complete the tasks on page 324. Have each group report its findings. Conclude the discussion with these questions. (post on the white board)

- What told the number of equal groups to form? **Denominator**

- What does a numerator tell? **Number of fractional groupings made from a set**

Making the connection:

- If the numerator is 1, how many steps are needed to find the answer? **1 step** why? **Because the quotient is the number in 1 part**
- Is a fraction of a number always less than the number? **Yes**

Use multiplication and division to find the fraction of each number.

1. ¾ of 160 = _____(120)
2. 7/8 of 720 = _____ (630)

Checking for understanding:
You may want students to work with a partner to complete Exercises 5-12. Have students share their drawings for exercises 12 with the class.

Summarize: Have students orally explain how to find a fraction of a number using multiplication and division.

Day 4: Lesson 10.6 Equivalent Fractions Pg. 328-329

Motivate: Whole class
Materials: For each student – paper strip, crayon

Have students fold a paper strip in half, color 1 of the halves, and fold the paper in half again.

- How many equal parts are in the paper strip? **4 equal parts**
- What fraction of the strip is colored? **2/4 , or ½**
- Are 2/4 and ½ the same amount? **Yes**

Teach: Read about Mary's and Martha's granola bars. Discuss the meaning of equivalent fractions, and have students write it in their math notebooks.

Building understanding:
Materials: assorted materials for making fraction pieces

Have students work in cooperative groups to complete the task on page 328. Have each group report about its discoveries. Conclude the discussion with these questions,

- What is the number relationship of the numerator and denominator for fractions equivalent to ½ ? Numerator is half the value of the denominator, or denominator is twice the value of the numerator.
- Give the missing numerator or denominator for the following fractions equivalent to ½ .
  a. ?/10 = 5 b. 8/ ? = **16** c. ? /24 = **12** d. 9/? = **18**

Independent work: #1-10 / mixed review for extra practice
You may want students to work with a partner to complete exercises 1-10 and then explain their answers.

Summary question: Ask students to describe several ways to determine whether two or more fractions are equivalent.

Day 5: Assessments / Review
Pg. 330

Accommodations/Modifications:
Peer tutoring, extend time for completion,
Simplified instructions
Modified assessments

Practice exercises:
Slide 15 Set A

Use these exercises for students who do not fully understand the big idea(s) of the lesson. Students will start by practicing generating equivalent fractions and then apply this skill to some simple fraction addition problems with denominators of 10 and 100. If a student still needs model and visual supports then allow the student to use the Model Exploration Mat which can be found in the Supplementary Resources section.

Slide 16 Set B

Use these exercises for students who showed understanding but would benefit from added practice. Students will still apply the skill of generating equivalent fractions to add fractions with denominators of 10 and 100, but will take it one step further by having to compare the sums. Using fractions with denominators of 10 and 100, students will then create their own sum less than a given amount.

Slide 17 Set C

Use these exercises for students who displayed strong understanding of the big idea(s) and are ready to develop a deeper understanding. Students will be able to explore adding fractions with denominators of 10 and 100 through problem solving.

Resources (Textbook and Supplemental):
https://learnzillion.com/lesson_plans/65-add-two-fractions-with-denominators-of-10-and-100-using-equivalent-fractions/handout

Mathematics Plus Orange book

Lesson 10.3 Pg. 322- 323
Lesson 10.4 pg. 324-325
Lesson 10.6 pg. 328 – 329
Assessments: Review and Maintenance Pg. 330

Quarter: 2nd

Guam District Level Lesson Plan

Content: Math	**Grade/Course**: 4th	**Timeline**: Nov. 30-Dec. 4

Standard(s):

4.NF.5 Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.[4] For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.

- **DOK 1: 3/10 = ?/100 (30)**

Lesson Overview:
This lesson builds on students' work with generating equivalent fractions as a strategy to add fractions with denominators of 10 and 100. Students are presented with different fractions of a pound of various candies at The Sweet Tooth candy store where they must brainstorm different combinations of candies while staying within the weight limit. By generating equivalent fractions, students will be able to find common denominators and add fractions. This lesson builds toward students' work with fractions in grade 5.

