

HOW CAN GUIDED MATH TECHNIQUES BE INTEGRATED INTO A THIRD
GRADE MULTIPLICATION UNIT?

By

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Introduction

Every year I have seen how tricky multiplication can be for third grade students. The various methods that educators are required to teach can be extremely challenging for students. Teaching using the whole-group instructional technique proves to be very challenging to ensure students fully understand the topic and are able to apply the concept. Teaching to twenty-four students at one time is extremely challenging when the goal is to ensure that every student understands the concept and is able to apply it. This is why I have selected the research question: *How can guided math techniques be integrated into a third grade multiplication unit?*

As a teacher, I want to provide my students with the best possible instruction. Unfortunately, this looks uniquely different for each of my twenty-four students. The question then is, how am I supposed to meet the individual needs of each of my students? It is impossible to meet each of these needs through whole-group instruction. Teaching this way, I really am only teaching to a small portion of my students. The answer to the question is teaching through small group instruction, specifically using the Guided Math instructional technique.

Guided Math allows my students to have individualized instruction, authentic practice, and hands on activities. To me this is the best of the best. My students are getting the specific help they need through multiple methods, and they are motivated and engaged during the entire process. When students are motivated and engaged it is more likely that learning will occur.

For my project I wanted to create a resource for educators to use when trying to implement guided math into the classroom. In the beginning, guided math can seem very daunting. There are lots of different pieces that need to be planned, and the classroom management piece can be challenging. These lesson plans will hopefully alleviate some of the challenges and struggles that surface when trying to implement something new. The lesson plans include the various structural components of guided math as it would be seen in a third grade multiplication unit, but could be altered for any grade level or concept. These lesson plans include calendar time, the daily word problem, mini-lesson, math stations, and share time.

Many teachers choose to incorporate calendar time and the problem of the day into their morning meeting or morning routines. According to Newton (2013), it is important for all students to partake in various calendar activities. It encourages students to practice everyday skills like writing numbers, analyzing and discussing data, and creating graphs (p. 20).

During the morning routine it is also beneficial to lead activities that require students to solve a problem of the day or a number of the day. While completing these activities students are building their number sense. They are developing a stronger understanding of what the number is and how the number is made (Shumway, 2011). Through conversation with their peers, students are finding and answering multiple number models. They are showing the number with manipulatives, writing the number in different ways, and determining if the number is odd, even, or prime. Students are developing a stronger understanding of numbers and how to use various methods to solve

mathematical problems. It is beneficial for students to build these skills in a supportive environment like the morning meeting.

The next part of guided math is called the mini-lesson. During this part all students are gathered together. Students are given insight into what the math block will consist of for the day. “The idea of the mini-lesson is to start or continue a general discussion about the Big Ideas that students are looking at in their current unit of study” (Newton, 2013, p. 22). During the mini-lesson a new skill may be introduced or already learned skills could be reviewed. It is important to provide students the information so that they can adequately use and apply this information at the centers they will be completing during the duration of the math block. The mini-lesson models the current skill or strategy so students can independently apply it on their own. In addition to modeling the skill, it is also important to create an anchor chart or example that students can refer back to. This is especially important to ensure that students can work independently during math center time (Sammons, 2011).

The next component of the math workshop is one of the most important parts; it is center time. Students will be completing various math centers during a given amount of time. Typically, students will participate in a set number of centers for an average of ten to fifteen minutes per center; however, the amount of centers and time per center could vary based on student need and concepts being taught. According to Newton (2013), students should be partaking in centers that require them to apply the skill (assessment based), work on math facts (memorization of basic computations), active practice (hands-on activity), and teacher time (specific individualized instruction). The elements

of center time in guided math closely models that of guided reading (Fountas & Pinnell, 2013). Students receive individualized instruction in small groups, and individually work on skills in other centers. Both also consist of students working on skills at their individual levels through various methods of instruction. These various types of centers encourage students to utilize and apply various learning styles.

While this is one structure and method of implementing guided math; it is not the only way and should not be used verbatim. It is important for the educator to get to know their individual students and use the data collected to guide and plan the various lessons and station activities. There maybe alternative activities to use that would most greatly benefit students. The ability to alter, change, and revamp on the go, is one of the many benefits of implementing guided math. “Guided math allows you to meet students where they are so you can take them where they need to go” (Newton, 2013, p. 9).

| Understanding by Design (UbD) Unit Plan | |
|---|--|
| Title: <u>Unit 1: Lesson 1</u> | Subject: <u>Mathematics</u> |
| Topic: <u>Multiply with 5</u> | Grade: <u>Third Grade</u> |
| Stage 1- Desired Results | |
| <p>Established Goals:</p> <p><u>3.ARO.1</u> Given an expression such as 3×8, describe the product as the total number of objects in 3 groups of 8 objects.</p> <p><u>3.ARO.2</u> Given an expression such as $35/7$, describe the quotient as the number of objects in a group when 35 objects are separated into equal shares, or the number of equal shares when 35 objects are separated in equal groups of 7 objects.</p> <p><u>3.ARO.4</u> Given a multiplication or division equation involving 3 whole numbers, find the unknown quantity that makes the equation true.</p> <p><u>3.ARO.7</u> Demonstrate fluency in multiplying and dividing through 100 by using strategies like the properties of operations or the relationship between multiplication and division.</p> <p><u>3.ARO.9</u> Find arithmetic patterns. Use properties of operations to explain these patterns.</p> | |
| <p>Understandings: Students will learn to identify and use patterns to multiply with 5.</p> | <p>Essential Question/Big Idea: What does the equation mean? How do we read it? What patterns do we notice when skip counting by 5's? Do the factors follow any patterns? What does the multiplier, the number we multiply by, tell us?</p> |
| <p>Students will know... How to identify and use patterns to multiply by 5. How to count-by 5's and transfer this knowledge into multiplication.</p> | <p>Students will be able to... Explore patterns when multiplying by 5.</p> |
| Stage 2- Assessment Evidence | |
| <p>Performance Task: Students will complete various activities that will require them to utilize the patterns found/outlined in the mini-lesson to complete their stations.</p> <p>Students will work on activities to help increase their fact fluency.</p> | |
| <p>Assessment Evidence:</p> | |

Teacher observation.

Information discovered at stations written in their math journal.

Stage 3- Learning Plan

Learning Activities:

Calendar Morning Routine (10 minutes): As a whole group students will identify the number of the day that will be predetermined. This number should be posted and visible for all students to see; the number should change daily, increasing the complexity of the number daily. The number for the day will be 245. A discussion will be lead on how to write this number in standard form, expanded form, and written form. Students will then have their math journal at their carpet spots and write what number is 10 more and 10 less. Students will then add one hundred to the number.

Daily Word Problem (10 minutes): Students will complete this problem in their math journal independently. Then depending on time students will either share with a partner, or there will be a whole class discussion. Discussion will include having students describe the process they used to find the pattern.

-Find the pattern in these numbers: 0, 9, 18, 27, 36, 45. Write the next three numbers.

Mini-Lesson (10 minutes): Ahead of time prepare a line of 100 cubes, squares, etc. They can be a manipulative or a drawing.

-Together circle groups of 5 blocks. Do this until 10 groups are circled. Point to groups saying “1 group of 5 is 5. 2 groups of 5 is 10. Etc.” Explain to students that these are the numbers we say when we count by 5. Point to circled groups as students practice counting by 5’s until 50.

-Tell students that we can use multiplication to represent the total for a repeated group of 5. $5=1 \times 5$. (Refer to the boxes created when showing the equation.

-Prompt students with the equation $10=2 \times 5$. Have students Turn & Talk with their partner to explain what this equation means.

-Have students look and describe any patterns they see.

-Tell students that today we will continue looking at these patterns while practicing counting and multiplying by 5.

Math Stations(30 minutes): Day 1 of 2. Students will be split into four different groups based on assessment data and student need. Students will complete two stations per day (each station lasting 15 minutes). The students will then complete the last two stations on the next day.

- **M (Math Facts):** Students will work on Multiplication Fact Station. This station helps and encourages students to develop their multiplication facts. Students work on various facts in depth; completing activities and worksheets to help automaticity. Students work at their own level and pace. This station is student led. Work will be kept in students’ math folder.

- A (At your Seat): Students will be completing multiplication fact cards. Students will record the answers to these fact cards on a recording card; students will turn in answers when completed.
- T (Teacher Time): Every group will have a lesson that is specifically designed for each group. There are four different groups that will rotate through these stations. These groups will be flexible and change frequently based on observation and data. For the purpose of this plan I will outline three different model lessons: above grade level, grade level, and below grade level. Once the specific needs of the students are determined, this plan can be altered to fit each group.
 - Below Grade Level: Provide students with manipulatives. Have students make groups of five. After students have counted out the groups of 5, write the associated multiplication problem. Do this activity multiple times so students can envision what each multiplication problem would look like with the manipulatives.
 - At Grade Level: Have manipulatives available for students who need/would like to utilize. Refer to anchor chart that was created in the mini-lesson. Review the circled group of 5's and the multiplication equation that relates to it. Have students look for patterns. Allow students time to share ideas with a neighbor. Then discuss the ideas as a group. Lead students to realize a multiplication problem is the number of groups times five. Explain to students that these are called factors. The answer the problem is the total. Model this new vocabulary on another multiplication problem. Have students share vocab knowledge. Have students solve a few multiplication problems on their whiteboards. 5×6 . 8×5 . Have students describe the ways they solved these problems. If time have students work with a partner to continue this process of solving and describing.
 - Above Grade Level: Roman Numeral Multiplication: Challenge Lesson 1. Begin with prompt: is $(4 \times 5) + (2 \times 5) = 6$. Provide students with time to solve independently and then time to share with partner. Discuss as a small group.
Next students will be writing and solving problems with Roman Numerals. Share symbols with students and explain to students how Roman Numerals are read. Have students identify the numbers based on the symbols. Ex: IX, II, VIII, XI, etc. Then have students solve multiplication problems. $I \times X = ?$, $X \times VII = ?$, etc.
- H (Hands On): Students will be playing Addition Top-It. Students will be playing this card game with a partner. Students will divide cards evenly. Each student will flip one card over. Each students needs to silently add the total of the two cards in his/her head. Once the answer is known they will say it outloud. The student to say the correct answer first gets both cards. If it is a tie, each student places another card down and repeats the same process. The goal is get the most cards. Face cards are 10 and aces are 1.

Share (10 minutes): Students will gather at the carpet. Teacher will point out a positive that students did during the lesson. Students will be asked to share with their partner one take-away from today. If time a few students will share with the class.

Resources:

Math Lesson adapted from Math Expression Curriculum

Multiplication Monsters Task Cards retrieved from

<https://www.teacherspayteachers.com/Product/Monster-Multiplication-Task-Cards-1776785>

Challenge Card 1.1

| Understanding by Design (UbD) Unit Plan | |
|---|---|
| Title: <u>Unit 1: Lesson 2</u> | Subject: <u>Mathematics</u> |
| Topic: <u>Multiplication as Equal Groups</u> | Grade: <u>Third Grade</u> |
| Stage 1- Desired Results | |
| <p>Establish Goals:</p> <p><u>3.ARO.1</u> Given an expression such as 3×8, describe the product as the total number of objects in 3 groups of 8 objects.</p> <p><u>3.ARO.3</u> Solve multiplication and division word problems through 100 involving arrays, equal groups, and measurements; represent the problem using for example, pictures, and equations that have symbols for the unknown quantity.</p> <p><u>3.ARO.7</u> Demonstrate fluency in multiplying and dividing through 100 by using strategies like the properties of operations or the relationship between multiplication and division.</p> | |
| <p>Understandings:</p> <p>Students will learn to use multiplication and drawings to represent equal groups.</p> | <p>Essential Question/Big Idea:</p> <p>How can one use a picture to help create a multiplication equation and determine the answer?</p> <p>What multiplication equation does the picture show?</p> |
| <p>Students will know...</p> <p>The number of groups times the amount in each group is the total number of objects.</p> | <p>Students will be able to...</p> <p>Use a word problem to create a picture that will aid in solving a multiplication problem.</p> |
| Stage 2- Assessment Evidence | |
| <p>Performance Task:</p> <p>Students will complete various activities that will require them to utilize the patterns found/outlined in the mini-lesson to complete their stations.</p> <p>Students will work on activities to help increase their fact fluency.</p> <p>The Remembering sheet will be sent home as homework.</p> | |
| <p>Assessment Evidence:</p> <p>Teacher observation.</p> <p>Math Journals will be collected to assess students' knowledge and understanding.</p> <p>Homework will also be assessed.</p> | |

Stage 3- Learning Plan

Learning Activities:

Calendar Morning Routine (10 minutes): As a whole group students will identify the number of the day that will be predetermined. This number should be posted and visible for all students to see; the number should change daily, increasing the complexity of the number daily. The number for the day will be 658. A discussion will be lead on how to write this number in standard form, expanded form, and written form. Students will then have their math journal at their carpet spots and write what number is 10 more and 10 less. Students will then subtract one hundred from the number.

