

Lesson Plan #2

Introduction to Multiplication-Arrays

Performance Objective: Using pictures of arrays, students will be able to write and solve 4 out of 5 multiplication problems correctly.

Resources or Materials Needed:

- Black construction paper
- Strips of different colored paper
- Small square colored paper
- Glue
- White crayons/colored pencil
- Sharpie
- White board
- Dry erase marker
- 20 red/white counters
- Assessment handout
- Chromebook-Google Slides

Time: 150 minutes (One, 60 minute class period, One, 90 minute class period)

Step 1: Pre-Instructional Activities:

- Each student will be given 20 red/white counters
- Students will be given 3 minutes to use 20 counters to make equal rows
- Students will share how many equal rows they made
- 5-6 students will share out loud how many equal rows they made

- Student will give feedback to students who may have made unequal groups and how to make them equal

Step 2: Content Presentation:

- On the white board, students will be shown multiple pictures of arrays. Important vocabulary words to know to be successful with arrays:
 - Rows
 - Columns
- While presenting arrays, the teacher will define rows as a line of objects going side to side and a column is a line of objects that go up and down. While defining rows that go side to side, the teacher will motion with their arm going side to side and while defining columns, the teacher will motion with their arm going up and down.
- As a class, we will begin to analyze each array individually and discuss how they relate to multiplication. Under the first array, the teacher will write $____ \times ____ = ____$. We will quickly review the previous lesson where multiplication is represented as *groups of*.
When looking at the array we will focus on groups and size of groups:
 - Each row is a group
 - The size of each group is how many objects are in each row
- The first array will show 10 rows of 2. I will explain how the first one relates to multiplication.
 - Start off by showing how each row can be represented as repeated addition
 - $2+2+2+2+2+2+2+2+2+2=20$
 - There are 10 rows
 - Size of each row is 2

- Students will be told that multiplication sentences always start with how many groups there are and then the size of the group. For example, in this array there are 10 groups of 2, 10 groups of 2 = 10×2
- Multiplication equation written under array will $10 \times 2 = 20$
- The second array will show 2 rows of 10. With this array, we will discuss as a class and I will have them show me their answers to questions asked such as:
 - How can I represent this array as repeated addition?
 - Students will show on their white boards $10 + 10 = 20$
 - How many groups (rows) do we have?
 - Students will show on their white boards the number 2
 - What is the size of each group?
 - Students will show on their white boards the number 10
 - What would be our multiplication sentence?
 - Students will show on their white boards the multiplication equation $2 \times 10 = 20$
- The third array will show 3 rows of 4. With this array, students will use their white boards to show the multiplication sentence of the array. Students should show $3 \times 4 = 12$. Student will then turn and talk with their partners about how they wrote their equation. Possible turn and talk answers:
 - “I saw 3 rows of 4, so that means I should multiply $3 \times 4 = 12$ ”
 - “There were 3 groups of 4, 3 groups of 4 means $3 \times 4 = 12$ ”

Step 3: Learner Participation:

- Students will be introduced to an activity that involves arrays. This activity will go into the next day during our math time. Students will be creating an array city that displays their knowledge on arrays and their connections to multiplication (Bower, K., n.d.). Students will create buildings on their black construction paper using different colors while using small squares of colored paper as their windows. Each building will represent an array with the “windows” being the objects in the array.
 - Present small PowerPoint
 - Review of rows and columns
 - Show pictures of finished array cities as expectation
 - Array cities should have 3-4 buildings that cover the whole black construction paper
 - Each building should have the related multiplication sentence on the bottom of that building; for example, the building shows 5 rows of 3 “windows”, the multiplication sentence on the bottom of the building should show $5 \times 3 = 15$.

Step 4: Assessment:

Students will be assessed with by logging into Quizizz that shows five pictures of arrays from which students will be able to pick 4 out of 5 multiplication sentences that represent each array.

Step 5: Follow-Through Activities:

- As a class, we will do a gallery walk of our array cities. Students will have a chance to talk about their array city and to explain how they got their multiplication sentence.
- To end, students will be given a sticky note and will write one thing that they liked about another student’s array city and place it on their work for the students to see later.

