Math Zucchini Arrays

Oh My Squash!

Overview: The teacher will read <u>Zora's Zucchini</u> by Katherine Pryor. The illustrations in the book show that Zora bought 12 zucchini plants. The students will draw arrays of how Zora could plant her zucchini.

Georgia Standards:

MGSE3.OA.1 Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5 × 7.

MGSE3.OA.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

MGSE3.OA.5. Apply properties of operations as strategies to multiply and divide.6

Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.) Use arrays, area models, and manipulatives to develop understanding of properties.

Objectives:

Students will be able to use strategies to determine arrays with the product of 12.
Students will be able to use arrays and repeated addition to solve multiplication problems.

Materials:

<u>Zora's Zucchini</u> by Katherine Pryor

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Lesson Plan:

Engage:

- Teacher will read <u>Zora's Zucchini</u> to students.
- The teacher will tell the students that the text does not tell many zucchini plants Zora planted, but can we determine from the illustrations?

Explore:

- Farmers grow their crops in arrays to make it easier to look after and harvest.
- Zora has 12 zucchini plants. How could Zora arrange her plants into equal rows and columns?
- Give groups of students a variety of things to make a arrays (counters, real potted zucchini plants, etc.)
- Students will explore different ways to make arrays with the product of 12. Is there only one way to arrange Zora's plants?

Explain:

- It's important for the students to understand what a row is so they can make sense of the problem.
- Allow some time for each group to see if they can come up with different ways to solve the Zora's problem and record their method.
- Explain that if one group has 6 rows of 2 plants and another group has 2 rows of 6 plants, then the answer is the same (commutative property of multiplication).

Extend:

- Zora's 12 plants have 3 blooms on each. How blooms are on all 12 plants?
- What would be the arrays if Zora brought home 36 plants?

Evaluate:

- What are some strategies you used to solve the problem?
- How can the same problem be represented by two different arrays?
- How does an array model show repeated addition?