

Cameo Lakey, Mathematics Obs Event

Lesson by Cameo Lakey (created 02/22/18 with the CalStateTEACH Lesson Plan Assistant)

ATTACHED FILES AND VIDEOS

GENERAL COMMENTS

I. ESTABLISHING GOALS AND STANDARDS

Subject Area(s)

Math

Central Focus

Solve problems involving division of multidigit numbers by one-digit numbers. Demonstrate an understanding of, and the ability to use, standard algorithms for dividing a multidigit number by a one-digit number and use relationships between multiplication and division to check results. Use a variety of methods, such as numbers, symbols, and models to explain mathematical reasoning; express the solution clearly and logically by using the appropriate mathematical notation and terms. Engage effectively in a range of collaborative discussions with diverse partners on grade 4 topics, building on others' ideas and expressing their own clearly, make comments that contribute to the discussion and link to the remarks of others.

Standards

California Academic Content Standards

Mathematics, Grade 4

Number Sense | 3.0 Students solve problems involving addition, subtraction, multiplication, and division of whole numbers and understand the relationships among the operations:

- Standard 3.2: Demonstrate an understanding of, and the ability to use, standard algorithms for multiplying a multidigit number by a two-digit number and for dividing a multidigit number by a one-digit number; use relationships between them to simplify computations and to check results.

Number Sense | 3.0 Students solve problems involving addition, subtraction, multiplication, and division of whole numbers and understand the relationships among the operations:

- Standard 3.4: Solve problems involving division of multidigit numbers by one-digit numbers.

Mathematical Reasoning | 2.0 Students use strategies, skills, and concepts in finding solutions:

- Standard 2.3: Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.

Mathematical Reasoning | 2.0 Students use strategies, skills, and concepts in finding solutions:

- Standard 2.4: Express the solution clearly and logically by using the appropriate mathematical notation and terms and clear language; support solutions with evidence in both verbal and symbolic work.

English-Language Arts, Grade 4

Listening and Speaking | 1.0 Listening and Speaking Strategies | Organization and Delivery of Oral Communication

- Standard 1.8: Use details, examples, anecdotes, or experiences to explain or clarify information.

Common Core Standards

Mathematics, Grade 4

Number and Operations in Base Ten (4.NBT) | Use place value understanding and properties of operations to perform multi-digit arithmetic.

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

English-Language Arts, Grade 4

Speaking and Listening Standards | Comprehension and Collaboration

- Standard 1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly. a) Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. b) Follow agreed-upon rules for discussions and carry out assigned roles. c) Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others. d) Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.

Speaking and Listening Standards | Presentation of Knowledge and Ideas

- Standard 6: Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion); use formal English when appropriate to task and situation. (See grade 4 Language standards 1 for specific expectations.)

Language Standards | Knowledge of Language

- Standard 3: Use knowledge of language and its conventions when writing, speaking, reading, or listening. a) Choose words and phrases to convey ideas precisely.* b) Choose punctuation for effect.* c) Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion).

Language Standards | Vocabulary Acquisition and Use

- Standard 6: Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and that are basic to a particular topic (e.g., wildlife, conservation, and endangered when discussing animal preservation).

California English Language Development Standards

Listening and Speaking, Grades 3-5

Strategies and Applications | Intermediate ELD level | Comprehension and Organization and Delivery of Oral Communication

- Standard : Make oneself understood when speaking by using consistent standard English grammatical forms and sounds; however, some rules may not be followed (e.g., third-person singular, male and female pronouns).

Strategies and Applications | Intermediate ELD level | Comprehension and Organization and Delivery of Oral Communication

- Standard : Participate in social conversations with peers and adults on familiar topics by asking and answering questions and soliciting information.

Technology Standards

NETS (National Educational Technology Standards), Grades K-12

NETS for Students | 6. Technology Operations and Concepts

- Standard a: Students understand and use technology systems.

Grade/Level

4

Content Objective

Fourth grade students will show their understanding of using the distributive property while dividing a three-digit number by a one-digit number by writing the dividend in expanded notation and dividing each segment by the divisor using base-ten blocks and showing their work in both non-numerical and numerical forms on a sheet of graph paper.

75% of the class will meet the objective.