Lesson Objective(s):
In this lesson, students will be able to

- To read and write a fraction as part of a group (lesson 10.3)
- To find a fractional part of a group (L 10.4)
- To explore equivalent fractions, using models (L 10.6)

Vocabulary:

8 Mathematical Practices:

☐ 1. Make sense of problems and persevere in solving them.
☐ 2. Reason abstractly and quantitatively.
☐ 3. Construct viable arguments and critique the reasoning of others.
☐ 4. Model with mathematics.
☐ 5. Use appropriate tools strategically.
☐ 6. Attend to precision.
☐ 7. Look for and make use of structure.
☐ 8. Look for and express regularity in repeated

Focus Question(s):

- How will students know what technique to use to add, subtract, compare, and find equivalent fractions?
- Will students be able to turn a fraction into decimals and put decimals on a number line?
- How will students know what technique to use to add, subtract, compare, and find equivalent fractions?
- Will students be able to turn a fraction into decimals and put decimals on a number line?

Instructional Strategies: (EL, SIOP, SPED, Marzano)

Using Online Lesson Task

https://learnzillion.com/lesson_plans/65-add-two-fractions-with-denominators-of-10-and-100-using-equivalent-fractions

Strategies to use before the Lessons: Day 1 Introduction activity

Possible Guiding Questions:

- What do you know about fractions that might help you solve this task?
- What kinds of models or strategies could we use to help us solve this task? Explain your thinking.
- What do you notice about the fractions on this "Specialties" menu? How could this help you solve the task?
- Do you think equivalent fractions could help you solve this task? Explain your thinking.
- Can you name an example of a combination of candy that Hunter and Dan could choose? How much would it weigh? Explain your thinking.

(After writing down some combinations): Who can name a combination of candies where Hunter's candy weighs more than Dan's candy? Who can name a combination of candies where Dan's candy weighs more than Hunter's candy?

Task:

Students are expected to engage in productive struggle as they work to brainstorm different weight combinations of candy by adding them together using equivalent fractions. These questions are intended to be used with individual students or small groups as they work on the task.

General Task Questions:

- What is the task asking you to do?
- What information do you have?
- What do you know about fractions that might help you solve this task?
- How might you organize your work so you could explain your solutions to a classmate?
- Explain how you know the combinations you chose do not go over the weight limit.
- What might be another combination Hunter or Dan could purchase? Explain.

Task-Specific Questions:

- What types of models might help you if you get stuck when you are adding the weights together?
- What steps should you take to add your fraction weights together?
- Would it help us to think about how many hundredths are in one tenth when we are trying to add our fraction combinations together?
- How could you keep track of the different candy weight combinations you make for Hunter and Dan?
- What could you do if you add two candy weights together, but then add a third weight and it goes over your limit?
- Are there some candy weight combinations that go over the weight limit of 90/100? Explain with at least one example.
- Are than any candy weights that are equivalent with one another? If so, what are they and how do you know they are equivalent?

Extension: Could Hunter and Dan get more than one serving of a particular type of candy, but still have three different total kinds of candy and stay in the weight limit of 90/100? Explain your thinking with more than one example.

Common Misconceptions/Errors:

- Students may add the numerators and denominators when adding their weight combinations (for example, 6/10 + 20/100 + 5/10 = 31/120).
- Students may think they can add the numerators without thinking about the denominators, for example, 20/100 + 2/10 = 22/100.
- Students may add a zero to the denominator, but not to the numerator when converting from a fraction with a 10 in the denominator to a 100, for example, they may say that 1/10 = 1/100.

Students may think that they can not do anything to make it so they can add a fraction with a denominator of 10 and a fraction with a denominator of 100. In this case, they would need more practice generating equivalent fractions with denominators of 10 and 100. They would also benefit from using the Model Exploration Mat to help them discover that a fraction with a denominator of 10 and a fraction with a denominator of 100 can be added when a common denominator is found.

Possible Solution Paths:

- Hunter could choose: Jellybeans 6/10 kg, Gummy Worms 20/100 kg, and Candy Hearts 1/10 kg.
  Since 6/10 = 60/100 and 1/10 = 10/100, we can replace these fractions with an equivalent fraction so all the fractions have a denominator of 100. 60/100 + 20/100 + 10/100 = 90/100.
- Hunter could choose: Candy Corn 5/10 kg, Chocolate Hearts 1/10 kg, and Cinnamon Bites 9/100 kg.

Since 5/10 = 50/100 and 1/10 = 10/100, we can replace these fractions with an equivalent fraction so all the fractions have a denominator of 100. 50/100 + 10/100 + 9/100 = 69/100 kilograms.

- Dan could choose: Fruit Chews 2/10 kg, Cinnamon Bites 9/100 kg, and Peanut Butter Cups 38/100 kg.

  Since 2/10 = 20/100, we can replace 2/10 with its equivalent fraction 20/100 so all the fractions have a denominator of 100. 20/100 + 9/100 + 38/100 = 67/100 kilograms.
- Dan could choose: Chocolate Hearts 1/10 kg, Candy Corn 5/10 kg, and Fruit Chews 2/10 kg.

