

Lesson #6: Multiplying by 2s- Thursday, April 7, 2016 & Friday, April 8, 2016- 50 Minutes on Thursday & 30 Minutes on Friday

Lesson Understandings:

- **Unit Overall Big Idea:** Multiplication is an important early operations concept to learn because it allows us to solve many problems in the real world.
- **Supporting Idea of Learning Segment:** There are several strategies that we can use to recall basic multiplication facts up to 5×5 .
- **Segment Main Focusing Inquiry Question:** What strategies can we use to recall basic multiplication facts up to 5×5 ?
- **I Can Statements:**
 - I can understand and recall multiplication and division to 5×5 .
 - I can show and use many strategies to recall basic multiplication facts up to 5×5 .
 - I can represent multiplication using equal grouping.

Outcomes of Lesson:

- **Mathematics Outcomes:**
 - **Number Strand:** Demonstrate an understanding of multiplication to 5×5 by :
 - Representing and explaining multiplication using equal grouping and arrays
 - Creating and solving problems in context that involve multiplication
 - Modelling multiplication using concrete and visual representations, and recording the process symbolically
 - Relating multiplication to repeated addition
 - Relating multiplication to division
[C, CN, PS, R]
- **Music Outcomes:**
 - **Specific Learner Expectation- Concepts- Rhythm Outcome 6:** Rhythm patterns can accompany melody.
 - **Specific Learner Expectation- Concepts- Rhythm Outcome 7:** Rhythm patterns are made up of the beat and divisions of the beat.
- **English Language Arts Outcome:**
 - **Specific Outcome-1.2-Clarify and Extend-Extend Understanding:** Ask questions to clarify information and ensure understanding.

Ministerial Order Cross-Curricular Competencies (CCCs):

- **Engaged Thinker:**
 - Numeracy.
 - Know How to Learn.
- **Ethical Citizen:**
 - Literacy.
 - Think Critically.
 - Identify and Solve Complex Problems.
 - Manage Information.
- **Entrepreneurial Spirit:**
 - Apply Multiple Literacies.

Supporting Learner Growth:

- **Collaborative Engagement Strategies:**
 - **Instructional Intelligences:** Bloom's Taxonomy, and Wait Time.
 - **Kagan Strategy:** Quiz-Quiz-Trade.
- **Differentiation in Instruction:**
 - **Opportunities for Student Choice:** The students will have the opportunity to express their own understanding during the mini whiteboard guided examples activities. The "Levelled Multiplying by 2s" Sheets will also provide the students with the opportunity for choice because the students will receive a worksheet that is appropriately challenging for their individual multiplication skills.
 - **Multiple Intelligences:** Logical-Mathematical, Verbal-Linguistic, Music-Rhythmic, Visual-Spatial, Interpersonal, and Intrapersonal.
 - **Bloom's Taxonomy Levels:**
 - **Analysis Level Questioning:** Can you **demonstrate** using your mini whiteboard how we can find the missing factor in the multiplication sentence $2 \times \underline{\quad} = 8$?
 - **Evaluation Level Questioning:** Can you **explain** at least one of the general rules that will always happen when you multiply by 2?

Materials/Resources Required: SMART Board, Class Set of Playing Cards (1 set of playing cards for a pair of students), "Two Times Table Multiplication Rap" & "The Multiplying by Two's Strategy YouTube Videos (see links below), Mini Whiteboards, "Cross It Out Mover & Shaker Activity" Sheets (1 per student), and Levelled Multiplying by 2s Sheets (1 per student).

Teacher/Student Lesson Activities:

Day 1 (*Note: Day 1 will occur on Thursday & will last approximately 50 Minutes. The students will still be in the practice/development stage of the lesson at the end of Day 1).