Daily Word Problem (10 minutes): Students will complete this problem in their math journal independently. Then depending on time students will either share with a partner, or there will be a whole class discussion. Discussion will include having students describe the process they used to find the answer. Post this question:
-Dulal, Lien, and Kate have either the bird, the cat, or the fish. Dulal does not have the bird. Lien does not have the cat. Kate does not have the fish or the cat. Which pet does each person have? Explain.

Mini-Lesson (10 minutes): Ahead of time prepare anchor chart with examples showing a set number of equal groups.
-Start with a quick review of yesterday's topic.
-Introduce the concept of equal groups.
-Refer to anchor chart. Ask students how many nests are shown. Then how many eggs are in each nest. 2 nest with 5 eggs in each. To find how many eggs we could take $2 \times 5 = 10$ eggs. Prompt by asking what does this equation mean? 2 groups of 5. 5 is the group size. 2 is how many groups.
-Point students' attention to the word problem. Follow the same process but have students work with their elbow partner. Write answers in their math journal. 4 groups of 3 bananas. $4 \times 3 = 12$ bananas. Allow time for students to share their strategies for solving. Write these strategies on the board.
-Finally have students try one by themselves. Make sure students write ideas down in their math journal. Allow time for discussion.

Math Stations(30 minutes): Day 2 of 2. At the end of the math station time, all students should have been at every group. Students will be split into four different groups based on assessment data and student need. Students will complete two stations per day (each station lasting 15 minutes). The students will then complete the last two stations on the next day.

- **M (Math Facts):** Students will work on Multiplication Fact Station. This station helps and encourages students to develop their multiplication facts. Students work on various facts in depth; completing activities and worksheets to help automaticity. Students work at their own level and pace. This station is student

led. Work will be kept in students' math folder.

- A (At your Seat): Students will be completing multiplication fact cards. Students will record the answers to these fact cards on a recording card; students will turn in answers when completed.
- T (Teacher Time): Every group will have a lesson that is specifically designed for each group. There are four different groups that will rotate through these stations. These groups will be flexible and change frequently based on observation and data. For the purpose of this plan I will outline three different model lessons: above grade level, grade level, and below grade level. Once the specific needs of the students are determined, this plan can be altered to fit each group.
 - Below Grade Level: Provide students with manipulatives. Have students make groups of five. After students have counted out the groups of 5, write the associated multiplication problem. Do this activity multiple times so students can envision what each multiplication problem would look like with the manipulatives.
 - At Grade Level: Have manipulatives available for students who need/would like to utilize. Refer to anchor chart that was created in the mini-lesson. Review the circled group of 5's and the multiplication equation that relates to it. Have students look for patterns. Allow students time to share ideas with a neighbor. Then discuss the ideas as a group. Lead students to realize a multiplication problem is the number of groups times five. Explain to students that these are called factors. The answer the problem is the total. Model this new vocabulary on another multiplication problem. Have students share vocab knowledge. Have students solve a few multiplication problems on their whiteboards. 5×6 . 8×5 . Have students describe the ways they solved these problems. If time have students work with a partner to continue this process of solving and describing.
 - Above Grade Level: Roman Numeral Multiplication: Challenge Lesson 1. Begin with prompt: is $(4 \times 5) + (2 \times 5) = 6$. Provide students with time to solve independently and then time to share with partner. Discuss as a small group.
Next students will be writing and solving problems with Roman Numerals. Share symbols with students and explain to students how Roman Numerals are read. Have students identify the numbers based on the symbols. Ex: IX, II, VIII, XI, etc. Then have students solve multiplication problems. $I \times X = ?$, $X \times VII = ?$, etc.
- H (Hands On): Students will be playing Addition Top-It. Students will be playing this card game with a partner. Students will divide cards evenly. Each student will flip one card over. Each students needs to silently add the total of the two cards in his/her head. Once the answer is known they will say it outloud. The student to say the correct answer first gets both cards. If it is a tie, each student places another card down and repeats the same process. The

goal is get the most cards. Face cards are 10 and aces are 1.

Share (10 minutes): Students will gather at the carpet. Teacher will point out a positive that students did during the lesson. Students will be asked to share with their partner one take-away from today. If time a few students will share with the class.

Resources:

Math Lesson adapted from Math Expression Curriculum

Multiplication Monsters Task Cards retrieved from

<https://www.teacherspayteachers.com/Product/Monster-Multiplication-Task-Cards-1776785>

| Understanding by Design (UbD) Unit Plan | |
|--|--|
| Title: <u>Unit 1 Lesson 3</u> | Subject: <u>Mathematics</u> |
| Topic: <u>Multiplication and Arrays</u> | Grade: <u>Third Grade</u> |
| Stage 1- Desired Results | |
| <p>Establish Goals: <u>3.ARO.1</u> Given an expression such as 3×8, describe the product as the total number of objects in 3 groups of 8 objects. <u>3.ARO.3</u> Solve multiplication and division word problems through 100 involving arrays, equal groups, and measurements; represent the problem using for example, pictures, and equations that have symbols for the unknown quantity. <u>3.ARO.5</u> Use properties of operations as strategies for multiplying and dividing. <u>3.ARO.7</u> Demonstrate fluency in multiplying and dividing through 100 by using strategies like the properties of operations or the relationship between multiplication and division.</p> | |
| <p>Understandings: Students will learn how to use arrays and the Commutative Property in multiplication.</p> | <p>Essential Question/Big Idea: Arrays have rows and columns. If you multiply the number of rows by columns (factors) it gives you the total (product).</p> |
| <p>Students will know... What an array is and how to create on. The difference between a row and a column Another name for the Commutative Property is a Turn-Around fact.</p> | <p>Students will be able to... Apply the Commutative Property of Multiplication in problems. Create and solve arrays based on word problems.</p> |
| Stage 2- Assessment Evidence | |
| <p>Performance Task: Students will be writing down tasks from the mini-lesson and stations in their math journal. Students will work on activities to help increase their fact fluency.</p> | |
| <p>Assessment Evidence: Teacher observation. Math Journals will be collected to assess students' knowledge and understanding.</p> | |
| Stage 3- Learning Plan | |
| <p>Learning Activities:</p> | |

Calendar Morning Routine (10 minutes): As a whole group students will identify the number of the day that will be predetermined. This number should be posted and visible for all students to see; the number should change daily, increasing the complexity of the number daily. The number for the day will be 23. A discussion will be lead on how to write this number in standard form, expanded form, and written form. Students will then have their math journal at their carpet spots and write what number is 5 more and 5 less. Students will then double the number.

Daily Word Problem (10 minutes): Students will complete this problem in their math journal independently. Then depending on time students will either share with a partner, or there will be a whole class discussion. Discussion will include having students describe the process they used to find the answer. Post this question:
-Can you name two whole one-digit numbers that have a sum of 16 and a difference of 1? Why or why not?

Mini-Lesson (10 minutes): Ahead of time prepare anchor chart with examples showing 3 different arrays.

-Start with a quick review of yesterday's topic.

-Introduce the concept of arrays. Student should have some prior knowledge of arrays.

-Refer to anchor chart. Show example of an array. Explain that an array has rows and columns. Be sure to point out that rows are horizontal and columns are vertical. Rows and columns have the same number of objects and are equally spaced out.

-The array on the chart is 2×5 . Meaning that it has 2 rows and 5 columns. This is called a 2-by-5 array. Or as a multiplication problem 2×5 . How many counters are there? 10 counters.

-Follow this same process as a whole group for the next example (3-by-4 array).

-For the third example have students do it with a partner in their math journal (5-by-6 array). Allow time for a few groups to share their answer and strategies.

-Then show a 6-by-5 array. Show students you can switch the number of rows and columns around. Explain how the number of counters is the same, but it looks different. Commutative Property of Multiplication. Students know this as turn-around facts.

-Finally have students complete the last one in their math journals independently (3-by-7 array). If time allows have a few students share.

Math Stations(30 minutes): Day 1 of 2. Students will be split into four different groups based on assessment data and student need. Students will complete two stations per day (each station lasting 15 minutes). The students will then complete the last two stations on the next day.

- M(Math Facts): Students will work on Multiplication Fact Station. This station helps and encourages students to develop their multiplication facts. Students work on various facts in depth; completing activities and worksheets to help automaticity. Students work at their own level and pace. This station is student led. Work will be kept in students' math folder.

- A (At your Seat): Students will be completing Array Task Cards. Students will record the answers to these task cards on a recording card; students will turn in answers when completed.
- T (Teacher Time): Every group will have a lesson that is specifically designed for each group. There are four different groups that will rotate through these stations. These groups will be flexible and change frequently based on observation and data. For the purpose of this plan I will outline three different model lessons: above grade level, grade level, and below grade level. Once the specific needs of the students are determined, this plan can be altered to fit each group.
 - Below Grade Level: Provide students with manipulatives (unifix cubes). Show students how to make a 3-by-5 array. Explain to students that there are 3 rows and 5 columns. Mention that this is the same as 3 groups of 5. Then have students create an array with you (4-by-6). Again use the language of 4 rows, 6 columns, 4 groups of 6. Then ask how many cubes are there total. How could we figure this out? Some students may want to count. If ready, encourage students to find a multiplication problem in addition to counting. Have students write the multiplication equation on their whiteboard. Help students solve the multiplication problem by using repeated addition. If time allows do more examples either as a whole group or in pairs. Allow time to discuss each problem before moving onto the next.
 - At Grade Level: Have manipulatives available for students who need/would like to utilize. Refer to anchor chart that was created in the mini-lesson. Have students create an array (5-by-2). Have student explain what are the rows and columns and how this would be made into a multiplication equation. Students should not destroy this example. They should make a new array (3-by-2). Answer all the same questions as before. Then ask students which is bigger. Move arrays on their white board and use greater than, less than, or equal to symbols. Ask students what they would have to do to make the arrays equal to each other. Then have students model other arrays for comparison. Students should also find and answer the multiplication equation for each.
 - Above Grade Level: Students will be given grid paper; cubes should be available for students want to use them. Students will outline a 10-by-10 square in marker on their grid. Students will make a design by outlining five or more smaller arrays inside the larger square. The arrays have to cover the entire 10-by-10 square, making sure all squares are used. Students should label each small array with a multiplication equation. When finished ask: What do you notice about the sum of all the products? This activity should be cut out and glued in their math journal.
- H (Hands On): Students will be playing Conquer. Students will be playing this

game with a partner. Students will need one 100 cm grid paper, two dice, and two different colored markers/crayons, colored pencils. The object of the game is to completely cover the grid with arrays of your color. Whoever has the most square area wins. Students take turns rolling both dice. Students then create an array, with their color, matching the numbers on the dice. When creating a new array it has to touch an already existing array. Each partner starts on opposite ends of the grid and works toward the middle.

Share (10 minutes): Students will gather at the carpet. Teacher will point out a positive that students did during the lesson. Students will be asked to share with their partner one take-away from today. If time a few students will share with the class.

Resources:

Math Lesson adapted from Math Expression Curriculum

Array Back to School Task Cards retrieved from

<https://www.teacherspayteachers.com/Product/Arrays-Repeated-Addition-Task-cards-Back-to-School-Theme-1326970>

| Understanding by Design (UbD) Unit Plan | |
|--|--|
| Title: <u>Unit 1 Lesson 4</u> | Subject: <u>Mathematics</u> |
| Topic: <u>The Meaning of Division</u> | Grade: <u>Third Grade</u> |
| Stage 1- Desired Results | |
| <p>Establish Goals:</p> <p><u>3.ARO.1</u> Given an expression such as 3×8, describe the product as the total number of objects in 3 groups of 8 objects.</p> <p><u>3.ARO.2</u> Given an expression such as $35/7$, describe the quotient as the number of objects in a group when 35 objects are separated into equal shares, or the number of equal shares when 35 objects are separated into equal groups of 7 objects.</p> <p><u>3.ARO.3</u> Solve multiplication and division word problems through 100 involving arrays, equal groups, and measurements; represent the problem using for example, pictures, and equations that have symbols for the unknown quantity.</p> <p><u>3.ARO.4</u> Given a multiplication or division equation involving 3 whole numbers, find the unknown quantity that makes the equation true.</p> <p><u>3.ARO.6</u> Use multiplication knowledge to recognize that division can be thought of as an unknown factor problem.</p> <p><u>3.ARO.7</u> Demonstrate fluency in multiplying and dividing through 100 by using strategies like the properties of operations or the relationship between multiplication and division.</p> | |
| <p>Understandings: Students will learn to relate division to multiplication with an unknown factor.</p> | <p>Essential Question/Big Idea: Multiplication and division work together like addition and subtraction. We can think of division as a multiplication problem with an unknown factor. $P \times P = T$</p> |
| <p>Students will know... What parts of a division equation are the dividend, divisor, and quotient.</p> | <p>Students will be able to... Create a mathematical equation based on information from a word problem. Solve an unknown using various strategies.</p> |
| Stage 2- Assessment Evidence | |
| <p>Performance Task: Students will be writing down tasks from the mini-lesson and stations in their math journal. Students will work on activities to help increase their fact fluency. The Remembering page will be sent home as homework.</p> | |

Assessment Evidence:

Teacher observation.