  Since 1/10 = 10/100, 5/10 = 50/100, and 2/10 = 20/100, we can replace these fractions with an equivalent fraction so all the fractions have a denominator of 100. 10/100 + 50/100 + 20/100 = 80/100 kilograms.
- Some students may find it easier to add two fractions at a time and then add the third fraction to that sum, for example, in the problem 60/100 + 20/100 + 10/100, students may add 60/100 + 20/100 = 80/100, then take 80/100 + 10/100 = 90/100 kilograms.
- Some students may need access to the Exploration Mat where they can use the grids or number lines to help them figure out equivalent fractions.

Some students may use the grids or number lines to help them add the fractions together and make sure they do not go over the limit of 90/100.

Task Debrief

Use the debrief to facilitate classroom discussion about the task, and share student approaches to the task. A possible task solution is included.

Possible Guiding Questions:

- How did you organize your work to keep track of the different combinations of candies for Hunter and Dan?
- What did you do to make sure you did not go over the weight limit of 90/100?
- What models or strategies did you use to add the candy weights together?
- Did you find any candy combinations that went over the weight limit? If so, what did you do try doing next?

Are there other possible candy combinations that Hunter and Dan could choose and still stay within the weight limit?

Big Idea(s)

The intent of the Big Idea(s) is to summarize the important mathematical concepts the task is meant to elicit. Consider asking students to explain the concepts on each slide in their own words and to connect each to the relevant part of the task.

Closing

Indicators of understanding:

-
- Understands that finding a common denominator helps to add fractions with denominators of 10 and 100.
- Understands that when adding fractions with denominators of 10 and 100, a strategy for finding a common denominator is to replace a fraction with a denominator of 10 with an equivalent fraction with a denominator of 100, so that both fractions will have a denominator of 100.
- Recognizes that finding a common denominator is important because if a common denominator is not found, the fractions being added represent parts of different wholes.

Recognizes that 1/10 is equal to 10/100 and this fact can be applied when converting from tenths to hundredths.

Slide 14/20

Formative Assessment

Success criteria:

- Recognizes that generating equivalent fractions is one strategy that can be used to add fractions.
- Understands that a common denominator must be determined in order to add fractions.
- Recognizes that "sum" is the answer to an addition problem, so they must add each answer to choice in order to find all the fractions with a sum less than 65/100.
- Understands that 1/10 = 10/100 and applies this when converting from fractions with a denominator of 10 to fractions with a denominator of 100.
- Understands that when adding fractions the numerators can be added if they have the same denominator, but denominators are not added since a denominator represents how many parts make up the whole for a particular fraction.

Day 2: Lesson 10. 3 Fractions Part of a group (pg. 322-323)
Cooperative Groups: Students work in groups of various sizes. Have each group use fractions to describe the part of their group consisting of boys, girls, students wearing shorts, and so on. Then write 3 questions that can be answering using the fractions.

Group present their questions to the class and have volunteers respond.

Multicultural note: The people of Finland use their skiing skills in a game called Orienteering players find their way through the wilderness to an objective miles away, taking only a compass, a map, and some food. The game requires strength, speed, and intelligence.

Teach: Discuss the WARM UP question. Students should conclude that it represents the total number of parts.

Read about the ski race. Emphasize that a fraction can name part of a group as well as part of a whole.

- What fraction of classmates entered the ski race? 7/7
- Suppose 3 more girls enter the ski race. What fraction of the skiers would be girls? 7/10

Independent work: Have students also write a fraction for the part not shaded for exercises 1-4. Have students compare their drawings for exercises 5-8 . Work on #9-32 and discuss their answers

Day 3: L.10.4 Exploring – Finding a fraction of a number pg. 324 – 325

Quick Check: Copy on the board and have students solve the problems (3 min activity)
Write the fraction:

1. three fourths
2. four sevenths
3. six ninths
4. one third

Cooperative partners:
Materials: 12 counters for each pair (or group)
Partners work together to make models of all of the different ways to separate 12 counters into equal groups. Take turns drawing pictures of the models and writing a fraction for one of the equal groups.

Teach:
Materials – Counters
Read about the 5 basic food groups. Have volunteers explain into which food groups the foods thye had for breakfast fall.

Building understandings:
Have students work in cooperative groups to complete the tasks on page 324. Have each group report its findings. Conclude the discussion with these questions. (post on the white board)

- What told the number of equal groups to form? **Denominator**

- What does a numerator tell? **Number of fractional groupings made from a set**

Making the connection:

- If the numerator is 1, how many steps are needed to find the answer? **1 step** why? **Because the quotient is the number in 1 part**
- Is a fraction of a number always less than the number? **Yes**

Use multiplication and division to find the fraction of each number.

