Multiplying Three Sisters

Multiplication

K20 Center, Christine Cox
Published by *Oklahoma Young Scholars/Javits*

Grade Level	2nd – 3rd Grade	**Time Frame**	2-3 class period(s)
Subject	Mathematics	**Duration**	180 minutes
Course	Elementary Mathematics		

Essential Question

How can you use multiplication to solve problems?

Summary

Students will use an example problem about the Three Sisters to complete a Strategy Harvest and develop a conceptual understanding of multiplying.

Snapshot

Engage

Students encounter a story problem involving the Three Sisters and consider different ways to solve it.

Explore

Students complete a Strategy Harvest to find multiple multiplication strategies.

Explain

Students discuss various multiplications strategies and work out a new problem using various methods, as a whole class.

Extend

Students use a Chalk Talk strategy to apply uses of multiplication to various topics of interest and create their own problem.

Evaluate

Students are evaluated on their work in the Extend or optionally complete an Exit Ticket solving a new problem.

Standards

Oklahoma Academic Standards for Mathematics (Grade 2)

2.N.2.6: Use concrete models and structured arrangements, such as repeated addition, arrays and ten frames to develop understanding of multiplication.

Oklahoma Academic Standards for Mathematics (Grade 2)

3.N.2.1: Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting.

Attachments

- Exit Ticket Handout.docx
- Exit Ticket Handout.pdf
- Strategy Harvest Handout.docx
- Strategy Harvest Handout.pdf

Materials

- Strategy Harvest handout (optional, attached)
- Exit Ticket handout (optional, attached)
- Counters, such as seeds
- Large paper, such as butcher or chart paper, or large sticky notes.
- Notebook paper

Engage

Introduce the following problem to students: A Native American farming tradition is to plant the "Three Sisters" (beans, corn, and squash) together. These plants work together to help each other survive. If I have 8 sets of the 3 seeds, how many total seeds will I plant5?"

Give students a minute to start thinking about the different ways they can solve this problem.

Explore

Guide students in completing a Strategy Harvest. Begin by incorporating an Elbow Partner strategy. Give pairs of students a large piece of paper to solve the problem in any way that they choose. This should take about 5–10 minutes. Encourage students to begin by drawing a picture of the problem.

Students can use the attached **Strategy Harvest** handout to help track the different strategies.

Teacher's Note: Scaffolding For Different Learner Levels

For those students who are struggling, using seeds/counters/manipulatives to help visualize the problem may be helpful. For those who find the problem too easy, have them think of as many ways as possible to solve the problem. Also, encourage them to show their thinking so they can share their ideas with others.

Once students have worked out the problem, have them partner with another set of partners (to form a group of four) and explain their work to within to the other pair.

Give students a few minutes to return to their work and add to it or revise their thinking based on their discussion with the other partners.

Teacher's Note: Documenting Student Strategies

Take note of what strategies your students are using. You will need to use these student strategy examples to build the discussion and concept of multiplication for students.

Explain

Bring the class together as a whole and STRATEGICALLY (see guidelines below) ask students to share how they solved the problem.

The order should look something like this:

1. Students who drew a picture.
2. Students who used repeated addition. If one group says, "I added 8, 3 times," ask if anyone did it differently, such as adding 3, 8 times. Did they get the same answer?
3. Students who counted by 3's. Did anyone count by 8s?
4. Students who drew an array. Could you do this instead of actual donuts?
5. Students who multiplied.

Independently, have students solve the following new problem by choosing one or two of the strategies the class has discussed:

Gardeners often use marigold plants to help keep weeds out of their garden, similar to how the Three Sisters help each other survive. Jaden has 4 marigold plants. Each plant has 5 flowers on it. How many flowers are there altogether?

As a class, work out this problem in repeated addition, array, and multiplication.

Allow students time to revise their work if necessary.

Extend

Using the Chalk Talk strategy, post four or five large sticky notes (or another type of paper) around the room. Write a topic heading on each piece of paper, such as cooking, gardening, playing video games, or other things your students are interested in. Have students write down a sentence that explains how they would use multiplication in that topic area.

Sample Answers:

"When adding takes too long." "When a recipe needs 2 cups of something, but we are making the recipe 3 times."

Independently, have students use the Create the Problem strategy to imagine a story problem in one of the topic areas that would involve the following situation:

3 groups of 7 equal 21.

Have students share their problem with a partner. Then, have a few students share their partner's problem and explain why they thought it was a good problem.

Evaluate

Options A: Use the written problem and work to determine students understanding of multiplication.

Option B: Use an Exit Ticket. Distribute the attached **Exit Ticket** handout. Have the students answer the following question on a notecard, sticky note, or half sheet of paper:

"I have 4 bags of donut holes. Each bag has 6 donuts. How many donuts are there altogether?"

Resources

- K20 Center. (n.d.). Bell ringers and exit tickets. Strategies. https://learn.k20center.ou.edu/strategy/125
- K20 Center. (n.d.). Chalk talk. Strategies. https://learn.k20center.ou.edu/strategy/197
- K20 Center. (n.d.). Create the problem. Strategies. https://learn.k20center.ou.edu/strategy/149
- K20 Center. (n.d.). Elbow partners. Strategies. https://learn.k20center.ou.edu/strategy/116
- K20 Center. (n.d.). Strategy harvest. Strategies. https://learn.k20center.ou.edu/strategy/135