Math Journals will be collected to assess students' knowledge and understanding.

Homework will also be assessed.

Stage 3- Learning Plan**Learning Activities:**

Calendar Morning Routine (10 minutes): As a whole group students will identify the number of the day that will be predetermined. This number should be posted and visible for all students to see; the number should change daily, increasing the complexity of the number daily. The number for the day will be 402. A discussion will be lead on how to write this number in standard form, expanded form, and written form. Students will then have their math journal at their carpet spots and write what number is 10 more and 10 less. Students will then double the number.

Daily Word Problem (10 minutes): Students will complete this problem in their math journal independently. Then depending on time students will either share with a partner, or there will be a whole class discussion. Discussion will include having students describe the process they used to find the answer. Post this question:
-Mark cut a ribbon in half. He kept one half and gave $\frac{1}{2}$ of the other half to each of 2 people. Juan got 4 inches. How much did Mark have to begin with? Explain how you found your answer.

Mini-Lesson (10 minutes): Ahead of time prepare anchor chart with equation showing number of groups (factor) \times group size (factor)= total (product). Also include a few word problems:

1. Marc bought some bags of lemons. There were 5 lemons in each bag. He bought 15 lemons altogether. How many bags did he buy?
2. There were 10 pictures on a wall. The pictures were in rows, with 5 pictures in each row. How many rows were there?

-Start by explaining the initial equation. In the first problem, what are the groups? The bags of lemons. Does the problem say how many groups? No. Since it does not tell us we will make a box for the number of groups. Does the problem say the group size? Yes, there were 5 lemons in each bag. Write 5 in the group size circle. Does the problem tell us the total or the product? Yes, there are 15 lemons. Put 15 in the total.

-How is this problem different than the equal groups problems? In this problem we have to find the equal groups. To find the total we multiply. How would we find a factor? Divide.

-Write $15/5=?$ The dividend is the number we divide into (the product). The divisor is the factor we divide by (5). The quotient is the unknown factor (3).

-Division undoes multiplication. Model with a drawing how to solve equation.

-If students need more support do the last problem together, as students write down the steps in their math journal. If some students need less support, allow them to work with another student.

-Discuss strategies used to solve the problem. Pointing out how to make the equation.

Math Stations (30 minutes): Day 2 of 2. Students will be split into four different groups based on assessment data and student need. Students will complete two stations per day (each station lasting 15 minutes). The students will then complete the last two stations on the next day.

- M (Math Facts): Students will work on Multiplication Fact Station. This station helps and encourages students to develop their multiplication facts. Students work on various facts in depth; completing activities and worksheets to help automaticity. Students work at their own level and pace. This station is student led. Work will be kept in students' math folder.
- A (At your Seat): Students will be completing Array Task Cards. Students will record the answers to these task cards on a recording card; students will turn in answers when completed.
- T (Teacher Time): Every group will have a lesson that is specifically designed for each group. There are four different groups that will rotate through these stations. These groups will be flexible and change frequently based on observation and data. For the purpose of this plan I will outline three different model lessons: above grade level, grade level, and below grade level. Once the specific needs of the students are determined, this plan can be altered to fit each group.
 - Below Grade Level: Provide students with manipulatives (unifix cubes). Show students how to make a 3-by-5 array. Explain to students that there are 3 rows and 5 columns. Mention that this is the same as 3 groups of 5. Then have students create an array with you (4-by-6). Again use the language of 4 rows, 6 columns, 4 groups of 6. Then ask how many cubes are there total. How could we figure this out? Some students may want to count. If ready, encourage students to find a multiplication problem in addition to counting. Have students write the multiplication equation on their whiteboard. Help students solve the multiplication problem by using repeated addition. If time allows do more examples either as a whole group or in pairs. Allow time to discuss each problem before moving onto the next.
 - At Grade Level: Have manipulatives available for students who need/would like to utilize. Refer to anchor chart that was created in the mini-lesson. Have students create an array (5-by-2). Have student explain what are the rows and columns and how this would be made into a multiplication equation. Students should not destroy this example. They should make a new array (3-by-2). Answer all the same questions as before. Then ask students which is bigger. Move arrays on their white board and use greater than, less than, or equal to symbols. Ask students what they would have to do to make the arrays equal to each other. Then have students model other arrays for comparison. Students should also find and answer the multiplication equation for

each.

- Above Grade Level: Students will be given grid paper; cubes should be available for students want to use them. Students will outline a 10-by-10 square in marker on their grid. Students will make a design by outlining five or more smaller arrays inside the larger square. The arrays have to cover the entire 10-by-10 square, making sure all squares are used. Students should label each small array with a multiplication equation. When finished ask: What do you notice about the sum of all the products? This activity should be cut out and glued in their math journal.
- H (Hands On): Students will be playing Conquer. Students will be playing this game with a partner. Students will need one 100 cm grid paper, two dice, and two different colored markers/crayons, colored pencils. The object of the game is to completely cover the grid with arrays of your color. Whoever has the most square area wins. Students take turns rolling both dice. Students then create an array, with their color, matching the numbers on the dice. When creating a new array it has to touch an already existing array. Each partner starts on opposite ends of the grid and works toward the middle.

Share (10 minutes): Students will gather at the carpet. Teacher will point out a positive that students did during the lesson. Students will be asked to share with their partner one take-away from today. If time a few students will share with the class.

Resources:

Math Lesson adapted from Math Expression Curriculum

Array Back to School Task Cards retrieved from

<https://www.teacherspayteachers.com/Product/Arrays-Repeated-Addition-Task-cards-Back-to-School-Theme-1326970>

| Understanding by Design (UbD) Unit Plan | |
|--|--|
| Title: <u>Unit 1 Lesson 5</u> | Subject: <u>Mathematics</u> |
| Topic: <u>Multiply and Divide with 2</u> | Grade: <u>Third Grade</u> |
| Stage 1- Desired Results | |
| <p>Establish Goals:</p> <p><u>3.ARO.1</u> Given an expression such as 3×8, describe the product as the total number of objects in 3 groups of 8 objects.</p> <p><u>3.ARO.2</u> Given an expression such as $35/7$, describe the quotient as the number of objects in a group when 35 objects are separated into equal shares, or the number of equal shares when 35 objects are separated into equal groups of 7 objects.</p> <p><u>3.ARO.3</u> Solve multiplication and division word problems through 100 involving arrays, equal groups, and measurements; represent the problem using for example, pictures, and equations that have symbols for the unknown quantity.</p> <p><u>3.ARO.4</u> Given a multiplication or division equation involving 3 whole numbers, find the unknown quantity that makes the equation true.</p> <p><u>3.ARO.6</u> Use multiplication knowledge to recognize that division can be thought of as an unknown factor problem.</p> <p><u>3.ARO.7</u> Demonstrate fluency in multiplying and dividing through 100 by using strategies like the properties of operations or the relationship between multiplication and division.</p> <p><u>3.ARO.9</u> Find arithmetic patterns. Use properties of operations to explain the patterns.</p> | |
| <p>Understandings: Students identify patterns in 2s count-bys and multiplications and relate multiplication and division.</p> | <p>Essential Question/Big Idea: What patterns are noticed when skip counting by 2s? How are multiplication and repeated addition related?</p> |
| <p>Students will know...</p> <p>How to identify and use patterns to multiply by 2, specifically in regards to even and odd numbers.</p> <p>How to count-by 2s and transfer this knowledge into multiplication.</p> | <p>Students will be able to...</p> <p>Identify the connection between multiplication and division.</p> <p>Identify if a number is even or odd.</p> |
| Stage 2- Assessment Evidence | |
| <p>Performance Task: Students will be writing down tasks from the mini-lesson and stations in their math journal. Students will work on activities to help increase their fact fluency.</p> | |

Assessment Evidence:

Teacher observation.

Math Journals will be collected to assess students' knowledge and understanding.

Stage 3- Learning Plan**Learning Activities:**

Calendar Morning Routine (10 minutes): As a whole group students will identify the number of the day that will be predetermined. This number should be posted and visible for all students to see; the number should change daily, increasing the complexity of the number daily. The number for the day will be 879. A discussion will be lead on how to write this number in standard form, expanded form, and written form. Students will then have their math journal at their carpet spots and write what number is 10 more and 10 less. Students will then add 100 to the number.

Daily Word Problem (10 minutes): Students will complete this problem in their math journal independently. Then depending on time students will either share with a partner, or there will be a whole class discussion. Discussion will include having students describe the process they used to find the answer. Post this question:
-Tyler, Kyra, and Emily finished the race in first, second, and third places. Tyler finished 1 second behind Emily. How many different ways could they have finished the race?

Mini-Lesson (10 minutes): Ahead of time prepare a line of 30 cubes, squares, etc. They can be a manipulative or a drawing.

-Together circle groups of 2 blocks. Do this until 10 groups are circled. Point to groups saying "1 group of 2 is 2. 2 groups of 2 is 4. Etc." Explain to students that these are the numbers we say when we count by 2. Point to circled groups as students practice counting by 2's until 20.

-Tell students that we can use multiplication to represent the total for a repeated group of 2. $2=1 \times 2$. (Refer to the boxes created when showing the equation.

-Prompt students with the equation $6=2 \times 3$. Have students Turn & Talk with their partner to explain what this equation means.

-Have students look and describe any patterns they see.

-Tell students that today we will continue looking at these patterns while practicing counting and multiplying by 2.

Math Stations (30 minutes): Day 1 of 2. Students will be split into four different groups based on assessment data and student need. Students will complete two stations per day (each station lasting 15 minutes). The students will then complete the last two stations on the next day.

- **M (Math Facts):** Students will work on Multiplication Fact Station. This station helps and encourages students to develop their multiplication facts. Students work on various facts in depth; completing activities and worksheets to help automaticity. Students work at their own level and pace. This station is student

led. Work will be kept in students' math folder.

- A (At your Seat): Students will be completing Place Value Task Cards. Students will record the answers to these task cards on a recording card; students will turn in answers when completed. This set of task cards does not directly correlate to the lesson, but it is an area of need that many students (at the beginning of third grade) struggle with.
- T (Teacher Time): Every group will have a lesson that is specifically designed for each group. There are four different groups that will rotate through these stations. These groups will be flexible and change frequently based on observation and data. For the purpose of this plan I will outline three different model lessons: above grade level, grade level, and below grade level. Once the specific needs of the students are determined, this plan can be altered to fit each group.
 - Below Grade Level: Provide students with manipulatives. Have students practice counting by 2s. Have students hold up fingers as they count. Next, have students make groups of two. After students have counted out the groups of two, write the associated multiplication problem. Do this activity multiple times so students can envision what each multiplication problem would look like with the manipulatives. Also mention that multiplying by two is like adding the number twice.
 - At Grade Level: Have manipulatives available for students who need/would like to utilize. Refer to anchor chart that was created in the mini-lesson. Review the circled group of 2's and the multiplication equation that relates to it. Have students look for patterns. Allow students time to share ideas with a neighbor. Then discuss the ideas as a group. When we count by 2s we are counting even numbers. Numbers that are not a multiple of 2 are called odd numbers. Ask students this word problem:
 - At the art fair, Tammy sold 9 pairs of earrings. How many individual earrings did she sell?
 - Have students model the equation in their math journal. Allow students time to discuss their strategies with each other and as a whole group.
 - Above Grade Level:

Start by asking students this prompt: How can you tell without multiplying if $5 \times 27 = 134$ is correct? The answer has to end in a 0 or 5 if you are multiplying a number by 5.

Students will be working in smaller groups writing division sentences. Each small group will write the numbers 5-20 on index cards, one number per card. Students will shuffle the deck and place them in a stack face down. Students will take turns drawing a card and deciding if the number belongs to the group of count-by-2s, count-by-5s, or both. If the number does not belong in either group, your turn ends. Otherwise, write a correct 2s or 5s division sentence using the number.

Each division sentence you create earns 1 point. Continue until all cards are used.

- H (Hands On): Students will be playing Conquer. Students will be playing this game with a partner. Students will need one 100 cm grid paper, two dice, and two different colored markers/crayons, colored pencils. The object of the game is to completely cover the grid with arrays of your color. Whoever has the most square area wins. Students take turns rolling both dice. Students then create an array, with their color, matching the numbers on the dice. When creating a new array it has to touch an already existing array. Each partner starts on opposite ends of the grid and works toward the middle.