1. ¾ of 160 = _____(120)
2. 7/8 of 720 = _____ (630)

Checking for understanding:
You may want students to work with a partner to complete Exercises 5-12. Have students share their drawings for exercises 12 with the class.

Summarize: Have students orally explain how to find a fraction of a number using multiplication and division.

Day 4: Lesson 10.6 Equivalent Fractions Pg. 328-329

Motivate: Whole class
Materials: For each student – paper strip, crayon

Have students fold a paper strip in half, color 1 of the halves, and fold the paper in half again.

- How many equal parts are in the paper strip? **4 equal parts**
- What fraction of the strip is colored? **2/4 , or ½**
- Are 2/4 and ½ the same amount? **Yes**

Teach: Read about Mary's and Martha's granola bars. Discuss the meaning of equivalent fractions, and have students write it in their math notebooks.

Building understanding:
Materials: assorted materials for making fraction pieces

Have students work in cooperative groups to complete the task on page 328. Have each group report about its discoveries. Conclude the discussion with these questions,

- What is the number relationship of the numerator and denominator for fractions equivalent to ½ ? Numerator is half the value of the denominator, or denominator is twice the value of the numerator.
- Give the missing numerator or denominator for the following fractions equivalent to ½ .
  a. ?/10 = 5 b. 8/ ? = **16** c. ? /24 = **12** d. 9/? = **18**

Independent work: #1-10 / mixed review for extra practice
You may want students to work with a partner to complete exercises 1-10 and then explain their answers.

Summary question: Ask students to describe several ways to determine whether two or more fractions are equivalent.

Day 5: Assessments / Review
Pg. 330

Accommodations/Modifications:
Peer tutoring, extend time for completion,
Simplified instructions
Modified assessments

Practice exercises:
Slide 15 Set A

Use these exercises for students who do not fully understand the big idea(s) of the lesson. Students will start by practicing generating equivalent fractions and then apply this skill to some simple fraction addition problems with denominators of 10 and 100. If a student still needs model and visual supports then allow the student to use the Model Exploration Mat which can be found in the Supplementary Resources section.

Slide 16 Set B

Use these exercises for students who showed understanding but would benefit from added practice. Students will still apply the skill of generating equivalent fractions to add fractions with denominators of 10 and 100, but will take it one step further by having to compare the sums. Using fractions with denominators of 10 and 100, students will then create their own sum less than a given amount.

Slide 17 Set C

Use these exercises for students who displayed strong understanding of the big idea(s) and are ready to develop a deeper understanding. Students will be able to explore adding fractions with denominators of 10 and 100 through problem solving.

Resources (Textbook and Supplemental):
https://learnzillion.com/lesson_plans/65-add-two-fractions-with-denominators-of-10-and-100-using-equivalent-fractions/handout

Mathematics Plus Orange book

Lesson 10.3 Pg. 322- 323
Lesson 10.4 pg. 324-325
Lesson 10.6 pg. 328 – 329
Assessments: Review and Maintenance Pg. 330

Quarter: 2nd qtr

Guam District Level Lesson Plan

Content: Math	**Grade/Course**: 4th	**Timeline**: Dec. 7 – 11, 2015

Standard(s):

4.NF.6 Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.

DOK 1: Change the following decimal into a fraction. 0.8=_____ Change the following fraction to a decimal 56/100=_____

Review 4.NF.5

Lesson Overview:
Students need to understand that decimals are an extension of our whole number base ten system. Decimals and fractions both represent parts of a whole. Students need to understand the value of the place and the relationship between place values so that 0.7 is ten times larger than 0.07. When reading decimals the decimal point is read as AND which separates the whole number from the decimal. Having students read decimal names out loud helps them make connections to fractions. When we see 0.4 we say, "Four tenths" and 0.07 is read as "Seven Hundredths".

Lesson Objective(s):
In this lesson, students will be able to

- To explore decimals (12.1)
- To relate fractions to decimals (12.2)
- To write Equivalent decimals (12.4)

Vocabulary:

8 Mathematical Practices:

☐ 1. Make sense of problems and persevere in solving them.
☐ 2. Reason abstractly and quantitatively.
☐ 3. Construct viable arguments and critique the reasoning of others.
☐ 4. Model with mathematics.
☐ 5. Use appropriate tools strategically.
☐ 6. Attend to precision.
☐ 7. Look for and make use of structure.
☐ 8. Look for and express regularity in repeated

Focus Question(s):

- How will students know what technique to use to add, subtract, compare, and find equivalent fractions?
- Will students be able to turn a fraction into decimals and put decimals on a number line?
- How will students know what technique to use to add, subtract, compare, and find equivalent fractions?
- Will students be able to turn a fraction into decimals and put decimals on a number line?

