Relationship between multiplication & division

3rd Grade lessons & activities
Monitor Elementary

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Spring 2023 EMPACTS Project
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Project Introduction

We are preservice teachers at NWACC taking a math structures class taught about mathematical systems. We used one of the Arkansas Mathematical Standards from K–6 to teach an elementary class. We met with a faculty member of a class within the Springdale school district that teaches third grade to plan a day of lessons and activities for the students.

In this course we were assigned an NWACC EMPACTS project where we prepare and present core mathematics lessons using some form of technology that can be incorporated into the EMPACTS program.

The Team

Our Mentor

CHELSEA COKER

Teacher

3rd Grade

(479) 750-8749

The school

Monitor Elementary School
Springdale, Arkansas

Mathematics Standard

Understand properties of multiplication and the relationship between multiplication and division

AR.Math.Content.3.OA.B.5

–Apply properties of operations as strategies to multiply and divide

For example: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known (Commutative property of multiplication). $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$ (Associative property of multiplication). Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$ (Distributive property).

AR.Math.Content.3.OA.B.6

–Understand division as an unknown–factor problem

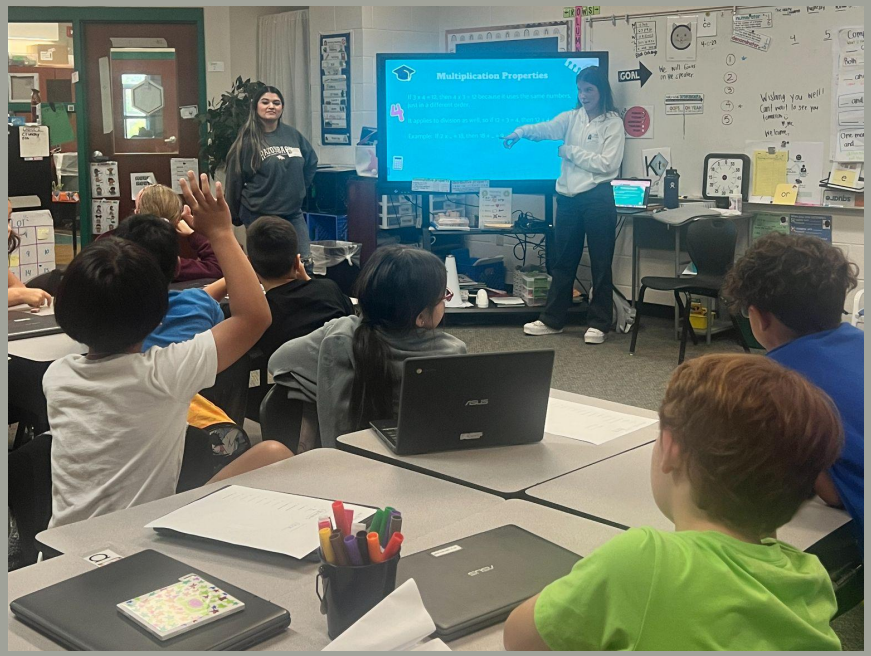
For example: Find $32 \div 8$ by finding the number that makes 32 when multiplied by 8.

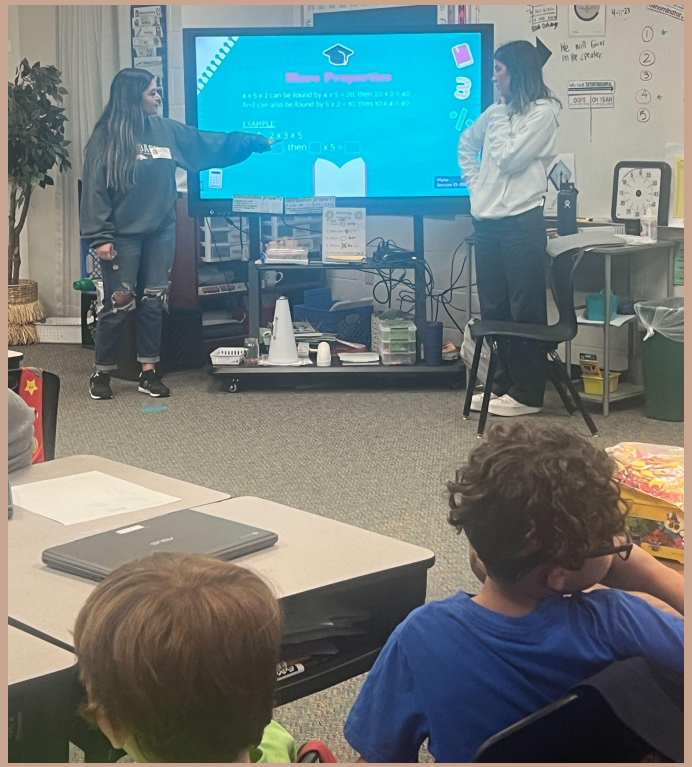
Goal: teach students to understand how multiplication and division have interchangeable properties and how they relate