Share (10 minutes): Students will gather at the carpet. Teacher will point out a positive that students did during the lesson. Students will practice counting by 2s following the chart created during the mini-lesson. If time students could sing in a round.

Resources:

Math Lesson adapted from Math Expression Curriculum

Place Value Task Cards retrieved from

<https://www.teacherspayteachers.com/Product/Place-Value-Task-Cards-self-checking-QR-codes-260764>

| Understanding by Design (UbD) Unit Plan | |
|---|---|
| Title: <u>Unit 1 Lesson 6</u> | Subject: <u>Mathematics</u> |
| Topic: <u>Build Fluency with 2s and 5s</u> | Grade: <u>Third Grade</u> |
| Stage 1- Desired Results | |
| <p>Establish Goals:</p> <p><u>3.ARO.1</u> Given an expression such as 3×8, describe the product as the total number of objects in 3 groups of 8 objects.</p> <p><u>3.ARO.2</u> Given an expression such as $35/7$, describe the quotient as the number of objects in a group when 35 objects are separated into equal shares, or the number of equal shares when 35 objects are separated into equal groups of 7 objects.</p> <p><u>3.ARO.3</u> Solve multiplication and division word problems through 100 involving arrays, equal groups, and measurements; represent the problem using for example, pictures, and equations that have symbols for the unknown quantity.</p> <p><u>3.ARO.4</u> Given a multiplication or division equation involving 3 whole numbers, find the unknown quantity that makes the equation true.</p> <p><u>3.ARO.5</u> Use properties of operations as strategies for multiplying and dividing.</p> <p><u>3.ARO.6</u> Use multiplication knowledge to recognize that division can be thought of as an unknown factor problem.</p> <p><u>3.ARO.7</u> Demonstrate fluency in multiplying and dividing through 100 by using strategies like the properties of operations or the relationship between multiplication and division.</p> <p><u>3.ARO.9</u> Find arithmetic patterns. Use properties of operations to explain the patterns.</p> | |
| <p>Understandings: Students will build fluency with 2s and 5s multiplications and divisions.</p> | <p>Essential Question/Big Idea: What patterns are similar for both the 2s and 5s? What do we notice about the product when one factor is even?</p> |
| <p>Students will know... Rows go across. Columns go down. As a result of the Commutative Property the answers to 8×5 and 5×8 are both 40.</p> | <p>Students will be able to... Identify factors and the product in an equation. Identify what rows and columns are in an array. Use a multiplication grid as a strategy to solve multiplication and division equations.</p> |
| Stage 2- Assessment Evidence | |
| <p>Performance Task: Students will be writing down tasks from the mini-lesson and stations in their math</p> | |

journal.

Students will work on activities to help increase their fact fluency.

Students will complete Quick Quiz 1

The Remembering page will be sent home was homework.

Assessment Evidence:

Teacher observation.

Math Journals will be collected to assess students' knowledge and understanding.

Information will be gathered from Quick Quiz 1.

Homework will also be assessed.

Stage 3- Learning Plan

Learning Activities:

Calendar Morning Routine (10 minutes): As a whole group students will identify the number of the day that will be predetermined. This number should be posted and visible for all students to see; the number should change daily, increasing the complexity of the number daily. The number for the day will be 999. A discussion will be lead on how to write this number in standard form, expanded form, and written form. Students will then have their math journal at their carpet spots and write what number is 10 more and 10 less. Students will then add 100 to the number.

Daily Word Problem (10 minutes): Students will complete this problem in their math journal independently. Then depending on time students will either share with a partner, or there will be a whole class discussion. Discussion will include having students describe the process they used to find the answer. Post this question:
-Felipe created a three-digit number. The hundreds digit is 3 greater than the ones digit. The product of the tens and the ones digit is 6. The sum of the hundreds and the ones digits are 9. What is the 3 digit number? 623

Mini-Lesson (10 minutes): Ahead of time have an enlarged copy of a multiplication grid (possible on SmartBoard), a multiplication equation ($4 \times 8 = ?$), and student copies of a multiplication grid that can be glued into each student's math journal.

-Introduce the multiplication grid (curriculum calls it a target).

-Have students study the target. Ask students what they notice about it.

-Point out to students that the row at the top and the far left column are a different color (green in this case). Tell students that those are our guide numbers. We will start at the row and column of colored numbers

-Refer to the multiplication equation. Ask students to remind you what numbers are the factors and which one is the product. Tell students that if we want to find the answer to a multiplication problem we use the factors on the target (grid). Model how to use the multiplication grid.

-Provide each student with their our multiplication grid to glue into their notebook.

Then have students practice with a partner using the grid. Provide students with some examples. Walk around the room to help and guide if necessary.

-After a minute or two. Show students how doing 4×8 and 8×4 give the same answer on the grid (Commutative Property of Multiplication).

-Tell students that this may be a strategy for them to use, but only to check their answers. Encourage them to use other strategies before resorting to the grid.

Math Stations (30 minutes): Day 2 of 2. Students will be split into four different groups based on assessment data and student need. Students will complete two stations per day (each station lasting 15 minutes). The students will then complete the last two stations on the next day.

- M (Math Facts): Students will work on Multiplication Fact Station. This station helps and encourages students to develop their multiplication facts. Students work on various facts in depth; completing activities and worksheets to help automaticity. Students work at their own level and pace. This station is student led. Work will be kept in students' math folder.
- A (At your Seat): Students will be completing Place Value Task Cards. Students will record the answers to these task cards on a recording card; students will turn in answers when completed. This set of task cards does not directly correlate to the lesson, but it is an area of need that many students (at the beginning of third grade) struggle with.
- T (Teacher Time): Every group will have a lesson that is specifically designed for each group. There are four different groups that will rotate through these stations. These groups will be flexible and change frequently based on observation and data. For the purpose of this plan I will outline three different model lessons: above grade level, grade level, and below grade level. Once the specific needs of the students are determined, this plan can be altered to fit each group.
 - Below Grade Level: Provide students with manipulatives. Have students practice counting by 2s. Have students hold up fingers as they count. Next, have students make groups of two. After students have counted out the groups of two, write the associated multiplication problem. Do this activity multiple times so students can envision what each multiplication problem would look like with the manipulatives. Also mention that multiplying by two is like adding the number twice.
 - At Grade Level: Have manipulatives available for students who need/would like to utilize. Refer to anchor chart that was created in the mini-lesson. Review the circled group of 2's and the multiplication equation that relates to it. Have students look for patterns. Allow students time to share ideas with a neighbor. Then discuss the ideas as a group. When we count by 2s we are counting even numbers. Numbers that are not a multiple of 2 are called odd numbers. Ask students this word problem:
 - At the art fair, Tammy sold 9 pairs of earrings. How many individual earrings did she sell?
 - Have students model the equation in their math journal.

Allow students time to discuss their strategies with each other and as a whole group.

○ Above Grade Level:

Start by asking students this prompt: How can you tell without multiplying if $5 \times 27 = 134$ is correct? The answer has to end in a 0 or 5 if you are multiplying a number by 5.

Students will be working in smaller groups writing division sentences.

Each small group will write the numbers 5-20 on index cards, one number per card. Students will shuffle the deck and place them in a stack face down. Students will take turns drawing a card and deciding if the number belongs to the group of count-by-2s, count-by-5s, or both.

If the number does not belong in either group, your turn ends.

Otherwise, write a correct 2s or 5s division sentence using the number.

Each division sentence you create earns 1 point. Continue until all cards are used.

- H (Hands On): Students will be playing Conquer. Students will be playing this game with a partner. Students will need one 100 cm grid paper, two dice, and two different colored markers/crayons, colored pencils. The object of the game is to completely cover the grid with arrays of your color. Whoever has the most square area wins. Students take turns rolling both dice. Students then create an array, with their color, matching the numbers on the dice. When creating a new array it has to touch an already existing array. Each partner starts on opposite ends of the grid and works toward the middle.

Share (10 minutes): Students will gather at the carpet. Teacher will point out a positive that students did during the lesson. Students will complete Quick Quiz 1 as their Exit Ticket. This will be turned in before going to lunch.

Resources:

Math Lesson adapted from Math Expression Curriculum

Place Value Task Cards

<https://www.teacherspayteachers.com/Product/Place-Value-Task-Cards-self-checking-QR-codes-260764>

Quick Quiz 1 from Math Expression Curriculum

| Understanding by Design (UbD) Unit Plan | |
|--|--|
| Title: <u>Unit 1 Lesson 7</u> | Subject: <u>Mathematics</u> |
| Topic: <u>Multiply and Divide with 10</u> | Grade: <u>Third Grade</u> |
| Stage 1- Desired Results | |
| <p>Establish Goals:</p> <p><u>3.ARO.1</u> Given an expression such as 3×8, describe the product as the total number of objects in 3 groups of 8 objects.</p> <p><u>3.ARO.2</u> Given an expression such as $35/7$, describe the quotient as the number of objects in a group when 35 objects are separated into equal shares, or the number of equal shares when 35 objects are separated into equal groups of 7 objects.</p> <p><u>3.ARO.3</u> Solve multiplication and division word problems through 100 involving arrays, equal groups, and measurements; represent the problem using for example, pictures, and equations that have symbols for the unknown quantity.</p> <p><u>3.ARO.4</u> Given a multiplication or division equation involving 3 whole numbers, find the unknown quantity that makes the equation true.</p> <p><u>3.ARO.6</u> Use multiplication knowledge to recognize that division can be thought of as an unknown factor problem.</p> <p><u>3.ARO.7</u> Demonstrate fluency in multiplying and dividing through 100 by using strategies like the properties of operations or the relationship between multiplication and division.</p> <p><u>3.ARO.9</u> Find arithmetic patterns. Use properties of operations to explain the patterns.</p> | |
| <p>Understandings: Students explore patterns in 10s count-bys, multiplications, divisions, and solve problems.</p> | <p>Essential Question/Big Idea: Multiplication equations relate to division equations. Variables are used in equations to represent an unknown number.</p> |
| <p>Students will know... That when counting by 10s the words all end in "ty". Letters and other symbols can be used to represent an unknown number in an equation. There are multiple symbols that are used to represent a multiplication or division sign.</p> | <p>Students will be able to... Use structure of patterns to recognize relationships between multipliers and products in 10s. Apply patterns, multiplication, and division strategies to solve word problems. Represent the unknown part of an equation using a variable.</p> |
| Stage 2- Assessment Evidence | |
| <p>Performance Task: Students will be writing down tasks from the mini-lesson and stations in their math</p> | |

journal.

Students will work on activities to help increase their fact fluency.

Students will complete an exit slip during Share time.

Assessment Evidence:

Teacher observation.

Math Journals will be collected to assess students' knowledge and understanding.

Data will be gathered through the exit tickets.

Stage 3- Learning Plan

Learning Activities:

Calendar Morning Routine (10 minutes): As a whole group students will identify the number of the day that will be predetermined. This number should be posted and visible for all students to see; the number should change daily, increasing the complexity of the number daily. The number for the day will be 546. A discussion will be lead on how to write this number in standard form, expanded form, and written form. Students will then have their math journal at their carpet spots and write what number is 200 more and 200 less. Students will then double the number.

Daily Word Problem (10 minutes): Students will complete this problem in their math journal independently (students who may struggle can work together). Then depending on time students will either share with a partner, or there will be a whole class discussion. Discussion will include having students describe the process they used to find the answer. Post this question:

-How many possible products can you get using any combination of two of these factors? 2, 5, 10. 3 products: 10, 20, 50

Mini-Lesson (10 minutes): Ahead of time prepare a line of 100 cubes, squares, etc on anchor chart. They can be a manipulative or a drawing.

-Together circle groups of 10 blocks. Do this until 10 groups are circled. Point to groups saying "1 group of 10 is 10. 2 groups of 10 is 20. Etc." Explain to students that these are the numbers we say when we count by 10. Point to circled groups as students practice counting by 10's until 100.

-Ask students, "When you count by 10s did you notice anything about the words you said? Most end in -ty.

-Tell students that we can use multiplication to represent the total for a repeated group of 10. $10=1 \times 10$. (Refer to the boxes created when showing the equation.

-Prompt students with the equation $60=10 \times 6$. Have students Turn & Talk with their partner to explain what this equation means.

-Have students look and describe any patterns they see. A

-Tell students that today we will continue looking at these patterns while practicing counting and multiplying by 10.

-Try an equation together: A box of straws hold 60 straws. There are 10 straws in each row. How many rows are there?

Math Stations (30 minutes): Day 1 of 2. Students will be split into four different groups based on assessment data and student need. Students will complete two stations per day (each station lasting 15 minutes). The students will then complete the last two stations on the next day.