Instructional Strategies: (EL, SIOP, SPED, Marzano)

Day 1: Lesson 12.1 Exploring Decimals and fractions pg. 380-381
Motivate (whole class): Test students sense of time by having them estimate the duration of Greg Foster's race. Use a watch that measures seconds. Say GO, and have students raise their hands when they think 7 46/100 sec have elapsed. Explain that seconds for the race are divided into decimal subdivisions.

Teach: Graph Paper (TR 25-26) play money (TR 10-12) or create your own graph (see text for example)
Have students work with a partner, carrying out activities and answering questions in the first ***talk about it*** question before moving on to the second. Conclude with these questions.

- How many whole figures would you need to model 10? ***10 whole figures***
- How could you model 1/1,000? ***Show ten 10 x 10 grids; color 1 square on 1 of the grids.***

Checking for understanding: for exercises 9-13, make sure that in writing word names for decimals, students write ***hundredths*** and not ***hundreds.***

Independent work: Students work on numbers 1-13 - correct together as a group and discuss any questions or fix up any errors.

Wrap up: Summarize by challenging students to explain how a penny, dime, and a dollar can help show decimal concepts they have learned.

Double Check Activity:
1. Five tenths ***0.5***
2. Nine hundredths ***0.09***
3. Two and eighty-six hundredths ***2.86***

Day 2: Continue with Lesson 12. 1 Exploring Decimals and Fractions
Pg. 380-381 #14 – 20 (students work independently)
Extra Practice H 78 Lesson 12.1 # 1- 11

Day 3: Lesson 12.2 Connecting Fractions to Decimals Pg. 382-383

Motivate: Have 1 student color squares in a 10 by 10 section and write the decimal that matches the model. Have a second student count the number of squares not colored and write the corresponding decimal. Then have students reverse roles.

- How are the number of squares colored and the number not colored related? **Their sum is 100.**

Teach: For students would benefit from a review of fractions and decimals use the Bridge Lesson on pages H24-H25

Discuss the warm up question. Elicit the following response from students: three tenths; three out of

ten; three divided by ten.

Fractions and decimals can be related to one another because each compares 2 whole numbers.

- What 2 numbers does a fraction compare? ***The numbers appearing in the numerator and the denominator***
- What 2 numbers does a decimal compare? The number appearing in the decimal and 10, 100, 1000, and so on.

Critical Thinking Questions:

- How many hundredths are in 2? **200 hundredths**
- How many tenths are in 4.7? **47 tenths**
- How many hundredths are in 5.29? **529 hundredths**

Independent work: # 1- 16 Students correct together after and fix up errors.

Wrap up: Summarize by discussing the wrap up question. Possible response are: change 2/5 to 4/10 and write 0.4; enter 2 ÷ 5 into a calculator.

Day 4: Connecting Fractions to decimals continue Pg. 383 # 14-21 / Mixed Review 1-8
Extra practice: pg. H78 L12.2

Day 5: Equivalent Fractions Pg. 386-387

Motivate: Whole Class

- Explain the meaning of the word EQUIVALENT. ***The same as***
- What other math word is similar to the word EQUIVALENT? ***Equal***
- Name the fraction equivalent to ½. ***Possible answer; 2/4***
- Name a number equivalent to 7 + 4. ***11***
- Name a number equivalent to 8 X 13. ***104***

Teach: Discuss the **WARM UP** question. Students should conclude that they are both equal to ½
Haves students study the first 2 decimal squares in **work together.**

- How has the first square been changed to make the second square? Horizontal lines have been added.
- Does the addition of the line change the amount of shading? No
- Do the shadings model equivalent decimals? Yes

Multicultural Note: In the 1964 Olympics. Eugenio MOnti and his partner had a good chance of winning a gold medal for Italy in the bobsled competition. At the last minute, a bolt on the British team's sled broke. Monti gave the team a bolt from his own sled. After repairing their bobsled, the British team went on to win the gold medal. Monti and his partner came in third, less than a second behind the British team.

Independent work: # 1-15 check for understanding and fix up errors.

Summarize by discussing the wrap up question. A possible response is that 14.06 equals 14 6/100 and 14.60 equals 14 60/100.