Academic Language Demands

The academic language students will be strengthening will be distributive property, quotient, dividend, and divisor. The language demands to be reinforced will consist of sharing materials, and performing specific jobs, with group members and sharing thoughts and ideas with a partner and with the whole group. Students will understand the vocabulary and demonstrate their ability to perform the language demands through saying the vocabulary terms out loud and stating their meaning, watching me model a demonstration of completing a problem to them while using the vocabulary terms, completing problems on their own, participating in a think, pair, share, where they will be talking about how well they understand the material, and sharing what they learned.

II. LEARNING ABOUT STUDENTS

Class Information

- Total Number of students: 29
 - Number of boys: 14
 - Number of girls: 15
 - African American: 3
 - Caucasian: 15
 - Hispanic/Latino Americans: 9
 - Two or More Races: 2
 - English Language Learners: 1 (Spanish) [Overall: Intermediate | Listening: Intermediate | Speaking: Early Advanced | Reading: Beginning | Writing: Early Intermediate]
 - CELDT RFEP students: 1 (Portuguese) [Overall: Early Advanced | Listening: Early Advanced | Speaking: Advanced | Reading: Advanced | Writing: Early Advanced] (RFEP in May 2017)
 - Special Needs: IEPs - 9 (Speech - 2 , Health related - 7) | 504 - 1
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III. MAKING ADAPTATIONS

Adaptations

Wait Time, Grouping, Preferred Seating, Other Resources

Adaptation Details

English Learners (ELs) will be provided with a sheet of paper with vocabulary terms, definitions of each term, and visuals to accompany the vocabulary words; I will model how to solve a three-digit by one-digit division problem using manipulatives; and they will be in groups with English fluent students for scaffolding. For speech students, I will provide them with the time they need to formulate verbal responses and they will be in groups with students who are not in speech during verbal discussions for scaffolding. The student with the 504 plan will be allowed to take extra time if needed in order to finish their work. I will also walk the room while students are completing their work in order to assist any struggling students, to make sure students are on task, and to allow them to explain their thought process to me. I have been working with the lower group if students while they have been learning the concept of long division, so I have an established understanding of which students are more likely to require assistance.

IV. ANALYSIS OF STUDENT LEARNING

Assessment

Formative

Description of Assessment

Students will be given one division problem (dividing a three-digit by a one-digit number) and a sheet of graph paper where they will be directed to solve the problem according to the steps we completed during the guided practice and independent practice sections:

1. Write the dividend in expanded notation.
 2. Make the dividend using base-ten blocks.
 3. Draw the base-ten blocks on the graph paper.
 4. Divide each base-ten block group by the divisor. (100s group, 10s group, and 1s group)
 5. Add up each quotient to solve.
 6. Use multiplication to check your answer.
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V. PROCEDURE

Prerequisite Background Knowledge/Skills

Students must know how to multiply multidigit numbers by a one-digit number. Students need to have an understanding of solving division problems consisting of one-digit and two-digit dividends by a one-digit divisor. Additionally, students need to be able to share their ideas verbally with a partner as well as to verbally talk about what they have learned.

Materials

Technological Materials:

- Computer
- ELMO Projector
- SMART Board

Other Materials:

- ten-frame block physical manipulatives
 - ten-frame block paper manipulatives
 - graph paper
 - pencil
 - eraser
 - assessment
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INSTRUCTIONAL STRATEGIES

Open

LINKS TO PAST LEARNING:

1. Using the SMART Board, I have students give me the steps to solving a two-digit by one-digit division problem using long division.

STATE THE OBJECTIVE:

2. Using a sheet of paper on the whiteboard, we read the lesson objective together as a class. "Students will show their understanding of solving three-digit by one-digit division problems by using the distributive property by writing the dividend in expanded notation and dividing each group by the divisor using base-ten blocks and showing their work both non-numerically and numerically."

WHAT THEY WILL BE LEARNING:

3. I tell the students that today they will be learning how to solve three-digit by one-digit multiplication problems by using the distributive property with ten-frames.
 4. We also read the vocabulary terms together on the board (distributive property, quotient, dividend, divisor) and review what quotient, dividend, and divisor mean.
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Body

MODELING:

1. Using the ELMO Projector, I will model how to complete one problem to the students.

GUIDED PRACTICE:

2. The students will be using the ten-frames (physical and paper ones) and graph papers at their own tables to follow along and complete the problem with me.