- M (Math Facts): Students will work on Multiplication Fact Station. This station helps and encourages students to develop their multiplication facts. Students work on various facts in depth; completing activities and worksheets to help automaticity. Students work at their own level and pace. This station is student led. Work will be kept in students' math folder.
- A (At your Seat): Students will be completing Fall Multiplication and Division Task Cards. Students will record the answers to these task cards on a recording card; students will turn in answers when completed.
- T (Teacher Time): Every group will have a lesson that is specifically designed for each group. There are four different groups that will rotate through these stations. These groups will be flexible and change frequently based on observation and data. For the purpose of this plan I will outline three different model lessons: above grade level, grade level, and below grade level. Once the specific needs of the students are determined, this plan can be altered to fit each group.
 - Below Grade Level: Provide students with manipulatives. Base 10 blocks work well. Have students practice counting by 10s. Have students move the blocks as they count. Next, have students make groups of ten. After students have counted out the groups of ten, write a multiplication problem. Do this activity multiple times so students can envision what each multiplication problem would look like with the manipulatives. Show students the corresponding division problem with the block. If possible try incorporating a few unknown problems as well.
 - At Grade Level: Have manipulatives available for students who need/would like to utilize, Base 10 blocks work well. Refer to anchor chart that was created in the mini-lesson. Review the circled group of 10's and the multiplication equation that relates to it. Provide students with equations. Do one together, let the students do one with a partner, and finally have the students complete one independently. Allow students to use strategies taught in class to solve.
 - Raymundo has 9 dimes. How many cents is that?
 - Yoko has some dimes in her pocket, and no other coins. She has a total of \$0.70. How many dimes does she have?
 - Jonah picked 40 strawberries. He gave them to 10 of his friends. Each friend got the same number of strawberries. How many strawberries did each friend get?
 - There are 10 Space Command trading cards in each pack. Zoe bought 5 packs of card. How many cards did she buy in all?

- Above Grade Level:
 - Students will have a real-life puzzle to solve today. Ahead of time create a chart that has three stickers on it. Each sticker costing a different amount (possibly \$0.02, \$0.05, and \$0.10).
 - Tell students that they have exactly \$0.50 to spend on these stickers. Have students make an organized list that shows all the possible combinations of stickers you could buy with \$0.50. Make sure to include at least one of each type of sticker in each combination.
 - When finished have students discuss their results and the strategies they used.
 - If time have students answer this prompt: Suppose you know that $\heartsuit \times 10 = \diamondsuit \times 5$. What is the relationship between \heartsuit and \diamondsuit ? Explain your answer.

- **H (Hands On):** Students will be playing Multiplication War. Students will need to be in pairs (three students per group if there is an odd number). Students will have a deck of cards. The cards should be split between the partners. Each partner will flip one card over at the same time. Students should multiply the number on the cards together. Whoever says the correct answer first gets both cards. If it is a tie, students should both flip another card over and follow the same process. The student with the most cards wins. Face cards are worth 10 and Aces are 1. Jokers or other non-playing cards in the deck can be zeroes.

Share (10 minutes): Students will gather at the carpet. Teacher will point out a positive that students did during the lesson. Students will then complete an exit ticket. Exit tickets will be turned in before leaving for lunch.

Resources:

Math Lesson adapted from Math Expression Curriculum
Fall Multiplication and Division Task Cards retrieved from
<https://www.teacherspayteachers.com/Product/Fall-Multiplication-and-Division-Printables-3rd-Grade-FREEBIE-2165467>
Exit Slip

| Understanding by Design (UbD) Unit Plan | |
|---|---|
| Title: <u>Unit 1 Lesson 8</u> | Subject: <u>Mathematics</u> |
| Topic: <u>Multiply and Divide with 9</u> | Grade: <u>Third Grade</u> |
| Stage 1- Desired Results | |
| <p>Establish Goals:</p> <p><u>3.ARO.1</u> Given an expression such as 3×8, describe the product as the total number of objects in 3 groups of 8 objects.</p> <p><u>3.ARO.4</u> Given a multiplication or division equation involving 3 whole numbers, find the unknown quantity that makes the equation true.</p> <p><u>3.ARO.6</u> Use multiplication knowledge to recognize that division can be thought of as an unknown factor problem.</p> <p><u>3.ARO.7</u> Demonstrate fluency in multiplying and dividing through 100 by using strategies like the properties of operations or the relationship between multiplication and division.</p> <p><u>3.ARO.9</u> Find arithmetic patterns. Use properties of operations to explain the patterns.</p> | |
| <p>Understandings: Students identify patterns and learn a strategy for quickly multiplying and dividing with 9s.</p> | <p>Essential Question/Big Idea: What patterns/relationships do you notice between the 10s and 9s?</p> |
| <p>Students will know... Strategies to multiply with 9.</p> | <p>Students will be able to... Identify and compare patterns for the 2s, 5s, 9s, and 10s. Use the 9s finger trick as a strategy to solve the 9s problems.</p> |
| Stage 2- Assessment Evidence | |
| <p>Performance Task: Students will be writing down tasks from the mini-lesson and stations in their math journal. Students will work on activities to help increase their fact fluency. The Remembering page will be sent home as homework.</p> | |
| <p>Assessment Evidence: Teacher observation. Math Journals will be collected to assess students' knowledge and understanding. Homework will also be assessed.</p> | |
| Stage 3- Learning Plan | |

Learning Activities:

Calendar Morning Routine (10 minutes): As a whole group students will identify the number of the day that will be predetermined. This number should be posted and visible for all students to see; the number should change daily, increasing the complexity of the number daily. The number for the day will be 100. A discussion will be lead on how to write this number in standard form, expanded form, and written form. Students will then have their math journal at their carpet spots and write what $100 \times 2 =$ and $100/2 =$. Students will also write five different ways to write the number 100.

Daily Word Problem (10 minutes): Students will complete this problem in their math journal independently (students who may struggle can work together). Then depending on time students will either share with a partner, or there will be a whole class discussion. Discussion will include having students describe the process they used to find the answer. Post this question:

-Tom finished the race 4 seconds behind Jane. Lou finished 7 seconds ahead of Tom. Write the order in which they finished the race. Explain. Lou, Jane, Tom.

Mini-Lesson (10 minutes): Ahead of time prepare a line of 100 cubes, squares, etc on anchor chart. They can be a manipulative or a drawing.

-Together circle groups of 9 blocks. Do this until 10 groups are circled. Point to groups saying "1 group of 9 is 9. 2 groups of 9 is 18. Etc." Explain to students that these are the numbers we say when we count by 9. Point to circled groups as students practice counting by 9's until 90.

-Ask students if they noticed any patterns.

-Show students how to do the nine hands trick to solve a multiplication equation with a 9 as a factor.

-Have students practice this hand trick with multiple examples. First do a few as a group. -Then allow students to try by themselves.

-Next, show students how to use this hand trick when doing a division problem.

-Allow time for practice.

-Tell students that today we will continue looking at these patterns while practicing counting and multiplying by 9.

Math Stations (30 minutes): Day 2 of 2. Students will be split into four different groups based on assessment data and student need. Students will complete two stations per day (each station lasting 15 minutes). The students will then complete the last two stations on the next day.

- M (Math Facts): Students will work on Multiplication Fact Station. This station helps and encourages students to develop their multiplication facts. Students work on various facts in depth; completing activities and worksheets to help automaticity. Students work at their own level and pace. This station is student led. Work will be kept in students' math folder.
- A (At your Seat): Students will be completing Fall Multiplication and Division

Task Cards. Students will record the answers to these task cards on a recording card; students will turn in answers when completed.

- T (Teacher Time): Every group will have a lesson that is specifically designed for each group. There are four different groups that will rotate through these stations. These groups will be flexible and change frequently based on observation and data. For the purpose of this plan I will outline three different model lessons: above grade level, grade level, and below grade level. Once the specific needs of the students are determined, this plan can be altered to fit each group.
 - Below Grade Level: Provide students with manipulatives. Base 10 blocks work well. Have students practice counting by 10s. Have students move the blocks as they count. Next, have students make groups of ten. After students have counted out the groups of ten, write a multiplication problem. Do this activity multiple times so students can envision what each multiplication problem would look like with the manipulatives. Show students the corresponding division problem with the block. If possible try incorporating a few unknown problems as well.
 - At Grade Level: Have manipulatives available for students who need/would like to utilize, Base 10 blocks work well. Refer to anchor chart that was created in the mini-lesson. Review the circled group of 10's and the multiplication equation that relates to it. Provide students with equations. Do one together, let the students do one with a partner, and finally have the students complete one independently. Allow students to use strategies taught in class to solve.
 - Raymundo has 9 dimes. How many cents is that?
 - Yoko has some dimes in her pocket, and no other coins. She has a total of \$0.70. How many dimes does she have?
 - Jonah picked 40 strawberries. He gave them to 10 of his friends. Each friend got the same number of strawberries. How many strawberries did each friend get?
 - There are 10 Space Command trading cards in each pack. Zoe bought 5 packs of card. How many cards did she buy in all?
 - Above Grade Level:
 - Students will have a real-life puzzle to solve today. Ahead of time create a chart that has three stickers on it. Each sticker costing a different amount (possibly \$0.02, \$0.05, and \$0.10).
 - Tell students that they have exactly \$0.50 to spend on these stickers. Have students make an organized list that shows all the possible combinations of stickers you could buy with \$0.50. Make sure to include at least one of each type of sticker in each combination.
 - When finished have students discuss their results and the strategies they used.
 - If time have students answer this prompt: Suppose you know that $\heartsuit \times$

$10 = \heartsuit \times 5$. What is the relationship between \heartsuit and \diamond ? Explain your answer.

- **H (Hands On):** Students will be playing Multiplication War. Students will need to be in pairs (three students per group if there is an odd number). Students will have a deck of cards. The cards should be split between the partners. Each partner will flip one card over at the same time. Students should multiply the number on the cards together. Whoever says the correct answer first gets both cards. If it is a tie, students should both flip another card over and follow the same process. The student with the most cards wins. Face cards are worth 10 and Aces are 1. Jokers or other non-playing cards in the deck can be zeroes.

Share (10 minutes): Students will gather at the carpet. Teacher will point out a positive that students did during the lesson. Students will then share something they learned today with a partner. If time a few groups can share with the whole group.

Resources:

Math Lesson adapted from Math Expression Curriculum
Fall Multiplication and Division Task Cards retrieved from
<https://www.teacherspayteachers.com/Product/Fall-Multiplication-and-Division-Printables-3rd-Grade-FREEBIE-2165467>

Understanding by Design (UbD) Unit Plan

Title: Unit 1 Lesson 9

Subject: Mathematics

Topic: Build Fluency with 2s, 5s, 9s, and 10s

Grade: Third Grade

Stage 1- Desired Results

Establish Goals:

3.ARO.1 Given an expression such as 3×8 , describe the product as the total number of objects in 3 groups of 8 objects.

3.ARO.2 Given an expression such as $35/7$, describe the quotient as the number of objects in a group when 35 objects are separated into equal shares, or the number of equal shares when 35 objects are separated into equal groups of 7 objects.

3.ARO.3 Solve multiplication and division word problems through 100 involving arrays, equal groups, and measurements; represent the problem using for example, pictures, and equations that have symbols for the unknown quantity.

3.ARO.4 Given a multiplication or division equation involving 3 whole numbers, find the unknown quantity that makes the equation true.

3.ARO.6 Use multiplication knowledge to recognize that division can be thought of as an unknown factor problem.

3.ARO.7 Demonstrate fluency in multiplying and dividing through 100 by using strategies like the properties of operations or the relationship between multiplication and division.

Understandings:

Students will build fluency with 2s, 5s, 9s, and 10s multiplications and divisions.

Essential Question/Big Idea:

There are multiple ways to solve a problem. Use what works best for you. Building fact fluency is an important first step in learning multiplication and division.

Students will know...

There are multiple methods to solve a problem.

How a fast array drawing can be beneficial in solving problems.

Students will be able to...

Apply the skills and strategies learned for 2s, 5s, 9s, and 10s in the context of real-world word problems.

Use drawings to help organize and represent solution methods.

Stage 2- Assessment Evidence

Performance Task:

Students will be writing down tasks from the mini-lesson and stations in their math journal.

Students will work on activities to help increase their fact fluency.

Assessment Evidence:

Teacher observation.

Math Journals will be collected to assess students' knowledge and understanding.

Stage 3- Learning Plan**Learning Activities:**

Calendar Morning Routine (10 minutes): As a whole group students will identify the number of the day that will be predetermined. This number should be posted and visible for all students to see; the number should change daily, increasing the complexity of the number daily. The number for the day will be 345. A discussion will be lead on how to write this number in standard form, expanded form, and written form. Students will then have their math journal at their carpet spots and write number is 10 more and 10 less. Students will also write five different ways to write the number 100.