Extra practice: H79 Lesson 12.4

Accommodations/Modifications:
Peer tutoring, extend time for completion,
Simplified instructions

Resources (Textbook and Supplemental):
Online: https://grade4commoncoremath.wikispaces.hcpss.org/4.NF.6

Mathematics Plus (orange book)

Lesson 12.1 pg. 380-381 Exploring Decimals

Lesson 12.2 pg. 382-383 Connecting Fractions to Decimals

Lesson 12.3 pg. 386-387 Equivalent Decimals

Extra Practices/ Mixed reviews after each lessons

H78 L.12.1 / L12.2

H79 L12.4

Quarter: 2nd qtr

Guam District Level Lesson Plan

Content: Math	**Grade/Course**: 4th	**Timeline**: Dec. 14-18, 2015

Standard(s):

4.NF.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.

DOK 1: Compare the two decimals using <, =, >

0.03 < 0.33

DOK 2: Order the decimals from least to greatest

0.3, 0.33, 0.03

0.03, 0.3, 0.33

4.NF.6 Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.

DOK 1: Change the following decimal into a fraction. 0.8=_____ Change the following fraction to a decimal 56/100=_____

Review 4.NF.5

Lesson Overview:	**Lesson Objective(s)**:
Students need to understand that decimals are an extension of our whole number base ten system. Decimals and fractions both represent parts of a whole. Students need to understand the value of the place and the relationship between place values so that 0.7 is ten times larger than 0.07. When reading decimals the decimal point is read as AND which separates the whole number from the decimal. Having students read decimal names out loud helps them make connections to fractions. When we see 0.4 we say, "Four tenths" and 0.07 is read as "Seven Hundredths".	In this lesson, students will be able to • To explore decimals (12.1) • To relate fractions to decimals (12.2) • To write Equivalent decimals (12.4) • To compare and order decimals (12.5) • To round and estimate Decimals (12.6)
Vocabulary: **8 Mathematical Practices:** ☐ 1. Make sense of problems and persevere in solving them. ☐ 2. Reason abstractly and quantitatively. ☐ 3. Construct viable arguments and critique the	**Focus Question(s)**: • How will students know what technique to use to add, subtract, compare, and find equivalent fractions? • Will students be able to turn a fraction

reasoning of others. ☐ 4. Model with mathematics. ☐ 5. Use appropriate tools strategically. ☐ 6. Attend to precision. ☐ 7. Look for and make use of structure. ☐ 8. Look for and express regularity in repeated • I can explore decimals • I can relate fractions to decimals • I can write equivalent decimals • I can compare and order decimals • I can round and estimate decimals	into decimals and put decimals on a number line? • How will students know what technique to use to add, subtract, compare, and find equivalent fractions? • Will students be able to turn a fraction into decimals and put decimals on a number line?

Instructional Strategies: (EL, SIOP, SPED, Marzano)

Day 1: Lesson 12.1 Exploring Decimals and fractions pg. 380-381
Motivate (whole class): Test students sense of time by having them estimate the duration of Greg Foster's race. Use a watch that measures seconds. Say GO, and have students raise their hands when they think 7 46/100 sec have elapsed. Explain that seconds for the race are divided into decimal subdivisions.

Teach: Graph Paper (TR 25-26) play money (TR 10-12) or create your own graph (see text for example)
Have students work with a partner, carrying out activities and answering questions in the first ***talk about it*** question before moving on to the second. Conclude with these questions.

- How many whole figures would you need to model 10? ***10 whole figures***
- How could you model 1/1,000? ***Show ten 10 x 10 grids; color 1 square on 1 of the grids.***

Checking for understanding: for exercises 9-13, make sure that in writing word names for decimals, students write ***hundredths*** and not ***hundreds.***

Independent work: Students work on numbers 1-13 - correct together as a group and discuss any questions or fix up any errors.

Wrap up: Summarize by challenging students to explain how a penny, dime, and a dollar can help show decimal concepts they have learned.

Double Check Activity:
1. Five tenths ***0.5***
2. Nine hundredths ***0.09***
3. Two and eighty-six hundredths ***2.86***

Day 2: Continue with Lesson 12. 1 Exploring Decimals and Fractions
Pg. 380-381 #14 – 20 (students work independently)
Extra Practice H 78 Lesson 12.1 # 1- 11

Day 3: Lesson 12.2 Connecting Fractions to Decimals Pg. 382-383

Motivate: Have 1 student color squares in a 10 by 10 section and write the decimal that matches the model. Have a second student count the number of squares not colored and write the corresponding decimal. Then have students reverse roles.

- How are the number of squares colored and the number not colored related? **Their sum is 100.**

Teach: For students would benefit from a review of fractions and decimals use the Bridge Lesson on pages H24-H25

Discuss the warm up question. Elicit the following response from students: three tenths; three out of ten; three divided by ten.

