WAMC Lab Template

Math Concept(s):	Multiplication Arrays, area
Source / Text:	Adapted for CORD Mathematics: A contextual approach to Geometry Website: Teaching with Jillian Starr https://jillianstarrteaching.com/10-multiplication-center-ideas/
Developed by:	Christopher Beyrouty
E-Mail:	ChristopherB@WapatoSD.org
Date:	6/21/2022

Attach and or link the following documents

Lab Instructions	On the student worksheet
Student Handout(s)	https://docs.google.com/document/d/1e5ORvuPrNY3Sg4OM1Sc00Al-4UBcEM3Uhc3eMVoK8b8/edit?usp=sharing
Rubric and/or Assessment Tool	

Short Description
(Be sure to include where in your instruction this lab takes place)

Students will review array multiplication by playing a game involving the rolling of two numbers with dice and competing to see who can cover more of the "field" with their squares.

Lab Plan

Lab Title:	Array Multiplication Review
Prerequisite Skills:	An understanding of multiplication. Basic multiplication facts 1 through 6.
Lab Objective:	Students will demonstrate their understanding of multiplication arrays by creating rectangles that represent the multiplication of two numbers determined by a roll of a dice.

Standards
Note SPECIFIC relationship to Science, Technology and or Engineering

Mathematics K-12 Learning standards:
●
Standards for Mathematical Practice:
2. Reason abstractly and quantitatively.   3. Construct viable arguments and critique the reasoning of others   4. Model with mathematics.
K-12 Learning Standards - ELA (Reading, Writing, Speaking & Listening):
●
K-12 Science Standards
●
Technology
●
Engineering
●
Social Emotional Learning
- Benchmark 5A: Demonstrates a range of communication and social skills to interact effectively with others.   - Benchmark 6B: Demonstrates the ability to work with others to set, monitor, adapt, achieve, and evaluate goals.

Leadership / 21st Century Skills

21st Century Interdisciplinary Themes

[ ] Global Awareness	[ ] Financial/Economic/Business/Entrepreneurial Literacy	[ ] Civic Literacy
[ ] Health/Safety Literacy	[ ] Environmental Literacy	

21st century Skills (Check those that students will demonstrate in the above activity.)

LEARNING AND INNOVATION	INFORMATION, MEDIA & TECHNOLOGY SKILLS	LIFE & CAREER SKILLS	
Creativity and Innovation [x] Think Creatively [x] Work Creatively with others [ ] Implement Innovations	Information Literacy [ ] Access and Evaluate Information [ ] Use and manage information	Flexibility and Adaptability [x] Adapt to Change [ ] Be Flexible	Productivity and Accountability [ ] Manage Projects [ ] Produce Results

Critical Thinking and Problem Solving [x] Reason Effectively [ ] Use Systems Thinking [x] Make Judgments and Decisions [x] Solve Problems	Media Literacy [ ] Analyze Media [ ] Create Media Products	Initiative and Self-Direction [x] Manage Goals and Time [ ] Work Independently [ ] Be Self-Directed Learners	Leadership and Responsibility [ ] Guide and Lead Others [ ] Be Responsible to Others
Communications and Collaboration [x] Communicate Clearly [ ] Collaborate with Others	Information, Communications and Technology (ICT Literacy) [ ] Apply Technology Effectively	Social and Cross-Cultural [x] Interact Effectively with Others [ ] Work Effectively in Diverse Teams	

Teacher Preparation:
What materials and set-up are required for this lab?

Materials

- https://docs.google.com/document/d/1e5ORvuPrNY3Sg4OM1Sc00Al-4UBcEM3Uhc3eMVoK8b8/edit?usp=sharing
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Set-Up Required

- Gather dice, 2 for each student
- Make copies of the playing field, 2 for each pair playing. You might want extra incase they want to play some more.

Lab Organization Strategies

Leadership (Connect to 21st Century Skills selected)

- <see above>

Cooperative Learning

-

Expectations

- Students are competing graciously and completing the task
- When they finish they might find another person to play against.

Timeline

- 5 minutes for explanation of the game
- 15 minutes for the students to play one round

Post Lab Follow-Up/Conclusions

Discuss real world application of learning from lab

- Arranging product in spaces

Career Applications

- Arranging packages for shipping
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Optional or Extension Activities

- Make the field larger and use 12 sided dice or 20 sided dice.
- Create a larger field and have 4 people play against each other.

