Amplify Desmos Math
CALIFORNIA

Grade 3

UNIT 1 | SUB-UNIT 2

Arrays

About Amplify

Amplify is dedicated to collaborating with educators to create learning experiences that are rigorous and riveting for all students. Amplify creates K–12 core and supplemental curriculum, assessment, and intervention programs for today's students.

A pioneer in K–12 education since 2000, Amplify is leading the way in next-generation curriculum and assessment. All of our programs provide teachers with powerful tools that help them understand and respond to the needs of every student.

Copyright by Amplify Education, Inc.
55 Washington Street, Suite 800,
Brooklyn, NY 11201
www.amplify.com

Amplify Desmos Math
CALIFORNIA

Grade 3

Unit 1: Introducing Multiplication

Sub-Unit 2: Arrays

Math Language Development Resource

Activity Pages and Teacher Support

Searching for Arrays

Finding, Drawing, and Describing Arrays

EL **Multilingual/English Learners** Use these scaffolds and supports during the **Activity 1, Monitor** step to provide more support for your students as they:

- Work toward the language goal in this lesson.
- Interpret **(Listening)** and communicate **(Speaking)** using the language from this activity, such as *array, column, row.*
- Interact in these meaningful ways:

Collaborative	• Exchanging information / ideas	ELD.PI.3.1
Interpretive	• Listening actively	ELD.PI.3.5
Productive	• Supporting opinions	ELD.PI.3.11

Spanish Cognates:

English	*column*
Español	*columna*

Materials

In Activity 1, Launch, you distributed the Activity 1 PDF and displayed the Visual Display PDF, *Arrays*. Students also need access to these additional materials.

In this Resource:

- *Array Hunt* PDF, one per student

Activity 1, Monitor

Distribute the *Describing Arrays* PDF. Activate background knowledge by asking students where they have seen items grouped into columns and rows in their everyday lives. Read aloud Problem 2. Invite students to look at the illustrations from the Unit Story shown on the Activity 1 PDF. **Sample responses shown.**

Emerging

Choose one array to discuss with students.

Ask:

- "What do you notice about the objects in the array?" **In groups, in a row (or gestures to rows and/or columns).**
- "What is the same about each group?" **3 in a row (or points to the objects that are the same in each row).**

Invite students to share their responses to in their primary languages first and/or using gestures. Then invite them to use the sentence frames and word bank to share their responses in English using simple words or phrases.

Expanding

Ask:

- "Where do you see equal groups in this array?" **I see rows and columns.**
- "What is the same about each row?" **I see the same number in each row.**
- "What is the same about each row?" **I see the same number in each row.**

Invite students to share their response to Problem 2 using short sentences and using the sentence frames and word bank provided in the *Describing Arrays* PDF.

Bridging

Ask:

- "Where do you see equal groups in this array?" **Each array has rows and columns. There are the same number in each row. Each column has the same number.**
- "How does an array show multiplication?" **The number of rows times the number in each row gives the total number of objects.**

Invite students to share their response to Problem 2 using complete sentences and as needed, the sentence frames and word bank provided in the *Describing Arrays* PDF. Encourage them to create their own sentences using the vocabulary from the unit.

Name _____ Date _____

Array Hunt

I see _____ rows.

I see _____ columns.

I see _____ is an array because . . .

Each row / column has _____ objects.

The array shows equal groups because . . .

Word bank (Banco de palabras)	
English	**Español**
array	formación
row	fila
column	columna
equal groups	grupos iguales

1.09 Activity 2 — Arrays of Flavor

Exploring the Commutative Property of Multiplication

EL **Multilingual/English Learners** Use these scaffolds and supports during the **Activity 2, Monitor** step to provide more support for your students as they:

- Work toward the language goal in this lesson.
- Interpret **(Listening)** and communicate **(Speaking)** using the language from this activity, such as **Commutative Property of Multiplication,** *expression, factor, product.*
- Interact in these meaningful ways:

Collaborative	• Exchanging information / ideas • Offering/ supporting opinions	ELD.PI.3.1 ELD.PI.3.3
Interpretive	• Listening actively	ELD.PI.3.5

Spanish Cognates:

English	*expression*	*factor*	*product*
Español	*expresión*	*factor*	*producto*

Materials

In Activity 2, Launch, you distributed counters (as needed). Students also need access to these additional materials.

In this Resource:

- *Testing Conjectures* PDF, one per student

Lesson Resources:

- Visual Display PDF, *Arrays*

Activity 2, Monitor

Distribute the *Testing the Conjecture* PDF. Display the Visual Display PDF, *Arrays* to provide continued access to a visual example of an array. Read aloud the directions for Activity 2. Invite students to use the PDF to draw arrays or form them with counters to represent each of the expressions. **Sample responses shown.**

Emerging

Ask (for each expression):

- "How many are in each row?" **3 (or points to their array)**
- "How many are in each column?" **5 (or points to their array)**
- "What is the product?" **15**
- "Which expressions have the same product? How are the arrays the same?" **Same total**

Invite students to share their responses in their primary language first and/or using gestures, such as pointing to their arrays. Then invite them to use the sentence frame and word bank to share their responses in English using simple words or phrases.