Fractions and decimals can be related to one another because each compares 2 whole numbers.

- What 2 numbers does a fraction compare? ***The numbers appearing in the numerator and the denominator***
- What 2 numbers does a decimal compare? The number appearing in the decimal and 10, 100, 1000, and so on.

Critical Thinking Questions:

- How many hundredths are in 2? **200 hundredths**
- How many tenths are in 4.7? **47 tenths**
- How many hundredths are in 5.29? **529 hundredths**

Independent work: # 1- 16 Students correct together after and fix up errors.

Wrap up: Summarize by discussing the wrap up question. Possible response are: change 2/5 to 4/10 and write 0.4; enter 2 ÷ 5 into a calculator.

Day 4: Connecting Fractions to decimals continue Pg. 383 # 14-21 / Mixed Review 1-8
Extra practice: pg. H78 L12.2

Day 5: Equivalent Fractions Pg. 386-387

Motivate: Whole Class

- Explain the meaning of the word EQUIVALENT. ***The same as***
- What other math word is similar to the word EQUIVALENT? ***Equal***
- Name the fraction equivalent to ½. ***Possible answer; 2/4***
- Name a number equivalent to 7 + 4. ***11***
- Name a number equivalent to 8 X 13. ***104***

Teach: Discuss the **WARM UP** question. Students should conclude that they are both equal to ½
Haves students study the first 2 decimal squares in **work together.**

- How has the first square been changed to make the second square? Horizontal lines have been added.
- Does the addition of the line change the amount of shading? No
- Do the shadings model equivalent decimals? Yes

Multicultural Note: In the 1964 Olympics. Eugenio MOnti and his partner had a good chance of winning a gold medal for Italy in the bobsled competition. At the last minute, a bolt on the British team's sled broke. Monti gave the team a bolt from his own sled. After repairing their bobsled, the British team went on to win the gold medal. Monti and his partner came in third, less than a second behind the British team.

Independent work: # 1-15 check for understanding and fix up errors.
Summarize by discussing the wrap up question. A possible response is that 14.06 equals 14 6/100 and 14.60 equals 14 60/100.

Extra practice: H79 Lesson 12.4

4.NF.7 Compare two decimals to hundredths by reasoning about their size.

December 14 – 18th
Day 6: Decimals Comparing and Ordering Pg. 388 – 389

Motivate: Cooperative Partners
Have pairs of students to take turns using the digits 0,2 and 7 to write as many numbers as they can showing ones, tenths, and hundredths places. Have them use each digit once in each number. Partners confer to answer the questions.

- How many numbers did you find? Name them, 6 numbers: 0.27, 0.72, 2.07, 2.70, 7.02, 7.20
- Which number is greatest? 7.20 which is least? 0.27

Independent work: 1-15 Group work: 16-23 Discuss each other's answer and share to the class

Day 7: Extra Practice Review Lesson 12.5 pg. H79 Go over and discuss students answer with each other.

Day 8: Estimating and Rounding Decimals Lesson 12.6 pg. 390-391

Motivate: Cooperative Partners

Have pairs of students follow these directions and answer these questions.

- Order the decimals from greatest to least: 7.66, 7.23, 7.95, 7.82, 7.45, 7.5 (answer: 7.95, 7.82, 7.66, 7.5, 7.45, 7.23, 7.1)

- Draw a circle around the numbers that are less than 7.5. (Circle 7.45, 7.23, and 7.1)
- Which numbers are closer to 7 than to 8? The circled numbers
- Which numbers are closer to 8 than to 7? The numbers not circled.

Teach: Discuss the WARM UP question. Elicit the following response from students. 75-84

At the Wade County Meet, which boy had the fastest time? (Cal) which boy had the slowest time? (doug)

Point out that the rules for rounding decimals are the same as the rules for rounding whole numbers.

Independent work: 1-16
Group work: 17 – 24 (continue the next day if not completed) Discuss each other's answer

Day 9: Extra Practice Review Lesson 12.6, pg. H79

Accommodations/Modifications:
Peer tutoring, extend time for completion,
Simplified instructions

Resources (Textbook and Supplemental):
Online: https://grade4commoncoremath.wikispaces.hcpss.org/4.NF.6

Mathematics Plus (orange book)

Lesson 12.1 pg. 380-381 Exploring Decimals

Lesson 12.2 pg. 382-383 Connecting Fractions to Decimals

Lesson 12.3 pg. 386-387 Equivalent Decimals

Lesson 12.5 pg. 388-389 Decimals Comparing and Ordering

Lesson 12.6 pg. 390-391 Decimals Estimating and Rounding

Extra Practices/ Mixed reviews after each lessons

H78 L.12.1 / L12.2

H79 L12.4

H79 L 12.5 / 12.6

Quarter: 2nd

Guam District Level Lesson Plan

Content: Math	**Grade/Course**: 4th	**Timeline**: week 10 END OF 2nd qtr.