Daily Word Problem (10 minutes): Students will complete this problem in their math journal independently (students who may struggle can work together). Then depending on time students will either share with a partner, or there will be a whole class discussion. Discussion will include having students describe the process they used to find the answer. Post this question:

-Jan has 5 times the number of dimes as she has nickels. She has half the number of nickels as she has pennies. Jan has 20 pennies. How many nickels does Jan have? How many dimes does Jan have? 10 nickels; 50 dimes.

Mini-Lesson (10 minutes): Ahead of time prepare three different equations.

Possibilities include:

- Ian planted tulip bulbs in an array with 5 rows and 10 columns. How many bulbs did he plant?
- Erin gave 30 basketball cards to her 5 cousins. Each cousin got the same number of cards. How many cards did each cousin get?
- Martina bought 7 cans of racquetballs. There were 2 balls per can. How many racquetballs did she buy in all?

-Start by reviewing vocab from previous lesson (factor, product, quotient, dividend, divisor, etc.)

-Do the first problem together. Outlining how to find the important information in the word problem, plugging the information into an equation, and how to solve.

Encourage students to participate.

-Allow students to complete the second one with a partner. Share strategies with the class.

-Students can do the third one independently in their math journal. Allow time for discussion. Provide extra support as needed.

Math Stations (30 minutes): Day 1 of 2. Students will be split into four different groups based on assessment data and student need. Students will complete two stations

per day (each station lasting 15 minutes). The students will then complete the last two stations on the next day.

- M (Math Facts): Students will work on Multiplication Fact Station. This station helps and encourages students to develop their multiplication facts. Students work on various facts in depth; completing activities and worksheets to help automaticity. Students work at their own level and pace. This station is student led. Work will be kept in students' math folder.
- A (At your Seat): Students will be completing Multiplication and Division Story Problems. Students will record the answers to these task cards on a recording card; students will turn in answers when completed.
- T (Teacher Time): Every group will have a lesson that is specifically designed for each group. There are four different groups that will rotate through these stations. These groups will be flexible and change frequently based on observation and data. For the purpose of this plan I will outline three different model lessons: above grade level, grade level, and below grade level. Once the specific needs of the students are determined, this plan can be altered to fit each group.
 - Below Grade Level: Provide students with manipulatives. Students will be learning how to identify the important parts of a story problem and how to plug them into an equation to discover what the unknown is and finally how to solve the problem. Scaffold instruction as needed.

Possible problems:

 - The 27 students in the orchestra stood in rows for their school picture. There were 9 students in every row. How many rows of students were there?
 - Lindsey needs 40 note cards. The note cards are packaged 10 to a box. How many boxes of cards should Lindsey buy?
 - There are 25 student desks in the classroom. The desks are arranged in 5 rows with the same number of desks in each room. How many desks are in each row?
 - At Grade Level: Have manipulatives available for students who need/would like to utilize. Students will be learning how to make fast arrays. This is a beneficial strategy that will allow students to quickly make a drawing. Model for students how to create a fast array drawing. Have students practice creating drawings, making equations, and solving the problems.
 - Beth planted flowers in 7 rows and 6 columns. How many flowers did she plant?
 - The 28 students stood in 4 rows for their school picture. How many students were in each row?
 - 24 chairs were placed in 6 rows. How many chairs were in each row?
 - Above Grade Level:
 - Students will be solving a multiplication riddle. Students will work

together to solve the riddle.

I am an odd number between 1 and 10. I am a factor of 35. I am also a factor of 50. What number am I?

I am greater than 35 and less than 70. One of my factors is 9. I am an even number. What number am I?

-If extra time students can create their own riddles.

-Math Writing Prompt: Suppose you cannot remember how to find 7×9 . Explain two different ways you could use to find the product.

- **H (Hands On):** Students will be playing Multiplication War. Students will need to be in pairs (three students per group if there is an odd number). Students will have a deck of cards. The cards should be split between the partners. Each partner will flip one card over at the same time. Students should multiply the number on the cards together. Whoever says the correct answer first gets both cards. If it is a tie, students should both flip another card over and follow the same process. The student with the most cards wins. Face cards are worth 10 and Aces are 1. Jokers or other non-playing cards in the deck can be zeroes.

Share (10 minutes): Students will gather at the carpet. Teacher will point out a positive that students did during the lesson. Students will then share something they learned today with a partner. If time a few groups can share with the whole group.

Resources:

Math Lesson adapted from Math Expression Curriculum

Multiplication and Division Story Problems retrieved from

<https://www.teacherspayteachers.com/Product/Task-Cards-Multiplication-and-Division-Story-Problems-Freebie-2519584>

| Understanding by Design (UbD) Unit Plan | |
|---|--|
| Title: <u>Unit 1 Lesson 10</u> | Subject: <u>Mathematics</u> |
| Topic: <u>Multiply and Divide with 3</u> | Grade: <u>Third Grade</u> |
| Stage 1- Desired Results | |
| <p>Establish Goals:</p> <p><u>3.ARO.1</u> Given an expression such as 3×8, describe the product as the total number of objects in 3 groups of 8 objects.</p> <p><u>3.ARO.2</u> Given an expression such as $35/7$, describe the quotient as the number of objects in a group when 35 objects are separated into equal shares, or the number of equal shares when 35 objects are separated into equal groups of 7 objects.</p> <p><u>3.ARO.3</u> Solve multiplication and division word problems through 100 involving arrays, equal groups, and measurements; represent the problem using for example, pictures, and equations that have symbols for the unknown quantity.</p> <p><u>3.ARO.4</u> Given a multiplication or division equation involving 3 whole numbers, find the unknown quantity that makes the equation true.</p> <p><u>3.ARO.5</u> Use properties of operations as strategies for multiplying and dividing.</p> <p><u>3.ARO.6</u> Use multiplication knowledge to recognize that division can be thought of as an unknown factor problem.</p> <p><u>3.ARO.7</u> Demonstrate fluency in multiplying and dividing through 100 by using strategies like the properties of operations or the relationship between multiplication and division.</p> <p><u>3.ARO.9</u> Find arithmetic patterns. Use properties of operations to explain the patterns.</p> | |
| <p>Understandings: Students look for patterns with 3s and learn a new strategy for finding products for multipliers greater than 5.</p> | <p>Essential Question/Big Idea: What patterns do you see when counting by 3s? How does the 5s shortcut help us with the 3s?</p> |
| <p>Students will know... Create pictures/patterns to help count by 3s. The various relationships between the 3s and 5s. There are multiple strategies to solve multiplication and division equations.</p> | <p>Students will be able to... Apply strategies learned for other count-bys for the 3s. Utilize learned strategies to find an unknown number in an equation.</p> |
| Stage 2- Assessment Evidence | |
| <p>Performance Task: Students will be writing down tasks from the mini-lesson and stations in their math journal.</p> | |

Students will work on activities to help increase their fact fluency.
The Remembering page will be sent home as homework.

Assessment Evidence:

Teacher observation.

Math Journals will be collected to assess students' knowledge and understanding.

Homework will also be assessed.

Stage 3- Learning Plan

Learning Activities:

Calendar Morning Routine (10 minutes): As a whole group students will identify the number of the day that will be predetermined. This number should be posted and visible for all students to see; the number should change daily, increasing the complexity of the number daily. The number for the day will be 809. A discussion will be lead on how to write this number in standard form, expanded form, and written form. Students will then have their math journal at their carpet spots and write number is 10 more and 10 less. Students will also write five different ways to write the number 100.

Daily Word Problem (10 minutes): Students will complete this problem in their math journal independently (students who may struggle can work together). Then depending on time students will either share with a partner, or there will be a whole class discussion. Discussion will include having students describe the process they used to find the answer. Post this question:

-Write the number 18 on the board. Have students write multiplication expressions that equal this product.

Mini-Lesson (10 minutes): Ahead of time prepare a line of 30 cubes, squares, etc on anchor chart. They can be a manipulative or a drawing.

-Together circle groups of 3 blocks. Do this until 10 groups are circled. Point to groups saying "1 group of 3 is 3. 2 groups of 3 is 6. Etc." Explain to students that these are the numbers we say when we count by 3. Point to circled groups as students practice counting by 3's until 30.

-Tell students that we can use multiplication to represent the total for a repeated group of 3. $3=1 \times 3$. (Refer to the boxes created when showing the equation.

-Prompt students with the equation $21=3 \times 7$. Have students Turn & Talk with their partner to explain what this equation means.

-Have students look and describe any patterns they see.

-Tell students that today we will continue looking at these patterns while practicing counting and multiplying by 3.

-Draw a picture with 8 triangles. Have students copy this picture in their math journal. Underneath each triangle write how many sides there are total (ex. 3, 6, 9, 12...)

Math Stations (30 minutes): Day 2 of 2. Students will be split into four different groups based on assessment data and student need. Students will complete two stations per day (each station lasting 15 minutes). The students will then complete the last two stations on the next day.

- M (Math Facts): Students will work on Multiplication Fact Station. This station helps and encourages students to develop their multiplication facts. Students work on various facts in depth; completing activities and worksheets to help automaticity. Students work at their own level and pace. This station is student led. Work will be kept in students' math folder.
- A (At your Seat): Students will be completing Multiplication and Division Story Problems. Students will record the answers to these task cards on a recording card; students will turn in answers when completed.
- T (Teacher Time): Every group will have a lesson that is specifically designed for each group. There are four different groups that will rotate through these stations. These groups will be flexible and change frequently based on observation and data. For the purpose of this plan I will outline three different model lessons: above grade level, grade level, and below grade level. Once the specific needs of the students are determined, this plan can be altered to fit each group.
 - Below Grade Level: Provide students with manipulatives. Students will be learning how to identify the important parts of a story problem and how to plug them into an equation to discover what the unknown is and finally how to solve the problem. Scaffold instruction as needed.

Possible problems:

 - The 27 students in the orchestra stood in rows for their school picture. There were 9 students in every row. How many rows of students were there?
 - Lindsey needs 40 note cards. The note cards are packaged 10 to a box. How many boxes of cards should Lindsey buy?
 - There are 25 student desks in the classroom. The desks are arranged in 5 rows with the same number of desks in each room. How many desks are in each row?
 - At Grade Level: Have manipulatives available for students who need/would like to utilize. Students will be learning how to make fast arrays. This is a beneficial strategy that will allow students to quickly make a drawing. Model for students how to create a fast array drawing. Have students practice creating drawings, making equations, and solving the problems.
 - Beth planted flowers in 7 rows and 6 columns. How many flowers did she plant?
 - The 28 students stood in 4 rows for their school picture. How many students were in each row?
 - 24 chairs were placed in 6 rows. How many chairs were in each

row?

- Above Grade Level:

- Students will be solving a multiplication riddle. Students will work together to solve the riddle.

- I am an odd number between 1 and 10. I am a factor of 35. I am also a factor of 50. What number am I?

- I am greater than 35 and less than 70. One of my factors is 9. I am an even number. What number am I?

- If extra time students can create their own riddles.

- Math Writing Prompt: Suppose you cannot remember how to find 7×9 . Explain two different ways you could use to find the product.

- H (Hands On): Students will be playing Multiplication War. Students will need to be in pairs (three students per group if there is an odd number). Students will have a deck of cards. The cards should be split between the partners. Each partner will flip one card over at the same time. Students should multiply the number on the cards together. Whoever says the correct answer first gets both cards. If it is a tie, students should both flip another card over and follow the same process. The student with the most cards wins. Face cards are worth 10 and Aces are 1. Jokers or other non-playing cards in the deck can be zeroes.

Share (10 minutes): Students will gather at the carpet. Teacher will point out a positive that students did during the lesson. Students will then share something they learned today with a partner. If time a few groups can share with the whole group.