- If one array city project has a sticky note on it than they need to find one that does not have one already on it.
- Students will log onto Google Classroom and work on digital task cards titled “Ways to Show Multiplication”. Students will work on the last 15 slides as these digital task cards are through Google Slides. The last 15 are practice multiplying using arrays and repeated addition. Google Slides will be shared as well as provided as a PDF.
- **Extension activity**: Students will be given a blank Google Doc that will be shared with students who may have completed the array city early enough to have ample time to be able to create a digital array city while collaborating with other students.

Lesson Plan Summary: This lesson was to build on lesson one by incorporating arrays and how they connect to multiplication, repeated addition and equal groups. Students use what they learned from lesson one to build on what they are learning in this lesson (Ertmer, P.A., & Newby, T.J., 2013). The lesson includes numerous amounts of modeling for students to be able to understand what they need to do, this includes the strategy “I do, we do, you do” (Ertmer, P.A., & Newby, T.J., 2013). Students are seeing the teacher model what is to be expected, then, students are assisting in solving the problem, then lastly, students are performing on their own to show understanding. The activity that students work on is creating an array that demonstrates their knowledge on arrays and multiplication facts that relate to the array. The activity is not an assessment but a continuation of the lesson. This allows the teacher to make on the spot correction if the student is seen struggling in creating arrays and/or having difficulties in creating multiplication sentences for that array.

Quizizz Assessment

9/26/2019

Arrays | Print - Quizizz

4.



Which equation matches this array?

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QUIZIZZ

Arrays

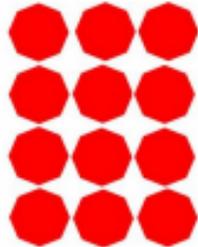
5 Questions

NAME : _____

CLASS : _____

DATE : _____

1.



Number Model _____

Select the multiplication equation to match the array.

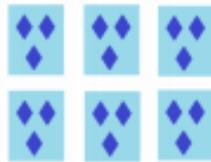
a) $3+3+3+3=12$

c) $4 \times 3 = 12$

b) $4+4+4=12$

d) $4+4+4+4=16$

2.



Select the multiplication sentence for the follow example:

a) $3 \times 8 = 24$

c) $2 \times 9 = 18$

b) $6 \times 5 = 30$

d) $6 \times 3 = 18$

3.



What multiplication sentence matches the picture?

a) $5 \times 5 = 15$

c) $3 \times 5 = 15$

b) $5 \times 3 = 15$

d) $3 \times 3 = 9$

11

Answer Key

1. c
2. d

3. c
4. a

5. a

Ways to Show Multiplication Google Slides

13	13.) Complete the multiplication equation.  ___ x ___ = ___	17	17.) Complete the multiplication equation. $4+4+4+4$  ___ x ___ = ___	21	21.) Complete the multiplication equation. $6+6+6+6$  ___ x ___ = ___
14	14.) Complete the multiplication equation.  ___ x ___ = ___	18	18.) Complete the multiplication equation. $2+2+2+2+2+2$  ___ x ___ = ___	22	22.) Complete the multiplication equation. $3+3+3+3+3$  ___ x ___ = ___
15	15.) Complete the multiplication equation.  ___ x ___ = ___	19	19.) Complete the multiplication equation. $7+7+7$  ___ x ___ = ___	23	23.) Complete the multiplication equation. $6+6+6+6+6$  ___ x ___ = ___
16	16.) Complete the multiplication equation.  ___ x ___ = ___	20	20.) Complete the multiplication equation. $5+5$  ___ x ___ = ___	24	24.) Complete the multiplication equation. $7+7+7+7$  ___ x ___ = ___

9

9.) Complete the multiplication equation.



___ x ___ = ___

10

10.) Complete the multiplication equation.



___ x ___ = ___

11

11.) Complete the multiplication equation.



___ x ___ = ___

12

12.) Complete the multiplication equation.



___ x ___ = ___