

Teacher: Rachel Healy

Grade: 5

Topic: Math - multiplication standard algorithm

Tuesday, March 2, 9:30 a.m. (45 minutes)

Curriculum Connection: Is skilled at multiplying multi-digit whole numbers using the U.S. standard algorithm. (South Portland Math Priority ELT Grade 5)

LTs

- I can use the standard algorithm for multiplication to solve multiplication problems with one, two, [and three-digit] numbers.
- I can check my work using another multiplication method.

Prior Knowledge: Last class we introduced the standard algorithm for multiplying multi-digit numbers. This class will build on and reinforce that lesson. Students have already learned to multiply by breaking numbers into ones, tens, and hundreds, and by using the box method. They understand which numbers represent ones, tens, and hundreds.

Assessment

Checks for understanding:

- After a review of prior lessons, we will use example problems from the workbook and have a class discussion of operations. I will ask for volunteers to walk through the steps and then ask the class if they agree or disagree. I will ask probing questions as needed to identify and clarify any remaining misconceptions.
- When students work alone on problems, I will circulate to check their work.

Materials Needed

- Student Pearson workbooks
- Teacher copy of Pearson pages on Promethean Board

Procedure

1. (10 minutes) Math Warm-Up: Closest Estimate - Display problems one at a time on the Promethean Board. Give students approx. 30 seconds to look at the three possible estimates and decide which is the closest to the actual answer. Have volunteers explaining their reasoning for each problem. Probing questions:
 - a. What did you notice about the fractions? (they are close to $\frac{1}{2}$)
 - b. How did that help you find the estimate?
 - c. Is the estimate more or less than the actual answer? How do you know?
2. Write LTs on the board and ask for volunteers to read them out loud. Review standard algorithm steps using the 2x2 problems on pp 217-218. Use precise place value language. Then walk through the first 3x2 problem on p. 217 together.

3. Practice - Have students work alone on remaining 3x2 problems from workbook pp. 217-218 using the standard algorithm. Circulate throughout the room to watch their process and answer questions. Then, ask for volunteers to show their work on the Promethean Board. Watch for:
 - a. If a problem is written horizontally, do they rewrite it vertically in order to use the standard algorithm?
 - b. Do they use the notation correctly?
 - c. Can they explain what the notation represents (e.g. ones, tens, hundreds place) and why the steps work to solve the problem?
4. If there is time - solving 3x3 and word problems using standard notation. Hand out workbook pp. 219-220 and have students work alone on problems 1-2.

Modifications/Supports/Extensions

Scaffold - If students are having difficulty using the standard algorithm to solve the problem, have them first solve it by breaking the numbers apart by place. Then help them connect that process to the standard algorithm.

Allow EG to sit at MJ's table if she wants, as this seems to help her focus. (behavior barrier)

Other Adults in the Room

MJ Coombs (lead teacher) - observe during lesson and provide additional support to students as needed, take photos of RH during lesson, provide feedback after lesson

Karen Sturgeon (Ed Tech) - provide support to GM as needed

Reflection

Did you meet your target? What is your evidence?

After this lesson, students were approaching the target of using the standard algorithm to solve multi-digit multiplication problems. However, some still struggled with remembering the steps. It took another class period of practice and review for all students to demonstrate they had met the goal. Students were able to use another method (break apart, box method) to check their work, as evidenced by success on their classwork and homework.

How did you pre-assess, activate prior knowledge or build on prior knowledge?

I began class y asking for volunteers to share what they remembered from the last class. Then, I wrote example problems on the white board and asked for volunteers to walk through the steps, and followed this by asking the class if they agreed or disagreed. I asked probing questions to identify and clarify misconceptions.

How did you adjust the lesson during instruction? Why?

It was clear to me that students felt overwhelmed by the standard algorithm. So, I decided to do the same multiplication problem three different ways (standard algorithm, break apart, box method) side by side on the board. I then color coded each step, showing the correlation

between the steps in the standard algorithm and the other ways that students are more comfortable with. This helped to show students why they were doing each step, and made the process easier to remember.

What did you learn for next time?

Going forward, I will definitely show students the three methods side by side at the beginning of the lesson. Without this comparison, the standard algorithm seems intimidating and nonsensical, and many students seem to “shut down” rather than attempt to master it.