Resources:

Math Lesson adapted from Math Expression Curriculum

Multiplication and Division Story Problems retrieved from

<https://www.teacherspayteachers.com/Product/Task-Cards-Multiplication-and-Division-Story-Problems-Freebie-2519584>

| Understanding by Design (UbD) Unit Plan | |
|---|--|
| Title: <u>Unit 1 Lesson 11</u> | Subject: <u>Mathematics</u> |
| Topic: <u>Multiplication and Area</u> | Grade: <u>Third Grade</u> |
| Stage 1- Desired Results | |
| <p>Establish Goals:</p> <p><u>3.ARO.5</u> Use properties of operations as strategies for multiplying and dividing.</p> <p><u>3.ARO.6</u> Use multiplication knowledge to recognize that division can be thought of as an unknown factor problem.</p> <p><u>3.ARO.7</u> Demonstrate fluency in multiplying and dividing through 100 by using strategies like the properties of operations or the relationship between multiplication and division.</p> <p><u>3.MDA.5</u> Know that area is an attribute of two-dimensional (plane) figures; understand concepts of area measurement.</p> <p><u>3.MDA.5.a</u> Recognize that a unit square has a side length of 1 unit and an area of 1 square unit and can be used to measure area of plane figures.</p> <p><u>3.MDA.5.b</u> Understand that if a plane figure can be covered by n unit squares without having gaps or overlaps, then the figure has an area of n square units.</p> <p><u>3.MDA.6</u> Count unit squares to find the area of a figure; use standard units and non-standard units to measure area.</p> <p><u>3.MDA.7</u> Understand the relationship between area and the operations of multiplication and addition.</p> <p><u>3.MDA.7.a</u> Use tiling to find the area of rectangles with given side lengths; show that the resulting area can also be found by multiplying the two side lengths.</p> <p><u>3.MDA.7.b</u> Solve real-world and other mathematical problems that involve finding the area of rectangles by multiplying the side lengths; use reasoning to illustrate the products as rectangular areas.</p> <p><u>3.MDA.7.d</u> Recognize that addition can be used to find area. Partition rectilinear figures into rectangles having no overlaps, then find the area of the original figure by adding the areas of the parts; use this approach to solve real-world problems.</p> | |
| <p>Understandings:</p> <p>Students will learn how to use the area model for multiplication.</p> | <p>Essential Question/Big Idea:</p> <p>What is the relationship between areas and arrays?</p> |
| <p>Students will know...</p> <p>Area is the amount inside a shape.</p> <p>Area can be modeled using an array.</p> <p>Area is labeled with a square unit.</p> <p>Area can be found by finding looking at the whole or adding the area of smaller</p> | <p>Students will be able to...</p> <p>Find the area of rectangle using multiplication.</p> <p>Use the area model and the Distributive Property as a multiplication strategy.</p> |

pieces inside the larger rectangle.

Stage 2- Assessment Evidence

Performance Task:

Students will be writing down tasks from the mini-lesson and stations in their math journal.

Students will work on activities to help increase their fact fluency.

Assessment Evidence:

Teacher observation.

Math Journals will be collected to assess students' knowledge and understanding.

Stage 3- Learning Plan

Learning Activities:

Calendar Morning Routine (10 minutes): As a whole group students will identify the number of the day that will be predetermined. This number should be posted and visible for all students to see; the number should change daily, increasing the complexity of the number daily. The number for the day will be 40. A discussion will be lead on how to write this number in standard form, expanded form, and written form. Students will then have their math journal at their carpet spots and write number is double and half of 40. Students will also write five different ways to write the number 40.

Daily Word Problem (10 minutes): Students will complete this problem in their math journal independently (students who may struggle can work together). Then depending on time students will either share with a partner, or there will be a whole class discussion. Discussion will include having students describe the process they used to find the answer. Post this question:

-At the park, there are birds and dogs. Altogether there are 6 animals and 16 legs. How many birds and dogs are at the park? Show your work. 4 birds, 2 dogs.

Mini-Lesson (10 minutes): Ahead of time prepare have the Square Tiles Interactive Tool up on the SmartBoard. Create a rectangle that is 4×5 .

-Have students count the squares inside the rectangle.

-Ask students how we could find the area without counting the squares. Write the equation.

-Ask students if the answer was the same.

-Create a different rectangle (3×4). What is the area.

-What are all the side lengths of the different rectangles that can be formed using 12 tiles? Create these rectangles for students to see how they look different, but have the same area.

-Make a 5×6 rectangle. Divide this into two smaller rectangles. Have the students find the lengths and widths of the two smaller rectangles. Show how Distributive Property

can be used to find the answer.

Math Stations (30 minutes): Day 1 of 2. Students will be split into four different groups based on assessment data and student need. Students will complete two stations per day (each station lasting 15 minutes). The students will then complete the last two stations on the next day.

- M (Math Facts): Students will work on Multiplication Fact Station. This station helps and encourages students to develop their multiplication facts. Students work on various facts in depth; completing activities and worksheets to help automaticity. Students work at their own level and pace. This station is student led. Work will be kept in students' math folder.
- A (At your Seat): Students will be completing Area Task Cards. Students will record the answers to these task cards on a recording card; students will turn in answers when completed.
- T (Teacher Time): Every group will have a lesson that is specifically designed for each group. There are four different groups that will rotate through these stations. These groups will be flexible and change frequently based on observation and data. For the purpose of this plan I will outline three different model lessons: above grade level, grade level, and below grade level. Once the specific needs of the students are determined, this plan can be altered to fit each group.
 - Below Grade Level: Provide students with Dotted paper or grid whiteboards. Students will practice drawing rectangles, writing the multiplication problem for the rectangle, and solving. Start altogether, then allow students to work with partners, and finally individually.
 - At Grade Level: Have a rectangle prepared that is 6x8. Have students find the area. Students will then look for other objects around the room that are less than 6 in x 8 in. They will practice measuring these objects and finding the area of them. Tell students to round to the nearest whole inch.
 - Above Grade Level:
 - Students will be working with a partner. They will be creating rectangles on grid paper for their partner to solve the area. Students should write the equations and label the answers correctly.
- H (Hands On): Students will be playing Conquer. Students will be playing this game with a partner. Students will need one 100 cm grid paper, two dice, and two different colored markers/crayons, colored pencils. The object of the game is to completely cover the grid with arrays of your color. Whoever has the most square area wins. Students take turns rolling both dice. Students then create an array, with their color, matching the numbers on the dice. When creating a new array it has to touch an already existing array. Each partner starts on opposite ends of the grid and works toward the middle.

Share (10 minutes): Students will gather at the carpet. Teacher will point out a positive that students did during the lesson. Students will then complete an exit slip before going to lunch.

Resources:

Math Lesson adapted from Math Expression Curriculum

Area Task Cards retrieved from

<https://www.teacherspayteachers.com/Product/Free-Area-Task-Cards-3430518>

Exit Slip

| Understanding by Design (UbD) Unit Plan | |
|--|--|
| Title: <u>Unit 1 Lesson 12</u> | Subject: <u>Mathematics</u> |
| Topic: <u>Multiply and Divide with 4</u> | Grade: <u>Third Grade</u> |
| Stage 1- Desired Results | |
| <p>Establish Goals:</p> <p><u>3.ARO.1</u> Given an expression such as 3×8, describe the product as the total number of objects in 3 groups of 8 objects.</p> <p><u>3.ARO.2</u> Given an expression such as $35/7$, describe the quotient as the number of objects in a group when 35 objects are separated into equal shares, or the number of equal shares when 35 objects are separated into equal groups of 7 objects.</p> <p><u>3.ARO.3</u> Solve multiplication and division word problems through 100 involving arrays, equal groups, and measurements; represent the problem using for example, pictures, and equations that have symbols for the unknown quantity.</p> <p><u>3.ARO.4</u> Given a multiplication or division equation involving 3 whole numbers, find the unknown quantity that makes the equation true.</p> <p><u>3.ARO.5</u> Use properties of operations as strategies for multiplying and dividing.</p> <p><u>3.ARO.6</u> Use multiplication knowledge to recognize that division can be thought of as an unknown factor problem.</p> <p><u>3.ARO.7</u> Demonstrate fluency in multiplying and dividing through 100 by using strategies like the properties of operations or the relationship between multiplication and division.</p> <p><u>3.ARO.9</u> Find arithmetic patterns. Use properties of operations to explain the patterns.</p> <p><u>3.MDA.7</u> Understand the relationship between area and the operations of multiplication and addition.</p> <p><u>3.MDA.7.c</u> Use reasoning and area models to represent the Distributive Property; given a rectangle that has side lengths A and B+C use tiles to illustrate understanding that the area is the sum of $A \times B$ and $A \times C$.</p> <p><u>3.MDA.7.d</u> Recognize that addition can be used to find area. Partition rectilinear figures into rectangles having no overlaps, then find the area of the original figure by adding the areas of the parts; use this approach to solve real-world problems.</p> | |
| <p>Understandings: Students look for patterns and learn a strategy for solving problems involving 4s.</p> | <p>Essential Question/Big Idea: What strategies can be used to solve problems involving 4s? What patterns do you see in the 4s count-bys and equations?</p> |
| Students will know... | Students will be able to... |

| | |
|---|---|
| <p>There are multiple strategies that can be used to solve for 4s. It is possible to use the Commutative Property when solving equations.</p> | <p>Utilize and apply knowledge learned from facts for the 4s.</p> |
| <p>Stage 2- Assessment Evidence</p> | |
| <p>Performance Task: Students will be writing down tasks from the mini-lesson and stations in their math journal. Students will work on activities to help increase their fact fluency. The Remembering page will be sent home as homework.</p> | |
| <p>Assessment Evidence: Teacher observation. Math Journals will be collected to assess students' knowledge and understanding. Homework will also be assessed.</p> | |
| <p>Stage 3- Learning Plan</p> | |
| <p>Learning Activities: Calendar Morning Routine (10 minutes): As a whole group students will identify the number of the day that will be predetermined. This number should be posted and visible for all students to see; the number should change daily, increasing the complexity of the number daily. The number for the day will be 556. A discussion will be lead on how to write this number in standard form, expanded form, and written form. Students will then have their math journal at their carpet spots and write a number that is 50 more and 50 less. Students will also write five different ways to write the number 556. Daily Word Problem (10 minutes): Students will complete this problem in their math journal independently (students who may struggle can work together). Then depending on time students will either share with a partner, or there will be a whole class discussion. Discussion will include having students describe the process they used to find the answer. Post this question: -Jake ran around a two-mile course 3 times. Luke ran around the two-mile course 5 times. How many more miles did Luke run than Jake? 4 miles Mini-Lesson (10 minutes): Ahead of time prepare a line of 40 cubes, squares, etc on anchor chart. They can be a manipulative or a drawing. -Together circle groups of 4 blocks. Do this until 10 groups are circled. Point to groups saying "1 group of 4 is 4. 2 groups of 4 is 8. Etc." Explain to students that these are the numbers we say when we count by 4. Point to circled groups as students practice counting by 4's until 40. -Tell students that we can use multiplication to represent the total for a repeated group</p> | |

of 4. $4=1 \times 4$. (Refer to the boxes created when showing the equation.

-Prompt students with the equation $32=4 \times 8$. Have students Turn & Talk with their partner to explain what this equation means.

-Have students look and describe any patterns they see.

-When counting by 4s the last digit always is a 4, 8, 2, 6, 0

-Tell students that today we will continue looking at these patterns while practicing counting and multiplying by 4.

-Problem done in math journal: How many legs are on 6 horses? How many sides are in 8 quadrilaterals?

Math Stations (30 minutes): Day 2 of 2. Students will be split into four different groups based on assessment data and student need. Students will complete two stations per day (each station lasting 15 minutes). The students will then complete the last two stations on the next day.

- M (Math Facts): Students will work on Multiplication Fact Station. This station helps and encourages students to develop their multiplication facts. Students work on various facts in depth; completing activities and worksheets to help automaticity. Students work at their own level and pace. This station is student led. Work will be kept in students' math folder.
- A (At your Seat): Students will be completing Area Task Cards. Students will record the answers to these task cards on a recording card; students will turn in answers when completed.
- T (Teacher Time): Every group will have a lesson that is specifically designed for each group. There are four different groups that will rotate through these stations. These groups will be flexible and change frequently based on observation and data. For the purpose of this plan I will outline three different model lessons: above grade level, grade level, and below grade level. Once the specific needs of the students are determined, this plan can be altered to fit each group.
 - Below Grade Level: Provide students with Dotted paper or grid whiteboards. Students will practice drawing rectangles, writing the multiplication problem for the rectangle, and solving. Start altogether, then allow students to work with partners, and finally individually.
 - At Grade Level: Have a rectangle prepared that is 6×8 . Have students find the area. Students will then look for other objects around the room that are less than 6 in \times 8 in. They will practice measuring these objects and finding the area of them. Tell students to round to the nearest whole inch.
 - Above Grade Level:
 - Students will be working with a partner. They will be creating rectangles on grid paper for their partner to solve the area. Students should write the equations and label the answers correctly.
- H (Hands On): Students will be playing Conquer. Students will be playing this

game with a partner. Students will need one 100 cm grid paper, two dice, and two different colored markers/crayons, colored pencils. The object of the game is to completely cover the grid with arrays of your color. Whoever has the most square area wins. Students take turns rolling both dice. Students then create an array, with their color, matching the numbers on the dice. When creating a new array it has to touch an already existing array. Each partner starts on opposite ends of the grid and works toward the middle.

Share (10 minutes): Students will gather at the carpet. Teacher will point out a positive that students did during the lesson. Students will then complete an exit slip before going to lunch.