- **Anticipatory Set:**
 - **Multiplying by 2s Strategies & Tips Videos (4 Minutes):** The teacher will show the students the following YouTube Video "Two Times Table Multiplication Rap" (Link: <https://www.youtube.com/watch?v=2WrKVXLJIU>) in order to introduce the students to the concept of doubling as a strategy when learning how to multiply anything by 2. The students will be encouraged to actively rap and/or sing along with the song. The teacher will also show the student a second YouTube video called "The Multiplying by Two's Strategy" (Link: <https://www.youtube.com/watch?v=TqbOWeWmGj4>) in order to reinforce the concept that two is one of easier times tables to learn because you simply double the other number.
- **Practice/Development:**
 - **Guided Example of Multiplying by 2s (5 Minutes):** A student will be selected to come up to the SMART Board and help lead the class through the steps of solving how to multiply 2×3 using doubling. The student will move the interactive counters around in order create a picture that shows two equal groups of three.
 - **Another Tip to Self-Monitor Multiplying by 2s (1 Minute):** Using the picture and multiplication that the student from the above activity has completed, the teacher will share with the class that another tip you can use to self-monitor your own learning of the two times table is to see if your answer is an even number. As long as you are multiplying any number by 2, the number will result in a product (answer) that is even. You can even write out the addition sentence (e.g. 2×3 with an addition sentence of $3 + 3$) to check that you have did your multiplication correctly.

- **Mini Whiteboard Missing Factors in a Multiplication Sentence (3 Minutes):** The teacher will ask the students to review how we can find a missing factor in a multiplication sentence when we know that the other factor is 2 & we know the product. The students will reaffirm that we can skip count until we reach the product (e.g. if we know our product is 8 and we skip count by 2s, we know our missing factor is 4 because we skip counted 4 times). Each student will use a mini whiteboard to complete this activity.
- **Using the 5-step Problem-Solving Method for Multiplication (5 Minutes):** The students will use their mini whiteboards to briefly review the 5-step problem-solving method and how it relates to multiplication word problems. The steps are as follows: Step 1 (Numbers), Step 2 (Multiplication Sentence), Step 3 (Answer), Step 4 (Sentence in Words), and Step 5 (Check using Repeated Addition). After each student has written his or her work down on their mini whiteboard, a student will volunteer to come up to the SMART Board and walk the class through the following question:
 - “Andrew is making sandwiches for 3 friends that he has coming over. If he wants everyone including himself to have 2 sandwiches, how many sandwiches will he need in all?”
- **Cross It Out Mover & Shaker Activity Sheets (25-30 Minutes):** The students will work with a partner to complete their “Cross It Out” Mover & Shaker Activity Sheets. Each partnership needs a deck of cards. For this game, aces equal 1. Begin by pulling out a card. Multiply the card by 2. Cross off the product on your number chart. Write the multiplication sentence and the flip multiplication sentence for that card when it is multiplied by 2. You win if you are the first player to cross off all your numbers. But be careful, if you have already crossed off one of the products, then you get a strike. Three strikes and you are out. If you have time, try the activity a second time with your partner using the same rules.

Day 2 (*Note: Day 2 will occur on Friday & will last approximately 30 Minutes):

- **Levelled Multiplying by 2s Sheets (25 Minutes):** The students will complete one of three “Multiplying by 2s” Sheets as assigned to them by their teacher. Each of these three sheets are differentiated according to the level of that students have with early operations concepts in mathematics. The students will be encouraged to work collaboratively using their recently learned skills of repeated addition, equal grouping, arrays, and skip counting in order to work through the problems on the sheet.
- **Closure/Reflection:**
 - **Practice Multiplying by 2s & 5s (5 Minutes):** If time, the students can use the **Quiz-Quiz-Trade** cooperative learning technique to take turns quizzing each other on multiplication facts from the two and five times tables. In order to use the technique successfully, a student must write down a multiplication sentence and pass it to his or her partner. The student’s partner must then use any multiplication strategy that they feel comfortable with to find the product to the original student’s multiplication sentence. The students can then reverse roles and repeat the above activity.

Steps for Future Learner Growth:

- **Modifications:** Additional guided examples of multiplying by 2s using doubling as a multiplication strategy could be completed as a class if necessary. Alternatively, multiplying by 2s could also be demonstrated using other multiplication strategies such as equal grouping, repeated addition, arrays, and skip counting.
- **Extensions:** Students who finish early can use a deck of cards to practice multiplying numbers by 2. If the students who finish early want to make this activity even more challenging, they can try multiplying cards with values of 6-10 by 2 instead of just cards with values of 1-5.

Formative Assessment to Guide Learning:

- **An informal teacher observation** will occur throughout all of the lesson's activities in order to determine each student's ability to represent multiplication pictorially and symbolically.
- **Teacher analysis of the "Cross It Out Mover & Shaker Activity" Sheets & the "Leveled Multiplying by 2s" Sheets** in order to determine each student's ability to represent multiplication pictorially and symbolically as well as solve word problems involving multiplication.

Notes and Revisions for Future Teaching Use: