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Mathematics Methods

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Math Lesson 6.1- A Multiples Strategy for Division

I had the great opportunity to go to Study Elementary school to a fourth grade classroom. I observed the teacher teaching multiple subjects including mathematics. One lesson that I saw taught was teaching multiples for strategies for division. The math series that this lesson comes from is Everyday Math.

This activity is done by doing multiplication problems to figure out division problems. The students are told a group size and then calculate multiples of that group size. For the beginning of the lesson the teacher would introduce the [6's]. Then, the students would think of things that are packaged in equal groups of 6, such as 6-packs of soft drinks. Ask: how many are in 10[6's], 20[6's], 2[6's], 30[6's], 3[6's], and so forth. Then show how a problem is a division problem on the board. Example, how many [12's] are in 246? Write the ways to show division- $246/12$, etc. Ask if there are at least 10 [12's] in 246. Yes, because $10 \times 12 = 120$. The answer that you get to the problem is the quotient. When you have numbers left over that is called the remainder. Share example problems on the board with the class, from the lesson. The students would do the activity by following along writing down the notes from the teacher. The teacher would give students a worksheet with multiple boxes on it, and he would do the first box with the class. The next box they would do on their own in class, and then they would go over it together. The rest would be for homework. The materials that are needed are worksheets for practice, and manipulative's if wanted. The students would write on their worksheets the correct answers. This allows the student to follow teacher as well as to practice on their own.

The mathematical ideas that this lesson will develop are gaining knowledge from multiplication skills to division strategies. The purpose of this lesson is to solve equal-grouping division stories by using a multiples of 10 strategy. It is transitioning from multiplying to dividing. It is important to have this skill because they will always use multiplication and division for the rest of their lives in different areas so it is important to know without relying on a calculator. The ideas in the lesson are concepts because it is taking a problem of multiplication and making it into division, and answering it that way. A related concept in this lesson would be gaining knowledge to complete harder questions in the future, as well as using a multiples of 10 strategy to solve equal- grouping division stories.

The main concept could be problematic, which relates to the purpose, if students do not get the concept of equal grouping division by using multiples of 10. If students get the concept, then they should be fine, except for gaining practice. Children need to think about how each step relates to finding the final answer. They need to reflect on how the multiplication strategy and the division strategy relate to one another, and intertwine. With this activity you have to think about each step and how they are related, otherwise the lesson would not be as beneficial. The difficulties that the students might face in this lesson are confusion, or getting stuck while solving. When students practice the lesson, this is the time for the teacher to help if he/she sees it being needed. The teacher's role is to lead the lesson as well as to continue to check for understanding from the students. The lesson is very beneficial for the students because they will use this material later in life.

The before phase of the lesson is introducing the concept. I would write [6's] on the board. Then say that you are thinking of things that are packaged in equal groups of 6, such as 6-packs of soft drinks. Ask: How many are in 10 [6's]? 60, 20 [6's]? 120, 2[6's]? 12. Then explain to the students the concept of multiplying these, and then converting them to division. The students will write in their notes as the teacher is showing examples and teaching the lesson. I would prepare the students by bringing in manipulative's, if needed. Most students understand concepts better when they can visually see what is happening in a problem. The during phase of the lesson might be more challenging because it is dividing harder problems. This is when I would make sure the students are understanding, and if not what could I do to help. We would always practice these problems, because this is beneficial and something they will use later. After the lesson, I would choose to put some on the board so students can see multiple ways of coming to the answer. When students can see how other student's might approach a problem, it may help them understand the concept better. This lesson is beneficial, and will be useful in the future.

Lesson Plan

Lesson Title: A Multiples Strategy for Division

Grade: 4

Alignment with State Standards: Math- 4.3.6 Recognize and apply the relationships between addition and multiplication, between subtraction and division, and the inverse relationship between multiplication and division to solve problems.

Mathematics Goals: The students will fill out the given worksheet with 4 out of 6 questions answered correctly.

Students' Needs: Students need to understand the multiplication and division are connected. Students need to know basic multiplication facts, and the set up for different kinds of division problems. Students also need to know how to read a story problem correctly, and understand it.