Lesson Procedure & Activities

LEARNING OBJECTIVE	STANDARD	MATERIALS
• Apply properties of operations as strategies to multiply and divide • Understand division as an unknown-factor problem • Students will be able to identify the connection between multiplication and division • They will be able to understand the math rule that says the way in which factors are grouped in a multiplication problem and how it does not change the product	• AR.Math.Content.3.OA.B.5 • AR.Math.Content.3.OA.B.6 -Understand properties of multiplication and the relationship between multiplication and division	• Math Worksheet • Pencils • Computer • Slideshow
LESSON	**INDEPENDENT WORK**	**CONCLUSION**
-Introduction about ourselves -Tell students how multiplication and division are inverse properties, draw out how it looks, inform them about the multiplication properties -Work together on a worksheet and have students raise their hand to give answers -Show them more properties of multiplication, ask students to raise their hand to give answers -Handout a worksheet for them to work on their own -Reviewed answers/explanation together at the end	• Walked around the room to check students' progress • Asked a few students to explain their thinking on a problem or two • Encouraged positive behavior and learning space, even if they didn't get the answer completely right	Students demonstrated complete understanding of the multiplication properties and the relationship between multiplication and division

Instructional Images





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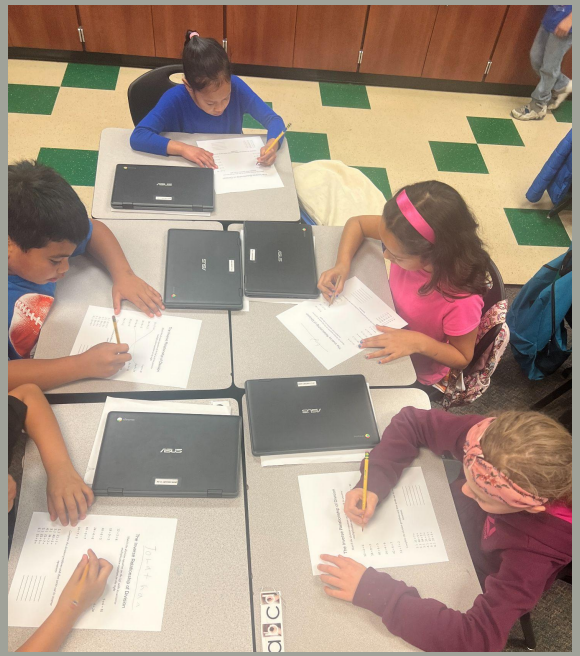
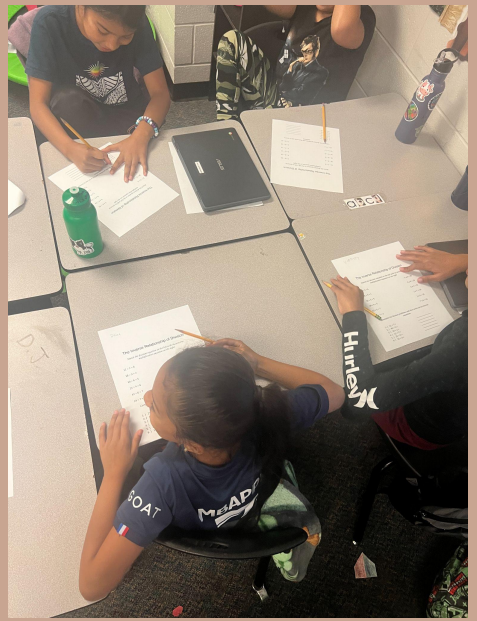
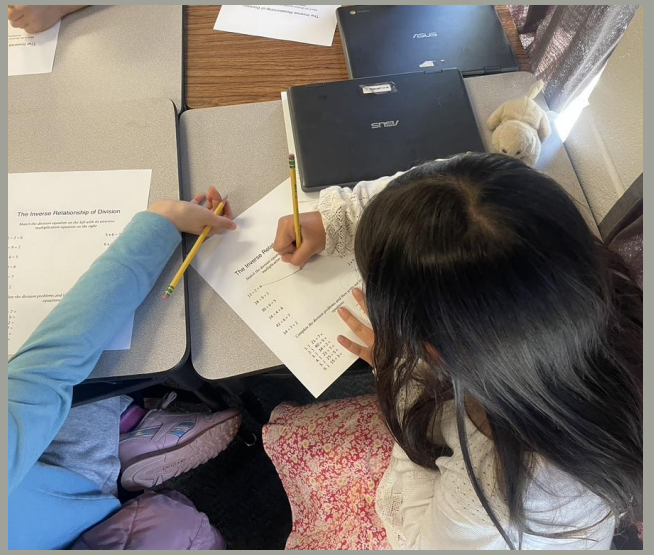