ARRAY CAPTURE

1. The first player rolls two dice.   Those numbers are the dimensions of their array. (For example, if a player rolls a 4 and a 5, they will build an array measuring 4 by 5.)
2. The first player colors in their array with their color (player 2 will have a different color). Then, they write their multiplication sentence in the middle of their shaded array (For example, 4 x 5 = 20) On the first roll, players must place their array in the starting square. However, all future arrays only need to be touching an existing array on one side.
3. Player two rolls next and continues in the same fashion, but from their corner. If a player cannot create an array because there is no space left, they lose a turn. When neither player can create an array two turns in a row, the game is over.
4. The player to capture the most squares wins!

Player 1

Start P1													
												Start P2

Player 2

WAMC Lesson Plan

Name(s): Christopher Beyrouty
Email Address: ChristopherB@WapatoSD.org
Lesson Title: V1C1 - Multiplication Array
Date: June 22, 2022
Text: CORD Mathematics: A contextual Approach to Geometry
STEM Correlation: Engineering, Science
Lesson Length: 20 minutes

Big Idea (Cluster): Area, Multiplication Array	
Mathematics K–12 Learning Standards:	
Mathematical Practice(s): ● 2. Reason abstractly and quantitatively. ● 3. Construct viable arguments and critique the reasoning of others ● 4. Model with mathematics.	
Content Objectives: Students will remember multiplication arrays and understand what multiplying by 1 means.	**Language Objectives (ELL):**
Vocabulary: Array	**Connections to Prior Learning** multiplication is repeated addition and represented by area models.
Questions to Develop Mathematical Thinking: ● What does multiplication represent? ●	**Common Misconceptions:** ● ●

Assessment (Formative and Summative):

● Formative assessment - How easily do student create the arrays representing the roll of the dice

Materials:

● 2 dice for each student playing ● game field for each pair of students playing

Instruction Plan:

Introduction: We are going to play a game and remember what multiplication represents.
Explore: Students pick a person to pair up with to play the game. Students take turns rolling dice and creating their arrays. The students with the most squares colored wins. When someone can't create an array 2 turns in a row the game is over.
When I observe students: Students are practicing good sportsmanship, taking turns, rolling the dice and creating arrays on the paper and coloring them in.
Questions to Develop Mathematical Thinking as you observe: ● Were there dice rolls that worked better than others? ●
Answers (to questions above):

WAMC Lesson Plan

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Summarize:
Students will build arrays based on the dice rolled and by doing so try to capture as much contiguous area of the playing field as possible.

Career Application(s):
- Construction, Engineering, Science related

Leadership/21ˢᵗ Century Skills:

21st Century Interdisciplinary themes (Check those that apply to the above activity.)
☐ Global Awareness   ☐ Financial/Economic/Business/Entrepreneurial Literacy   ☐ Civic Literacy
☐ Health/Safety Literacy   ☐ Environmental Literacy

21st Century Skills (Check those that students will demonstrate in the above activity.)

LEARNING AND INNOVATION	**INFORMATION, MEDIA & TECHNOLOGY SKILLS**	**LIFE & CAREER SKILLS**	**Productivity and Accountability**
Creativity and Innovation	Information Literacy	Flexibility and Adaptability	☐ Manage Projects
■ Think Creatively	☐ Access and Evaluate Information	☐ Adapt to Change	☐ Produce Results
■ Work Creatively with Others	☐ Use and manage Information	☐ Be Flexible	Leadership and Responsibility
☐ Implement Innovations	Media Literacy	Initiative and Self-Direction	☐ Guide and Lead Others
Critical Thinking and Problem Solving	☐ Analyze Media	■ Manage Goals and Time	☐ Be Responsible to Others
☐ Reason Effectively	☐ Create Media Products	☐ Work Independently	
☐ Use Systems Thinking	Information, Communications and Technology (ICT Literacy)	☐ Be Self-Directed Learners	
■ Make Judgments and Decisions	☐ Apply Technology Effectively	Social and Cross-Cultural	
☐ Solve Problems		■ Interact Effectively with Others	
Communication and Collaboration		☐ Work Effectively in Diverse Teams	
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