Resources:

Math Lesson adapted from Math Expression Curriculum

Area Task Cards retrieved from

<https://www.teacherspayteachers.com/Product/Free-Area-Task-Cards-3430518>

Exit Slip

| Understanding by Design (UbD) Unit Plan | |
|--|---|
| Title: <u>Unit 1 Lesson 14</u> | Subject: <u>Mathematics</u> |
| Topic: <u>Build Fluency with 2s, 3s, 4s, 5s, 9s, and 10s</u> | Grade: <u>Third Grade</u> |
| Stage 1- Desired Results | |
| <p>Establish Goals:</p> <p><u>3.ARO.1</u> Given an expression such as 3×8, describe the product as the total number of objects in 3 groups of 8 objects.</p> <p><u>3.ARO.2</u> Given an expression such as $35/7$, describe the quotient as the number of objects in a group when 35 objects are separated into equal shares, or the number of equal shares when 35 objects are separated into equal groups of 7 objects.</p> <p><u>3.ARO.3</u> Solve multiplication and division word problems through 100 involving arrays, equal groups, and measurements; represent the problem using for example, pictures, and equations that have symbols for the unknown quantity.</p> <p><u>3.ARO.4</u> Given a multiplication or division equation involving 3 whole numbers, find the unknown quantity that makes the equation true.</p> <p><u>3.ARO.5</u> Use properties of operations as strategies for multiplying and dividing.</p> <p><u>3.ARO.6</u> Use multiplication knowledge to recognize that division can be thought of as an unknown factor problem.</p> <p><u>3.ARO.7</u> Demonstrate fluency in multiplying and dividing through 100 by using strategies like the properties of operations or the relationship between multiplication and division.</p> <p><u>3.MDA.7.c</u> Use reasoning and area models to represent the Distributive Property; given a rectangle that has side lengths A and B+C use tiles to illustrate understanding that the area is the sum of $A \times B$ and $A \times C$.</p> | |
| <p>Understandings:</p> <p>Students will build fluency with 2s, 3s, 4s, 5s, 9s, and 10s multiplications and divisions.</p> | <p>Essential Question/Big Idea:</p> <p>What strategies can be used to find answers to multiplication and division problems?</p> <p>How do we solve for unknowns?</p> |
| <p>Students will know...</p> <p>How to use and describe a variety of multiplication and division strategies they have learned.</p> | <p>Students will be able to...</p> <p>Use variables to write equations for multiplication and division word problems.</p> |
| Stage 2- Assessment Evidence | |
| <p>Performance Task:</p> <p>Students will be writing down tasks from the mini-lesson and stations in their math</p> | |

journal.

Students will work on activities to help increase their fact fluency.

Unit 1 Quick Quiz 3

Strategy Check 3

Assessment Evidence:

Teacher observation.

Math Journals will be collected to assess students' knowledge and understanding.

Information will be gathered and assessed from the Quick Quiz and Strategy Check.

This information will be used to change groups.

Stage 3- Learning Plan

Learning Activities:

Calendar Morning Routine (10 minutes): As a whole group students will identify the number of the day that will be predetermined. This number should be posted and visible for all students to see; the number should change daily, increasing the complexity of the number daily. The number for the day will be 1,245. A discussion will be lead on how to write this number in standard form, expanded form, and written form. Students will then have their math journal at their carpet spots and write a number that is 100 more and 100 less.

Daily Word Problem (10 minutes): Students will complete this problem in their math journal independently (students who may struggle can work together). Then depending on time students will either share with a partner, or there will be a whole class discussion. Discussion will include having students describe the process they used to find the answer. Post this question:

-Bella, Tom, Juan, and Katie are different heights. Their heights are 6 feet, 5 feet, 4 feet, and 3 feet. Bella is not 6 feet or 5 feet tall. Tom is not 6 feet or 4 feet tall. Katie is 3 feet tall. How tall is Juan? 6 feet tall

Mini-Lesson (10 minutes): Start by reviewing count-bys that have been taught. Today is a good day to address any recurring problems or misconceptions.

-Practice word problems together. Discussing how to find the important parts, making equations, and solving for unknowns. Allow students to participate by modeling and sharing through discussion.

-Emily has 32 peaches. She wants to divide them equally among 4 baskets. How many peaches will be in each basket?

-A guitar has 6 strings. If Taylor replaces all the strings on 3 guitars, how many strings does he need?

-Kassler puts 5 strawberries in each bowl. Kassler has 40 strawberries. How many bowls will he fill?

Math Stations (30 minutes): Day 1 of 2. Students will be split into four different groups based on assessment data and student need. Students will complete two stations

per day (each station lasting 15 minutes). The students will then complete the last two stations on the next day.

- M (Math Facts): Students will work on Multiplication Fact Station. This station helps and encourages students to develop their multiplication facts. Students work on various facts in depth; completing activities and worksheets to help automaticity. Students work at their own level and pace. This station is student led. Work will be kept in students' math folder.
- A (At your Seat): Students will be completing Multiplication Properties Task Cards. Students will record the answers to these task cards on a recording card; students will turn in answers when completed.
- T (Teacher Time): Every group will have a lesson that is specifically designed for each group. There are four different groups that will rotate through these stations. These groups will be flexible and change frequently based on observation and data. For the purpose of this plan I will outline three different model lessons: above grade level, grade level, and below grade level. Once the specific needs of the students are determined, this plan can be altered to fit each group.
 - Below Grade Level: Review any areas that students need extra support on.
 - At Grade Level: Have students write the multiplications for 5s with products to 50. Have students write the multiplications for 10's with products to 50. Have students identify any multiplications of 5s and 10s that have the same product.
-Explain any patterns in the factors of the multiplications with the same products.
 - Above Grade Level:
-Students will be creating a multiplication puzzle. Provide students with a grid of 9 boxes. Split students into pairs. Each partner thinks of three multiplications that have the same product. These three problems should be placed diagonally, horizontally, or vertically in the grid. The student should then fill the rest of the boxes in with other problems that have a different product than the original three. Students then exchange their grid with their partner's. Students should circle the 3 problems that have the same product.
- H (Hands On): Students will be playing Conquer. Students will be playing this game with a partner. Students will need one 100 cm grid paper, two dice, and two different colored markers/crayons, colored pencils. The object of the game is to completely cover the grid with arrays of your color. Whoever has the most square area wins. Students take turns rolling both dice. Students then create an array, with their color, matching the numbers on the dice. When creating a new array it has to touch an already existing array. Each partner starts on opposite ends of the grid and works toward the middle.

Share (10 minutes): Students will gather at the carpet. Teacher will point out a positive that students did during the lesson. Students will share a take-away from today with a partner.

Resources:

Math Lesson adapted from Math Expression Curriculum

Multiplication Property Task Cards retrieved from

<https://www.teacherspayteachers.com/Product/4th-Grade-Math-Task-Cards-Multiplication-Properties-CCSS-4OAA1-1909463>

| Understanding by Design (UbD) Unit Plan | |
|--|---|
| Title: <u>Unit 1 Lesson 15</u> | Subject: <u>Mathematics</u> |
| Topic: <u>Multiply and Divide with 1 and 0</u> | Grade: <u>Third Grade</u> |
| Stage 1- Desired Results | |
| <p>Establish Goals: <u>3.ARO.5</u> Use properties of operations as strategies for multiplying and dividing. <u>3.ARO.6</u> Use multiplication knowledge to recognize that division can be thought of as an unknown factor problem. <u>3.ARO.7</u> Demonstrate fluency in multiplying and dividing through 100 by using strategies like the properties of operations or the relationship between multiplication and division. <u>3.ARO.9</u> Find arithmetic patterns. Use properties of operations to explain the patterns.</p> | |
| <p>Understandings: Students use multiplication properties and division rules as strategies to multiply and divide with 1 and 0.</p> | <p>Essential Question/Big Idea: What patterns do you notice in the 1s and 0s facts?</p> |
| <p>Students will know... Any number times 0 is 0 (Zero Property of Multiplication). Any number times 1 is the number (Identify Property of Multiplication).</p> | <p>Students will be able to... Apply the Zero Property of Multiplication and the Identity Property of Multiplication. Use the Properties to solve for an unknown number in an equation.</p> |
| Stage 2- Assessment Evidence | |
| <p>Performance Task: Students will be writing down tasks from the mini-lesson and stations in their math journal. Students will work on activities to help increase their fact fluency. The Remembering page will be sent home as homework.</p> | |
| <p>Assessment Evidence: Teacher observation. Math Journals will be collected to assess students' knowledge and understanding. Homework will also be assessed.</p> | |
| Stage 3- Learning Plan | |

Learning Activities:

Calendar Morning Routine (10 minutes): As a whole group students will identify the number of the day that will be predetermined. This number should be posted and visible for all students to see; the number should change daily, increasing the complexity of the number daily. The number for the day will be 1,992. A discussion will be lead on how to write this number in standard form, expanded form, and written form. Students will then have their math journal at their carpet spots and write a number that is 100 more and 100 less.

Daily Word Problem (10 minutes): Students will complete this problem in their math journal independently (students who may struggle can work together). Then depending on time students will either share with a partner, or there will be a whole class discussion. Discussion will include having students describe the process they used to find the answer. Post this question:

-Brian's basketball team will use two-digit numbers on their uniforms. Each player can choose a 1 or a 2 for the first digit. The second digit must be a 0, 1, 2, or 3. What are the possible uniform numbers? 10, 11, 12, 13, 20, 21, 22, 23

Mini-Lesson (10 minutes): Start by reviewing count-bys that have been taught. Look at the 1's and 0's table. Have students point out any patterns they see. Any number times 0 is 0 (Zero Property of Multiplication). Any number times 1 is the number (Identify Property of Multiplication). Have students practice these properties.

-Shawn gave 1 nickel to each of his three sisters. If he gave away 3 nickels, how many sisters does Shawn have?

-Kara has 3 empty boxes She put 0 toys in each box How many toys are in the boxes?

Math Stations (30 minutes): Day 2 of 2. Students will be split into four different groups based on assessment data and student need. Students will complete two stations per day (each station lasting 15 minutes). The students will then complete the last two stations on the next day.

- **M (Math Facts):** Students will work on Multiplication Fact Station. This station helps and encourages students to develop their multiplication facts. Students work on various facts in depth; completing activities and worksheets to help automaticity. Students work at their own level and pace. This station is student led. Work will be kept in students' math folder.
- **A (At your Seat):** Students will be completing Multiplication Properties Task Cards. Students will record the answers to these task cards on a recording card; students will turn in answers when completed.
- **T (Teacher Time):** Every group will have a lesson that is specifically designed for each group. There are four different groups that will rotate through these stations. These groups will be flexible and change frequently based on observation and data. For the purpose of this plan I will outline three different model lessons: above grade level, grade level, and below grade level. Once the specific needs of the students are determined, this plan can be altered to fit each

group.

- Below Grade Level: Review any areas that students need extra support on.
 - At Grade Level: Have students write the multiplications for 5s with products to 50. Have students write the multiplications for 10's with products to 50. Have students identify any multiplications of 5s and 10s that have the same product.
-Explain any patterns in the factors of the multiplications with the same products.
 - Above Grade Level:
-Students will be creating a multiplication puzzle. Provide students with a grid of 9 boxes. Split students into pairs. Each partner thinks of three multiplications that have the same product. These three problems should be placed diagonally, horizontally, or vertically in the grid. The student should then fill the rest of the boxes in with other problems that have a different product than the original three. Students then exchange their grid with their partner's. Students should circle the 3 problems that have the same product.
- H (Hands On): Students will be playing Conquer. Students will be playing this game with a partner. Students will need one 100 cm grid paper, two dice, and two different colored markers/crayons, colored pencils. The object of the game is to completely cover the grid with arrays of your color. Whoever has the most square area wins. Students take turns rolling both dice. Students then create an array, with their color, matching the numbers on the dice. When creating a new array it has to touch an already existing array. Each partner starts on opposite ends of the grid and works toward the middle.

Share (10 minutes): Students will gather at the carpet. Teacher will point out a positive that students did during the lesson. Students will complete an exit slip.

Resources:

Math Lesson adapted from Math Expression Curriculum

Multiplication Properties Task Cards retrieved from

<https://www.teacherspayteachers.com/Product/4th-Grade-Math-Task-Cards-Multiplication-Properties-CCSS-4OAA1-1909463>

Exit Slip

Ubd/DI Unit Plan Template

| Understanding by Design (UbD) Unit Plan | |
|--|-------------------------------------|
| Title: | Subject: |
| Topic: | Grade: |
| Stage 1- Desired Results | |
| Establish Goals: | |
| Understandings: | Essential Question/Big Idea: |
| Students will know... | Students will be able to... |
| Stage 2- Assessment Evidence | |
| Performance Task: | |
| Assessment Evidence: | |
| Stage 3- Learning Plan | |
| Learning Activities: | |
| Resources: | |

Template adapted from Wiggins and McTighe.

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