INDEPENDENT PRACTICE:

3. I have the students complete one problem on their own, we go over the correct answer as a group, then they turn their work into the Math basket once finished. Early finishers will be directed to read, write, or draw silently.
 4. During this time, I will walk the room to provide assistance and monitor student work (Students will additionally be allowed to ask others at their table groups for assistance; however, each student is expected to complete their own work).
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Close

ASSESSMENT:

1. Students will be provided with another graph paper and one more division problem to solve (there will be six different kinds of division problems in order to prevent cheating from taking place).
2. Students will complete their problem on their own (they will not be able to ask me or their peers for assistance), turn this into the Math basket when finished, and early finishers will read, write, or draw silently.

SELF-EVALUATION:

3. I will lead a think, pair, share with the students, where they will physically show me, and select students will verbally tell me, how well they understand the material.

WHAT THEY LEARNED:

4. I will then call on volunteers to tell me one thing they learned from the lesson.

~END OF LESSON~

VI. ANALYSIS AND REFLECTION

Analysis and Reflection

The parts of the lesson I felt were effective included the use of technology, having students learn the concept with the use of manipulatives, having the students complete the practice problem with me, and the think, pair, share. Despite having the technical difficulties, using the SMART Board technology as well as the ELMO Projector allowed for the students to visually learn what can be done with technology and also piqued their engagement within the lesson. Additionally, the technical difficulties allowed the students to experience the limitations of technology. The combination of teaching with manipulatives (in which we transitioned from the concrete to the abstract) and having the students complete the practice problem with me were very successful in implementing student understanding of how to use the concept. Additionally, having the students perform a task alongside my teaching, instead of just having them sit there and watch, was a huge improvement on their engagement in the lesson. The think, pair, share component was effective because it created both movement and student discussion within the classroom. These elements also added energy to my teaching, in which having students stay in their seats and complete a worksheet quietly detracts from both the energy from the students as well as my own.

The changes I would make to my instruction to better support student learning includes implementing more options for students to communicate with each other (instead of just calling on one student to answer a question), incorporating more activities into a lesson that allow for kinesthetic learning (movement), and to be very mindful of what I can do to decrease the lesson's time (especially during zoom observation events). For this lesson, the students were given the option to work with a partner in order to allow students to talk about the concept with each other and use the vocabulary terms; however, a majority of the students chose to complete the problem on their own. This showed that many of the students understood how to solve the problem on their own; however, this removed the ability for students to explain the concept with each other and to work within each other's zone of proximal development. Because of this, it would be beneficial for me to lessen the amount of instances where I call on one student to give me an answer and instead partner students to where they need to explain their thinking and how they found the answer to their partner first before discussing the answer together as a group. This also promotes the students to discover the answer on their own instead of just hearing the answer from another student or myself. This will also assist in developing growth in oral language as well. Removing opportunities for movement from this activity in order to keep the lesson simple so that it could be completed within thirty minutes was unsuccessful, thus, I need to focus on other aspects to reduce the lesson time without removing fun and engaging kinesthetic activities from my teaching. This includes not collecting papers or materials until after the lesson has been concluded, double checking that all students have the needed materials (one group was missing their ones of the base-ten block manipulatives), and setting up the ipad in a stationary position throughout the majority of the lesson.

My objective goal was for 75% of the class (or 21 out of 28 students) to successfully solve a division problem using the distributive property. 82% of students (or 23 of 28) successfully met this objective. (see application/next steps below for what I would do with this information).

Application/Next Steps

For the completion of the assessment, 3 of the 5 students who did not meet this objective did so because they made a mistake within the completion of a problem using one of the operations (1 student incorrectly added their quotients and 2 students incorrectly divided while using the distributive property). This shows that students are still making errors while completing the other operations, so it would be beneficial to spiral these concepts by allowing students to continue to practice them while they are learning new concepts. The students complete a morning math worksheet everyday that involves the use of these operations (addition, subtraction, multiplication); however, it would be beneficial for me to work out these problems while we are reviewing the answers. Additionally, I could have students explain to each other how to solve these problems during this time as well. The other 2 students who did not meet this objective did so because they did not show the last step, which was to check their answer. I will specifically tell these students that they lost points because they did not check their answer and will continue to require students to do so when solving math problems.

For the completion of the self-reflection, I received one specific piece of great feedback from a student in which he stated that he could solve a division problem using the distributive property; however, he would not be able to describe to someone in words on how to use this concept. This shows that the students have achieved the remember step within Bloom's Taxonomy for this concept, which means that the focus can now transition into the next level of Bloom's Taxonomy, which is apply. Also, 25 of the 28 students showed me that they understand this concept very well, which also indicates the success of reaching the objective goal for this lesson.