Project Results

The Inverse Relationship of Division

Match the division equation on the left with its universe multiplication equation on the right

12 ÷ 2 = 6	5 x 6 = 30
18 ÷ 9 = 2	6 x 4 = 24
30 ÷ 6 = 5	6 x 2 = 12
24 ÷ 4 = 6	2 x 7 = 14
42 ÷ 6 = 7	2 x 9 = 18
14 ÷ 7 = 2	7 x 6 = 42

Complete the division problems and then write out its inverse equations

1.) 21 ÷ 7 = _____
2.) 40 ÷ 5 = _____
3.) 34 ÷ 2 = _____
4.) 21 ÷ 7 = _____
5.) 25 ÷ 5 = _____
6.) 15 ÷ 3 = _____

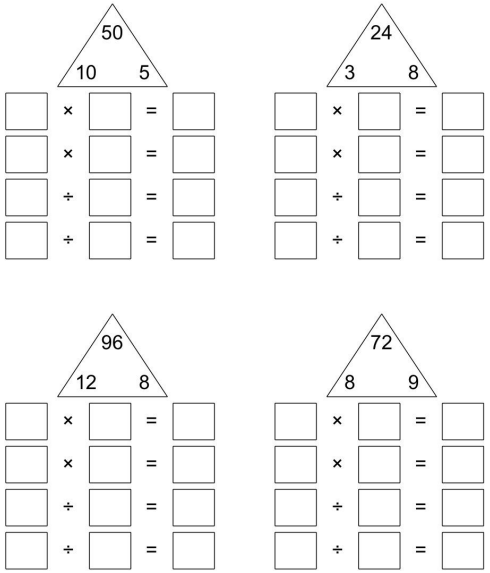
Created by: Maci Martelloni
NWACC Survey of Mathematic Structures II
Works cited in regard to Education.com

K5 Learning

Fact families: multiply and divide

Math Facts Practice Worksheet

Complete each family of facts.



What we learned

- Gave us a great feel for what teaching will be like in our future
- Gave us a feel for the age group we taught (3rd grade) and how they behave and interact with others while in the classroom setting
- All of the students were so smart, and so many different students raised their hands to answer questions during the lesson plan
- We had limited time for the worksheet, so not all of the students finished, so next time we will considering using manipulatives so that the students can have more fun with it and not feel like they're just doing homework during class

College Curricular Goals

- Demonstrate understanding of mathematical systems
- Prepare and present core mathematics lesson using some form of technology that can be incorporated into the EMPACTS Program Project
- Learn about what is needed in a classroom setting in order to successfully present information to students using requirements given

Products of learning experience

EMPACTS Skills

- Teamwork
- Problem solving
- Time management
- Communication
- Use of technology

Teaching Skills

- Classroom management
- Used mathematical standards to develop lessons and activities
- How to assess learning
- Time management

Project Products

- Lesson plan
- Activity
- Worksheet
- Grade level presentation
- Assessment
- Final Presentation
- Webpage

Acknowledgements

Dr. Marjorie Whitmore

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Mrs. Chelsea Coker, 3rd grade teacher, K–6 mentor at Monitor Elementary School

Citations

Inverse Relationship of Division

https://www.education.com/download/lesson-plan/division-and-multiplication-relationship/attachments/inverse-equations-division-worksheet.pdf

Multiplication and Division triangles

https://www.k5learning.com/worksheets/math-drills/fact-families-multiply-divide-a.pdf

Math Standard Properties

https://www.varsitytutors.com/common_core_3rd_grade_math-help/apply-properties-of-operations-as-strategies-to-multiply-and-divide-ccss-math-content-3-oa-b-5