Standard(s):

- 4.MD.4 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.

Lesson Overview:
Students will extend and compare fraction equivalence, ordering, and decimal fractions with denominators up to a hundred.

Lesson Objective(s):
In this lesson, students will be able to

- I can use data from a line plot to solve problems

Vocabulary:

- Line plot
- Data
- Fractions

8 Mathematical Practices:

☐ 1. Make sense of problems and persevere in solving them.
☐ 2. Reason abstractly and quantitatively.
☐ 3. Construct viable arguments and critique the reasoning of others.
☐ 4. Model with mathematics.
☐ 5. Use appropriate tools strategically.
☐ 6. Attend to precision.
☐ 7. Look for and make use of structure.
☐ 8. Look for and express regularity in repeated

Focus Question(s):

- How will students know what technique to use to add, subtract, compare, and find equivalent fractions?
- Will students be able to turn a fraction into decimals and put decimals on a number line?
- How will students know what technique to use to add, subtract, compare, and find equivalent fractions?
- Will students be able to turn a fraction into decimals and put decimals on a number line?

Instructional Strategies: (EL, SIOP, SPED, Marzano)

Increasing Rigor: Questions to ask prior to teaching:

- What is the relationship between line plots and number lines?
- What questions could be answered by analyzing the data on this line Plot? Write down as many questions as you can think of. Questions can include what is the difference between the longest and shortest amount of time studying? How many students studies 45 minutes or less?
- Ten people collect data on how far a frog jumps. (lengths ¼ foot = 2 jumps, ½ foot = 5 jumps, 1 foot = 2 jumps, 1 ¼ feet = 1 jump) no frog jumped ¾ of a foot. When making a line plot for this data, can you skip ¾ foot on the graph? Why or why not? (even if no data is collected for a particular value, it must be included on the line plot. Line plots are essentially number lines and we cannot eliminate a section on the number lines. Data does not have to start at 0, but whatever section of data is shown, must show all the intervals.)
- Data was collected to reflect the amount of pie eaten by people in a pie eating contest at the fair. The table to the right shows the data. Construct a line plot to reflect the data. How many people participated in the pie eating contest? How many many pies were consumed during the contest? How many people ate that amount?

1	
0	
4	
3	
5	

About the Math: A line plot is a simple way to organize data. To construct a line plot, draw a number line showing each possible value. The values can be whole numbers or fractions. Place an X at the appropriate spot above the number line for each value. Essential vocabulary for this standard includes: Line plot and data.

Lesson Review from last week standards:

Day 2: Lesson 12.6 Understanding Decimals (continue) Modify by using the number line with line plot. Pg. 390-391

Motivate: Cooperative partners
Have pairs of students follow these directions and answer these questions.

- Order the decimals from greatest to least: 7.66, 7.23, 7.95, 7.82, 7.45, 7.5
- Draw a circle around the numbers that are less than 7.5 (circle 7.45, 7.23, and 7.1)
- Which numbers are closer to 7 than to 8? The circled numbers
- Which numbers are closer to 8 than to 7? The numbers not circled

Teach: Discuss the warm up question. Elicit the following response from students: 75-84.

At the wade county meet, which boy had the fastest time? (Cal) which boy had the slowest time? (doug)

Point out that the rules for rounding decimals are the same as the rules for rounding whole numbers.

Independent work: after think, pair share of #1-5 complete the rest of the lesson #6-24

Check for understanding: Ask students these questions.

- In which numbers is the digit in the tenths place less than 5? (8.2, 15.1)
- IN which numbers is the digit in the tenths place 5 or more? (4.9, 56.8, 0.9)

Day 3: Extra Practice and review H79 Lesson 12.6 / worksheet pg. 76 from common core connections. Students work in groups to compare work and discuss possible answers to each questions. Students can demonstrate their understanding in class after grouping.

Day 4-5: Review and Maintenance : TESTING PG. 392

Accommodations/Modifications:
Peer tutoring, extend time for completion,
Simplified instructions
Modified assessments

Resources (Textbook and Supplemental):
Mathematics Plus Lesson 12.6 / H79 lesson 12.6

Review and Maintenance pg.392 #1-17

Worksheet: Common Core Connections pg. 76