Materials: Manipulatives (calculator and counters) and worksheets (one for in class, and one for homework).

Before Lesson: -This lesson comes from Everyday Mathematics, so the state standards are in each lesson, to make sure all of the standards are covered by the end of the year.- Have any of you done multiplication or some division before? (yes) Well great! Today, we are going to learn how to take multiplication strategies and turn them into division problems to solve. What we learn today, you will be able to use for the rest of your lives to figure different problems out. Let's get started. We are going to start by doing some mental math. (Write [6's] on the board). You are thinking of things that are packaged in equal groups of 6, such as 6-packs of soft drinks. (Do this together as a class) Ask: How many are in -10 [6's]? 60 -20 [6's]? 120 - 2 [6's]? 12 - 30 [6's]? 180 -3 [6's]? 18 -40[6's]? 240 -4 [6's]? 24 -50 [6's]? 300 and last one 5 [6's]? 30 Ask if they have any question. The math message for today is Egg cartons hold 12 eggs each. How many cartons do you need to pack 246 eggs?

During Lesson: After giving math message do, it on the board. Remind students that by packing the 246 eggs into groups of 12. The problem is a division problem, how many [12's] are in 246? Write this on the board, in a division problem. The answer that you get is called the quotient, and then the number that you have left over is the remainder. Do an example together on the board. Example: The school used 738 cans of soda at Parents' Night. How many 6-packs is that? This is a division problem. The 738 cans are divided into groups of 6. The problem is to find how many [6's] there are in 738. Do the division problem with the students. Ask them if they have any other questions. Answer: $738 \div 6 = 123$ Example 2: Each table seats 8 people. How many tables are needed to seat 500 people? Let the students do this on their own for 5 minutes. Then do it together as a class. Show in detail how

to get the correct answer. Answer: $500 \div 8 = 62 \text{ R } 4$. Ask if they have any questions. If they do, explain, and if not then give them a worksheet to start on in class. Let them do the first three problems in class. Go around and make sure they are doing it correctly. Then at the end of the time, go over answers. The rest of the worksheet will be for more practice tomorrow in class. Give students worksheet to take home and finish for homework. The students are to be taking notes in their journals, while I am doing problems on the board. I will make sure they are accountable by turning in their work, so I can check it daily. The types of questions I will ask students while I observe are, "How did you get that equation?" "What number was your answer, and did you go back and check your solutions?" These questions will allow students to dig deeper into how they solve a story problem, and to set it up. If the students are not grasping the idea as I wanted them to, then we would spend another day working on these solutions. If students finish early, I will have a couple problems on an additional worksheet that are more challenging to continue to work on.

After Lesson: Once the lesson is finished, I am going to put a problem on the board, and have students come to the board and work on it. The question that I would ask, are giving me a problem that you might use when you go to the grocery store? This allows them to think in depth. I will also have a question ready in case they do not think of one. Others question might refer to how do we dissect a story problem to figure out how to set up the problem. How do we convert from multiplication to division? How are these two functions alike/ different? I will structure these questions by sharing with the class, or with a buddy. It is important for each student to share, so they are thinking and not just relying on one person to do all of the work. For some question they may present findings, but overall, it will probably be more of a small group discussion. Questions are crucial for students to reflect on what they just learned, and how it might be beneficial in the future. If they can connect their findings to something, then they are more likely to grasp the information.

Assessment: The way I will determine who knows the objective in this particular lesson is to grade their homework, to see who understands the concepts and who still needs extra practice. The handouts will be one in class, and then one for homework. The techniques that will be used, is constant reviewing, and assessing them on future tests. This is a concept that they need to remember, so using tools such as worksheets, will help them practice. Overall, do the students understand the task given in the lesson? Did the students approach the lesson the way I anticipated? If not, what could I do to change better understanding in the future?

Accommodations: The strategies to support the diverse needs of students will be some students may need more time. Other student's may need more challenging problems. If it is a disability, such as eye impairment, I will make sure the student is in the front of the room, to be

able to see the board better. I will accommodate appropriately, based on the needs of my students.