Expanding

Ask:

- "How are the arrays similar?" **Two of them have the same total.**
- "How are those arrays different?" **The rows and columns are switched.**
- "What must be true about those two expressions?" **They have the same product.**

Invite students to complete the sentence frame with a partner, using the word bank as needed.

Bridging

Ask:

- "How are the arrays similar?" **Two of the arrays have the same total, 15.**
- "How are those arrays different? How are those expressions different?" **The rows and columns are switched. The factors are switched.**
- "What must be true about those two expressions?" **The expressions have the same product, 15.**

Invite students to complete the sentence frame individually and then share their thinking with a partner.

Name _____ Date _____

Testing Conjectures (sample response)

3 × 5

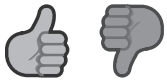
5 × 6

Circle 2 expressions with the same product. Use drawings, numbers, words, or equations to test your conjecture.

5 × 3

6 × 2

The conjecture is _____.



_____ and _____ have the same product. I know this because . . .

Word bank (Banco de palabras)			
array	row	column	Commutative Property
equal groups	factor	false	true

Organizing Art Supplies
Solving Problems With Arrays

EL **Multilingual/English Learners** Use these scaffolds and supports during the **Activity 1, Monitor** step to provide more support for your students as they:

- Work toward the language goal in this lesson.
- Interpret **(reading)** and communicate **(Speaking)** using the language from this activity, such as *array, column, row.*
- Interact in these meaningful ways:

Collaborative	• Exchanging information / ideas	ELD.PI.3.1
Interpretive	• Reading closely	ELD.PI.3.6

Spanish Cognates:

English	*column*
Español	*columna*

Materials

In Activity 1, Launch, you distributed connecting cubes and counters (as needed). Students also need access to these additional materials.

In this Resource:

- *Array of Colors* PDF, one per student

Lesson Resources:

- Visual Display PDF, *Arrays* (from lesson 8)

Activity 1, Monitor

Distribute the *Array of Colors* PDF. Display the Visual Display PDF, *Arrays* to provide continued access to a visual example of an array. Read aloud Problem 1 from Activity 1. **Sample responses shown.**

Emerging

Invite students to collaborate with you to underline, draw circles, and/or draw boxes around the words in the problem to help make sense of it . Ask:

- "What numbers do we know?" **5 and 40**
- "What is true about each row?" **Same number**
- "What do we need to find?" **How many in a row**

Invite students to complete the sentence frames with the information they know. Then invite them to use counters to create an array with 5 rows that has a total of 40.

Ask, "How many are in each row?" **8 *(students may point to the array and count)*** Invite students to write an equation that matches the array they created.

Repeat the above process for Problem 2.

Expanding

Invite students to work with a partner to underline, draw circles, and/or draw boxes around the words in the problem to help them make sense of it. Ask:

- "What numbers do we know?"**5 rows and 40 total.**
- "What is true about each row?" **Same number of crayons.**
- "What do we need to find?"**How many crayons are in each row.**

Invite students to complete the sentence frames with the information they know. Then invite them to use counters to create an array with 5 rows that has a total of 40.

Ask, "How many are in each row?"**8 in each row**

Invite students to write an equation that matches the array they created.

Repeat the above process for Problem 2.

Bridging

Invite students to work with a partner or independently to underline, draw circles, and/or draw boxes around the words in the problem to help them make sense of it. Ask:

- "What do we know?" **We know there are 5 rows and 40 in total.**
- "What is true about each row?" **Each row has the same number of crayons.**
- "What do we need to find?" **We need to find how many crayons are in each row.**

Invite students to complete the sentence frame individually and then share their thinking with a partner.

Ask:

- "How many are in each row?" **I see there are 8 crayons in each row.**

Repeat the above process for Problem 2.

Name _____ Date _____

Array of Colors (answers)

1 There are 5 rows of crayons in a box. The box has 40 crayons in it.

If each row has the same number of crayons, how many crayons are in each row?

I know there are _____ rows.

I know there are _____ in each row.

There are _____ total.

_____ × _____ = _____
(rows) (columns) (total)

2 There are 5 watercolor paints in each row of a palette. The palette has 40 paints in it. If each row has the same number of paints, how many rows of paints are there?

I know there are _____ rows.

I know there are _____ in each row.

There are _____ total.

_____ × _____ = _____
(rows) (columns) (total)

A Community Reading Event
Different Representations of Multiplication

EL **Multilingual/English Learners** Use these scaffolds and supports during the **Activity 1, Launch / Monitor** step to provide more support for your students as they:

- Work toward the language goal in this lesson.
- Interpret **(Reading)** and communicate **(Writing)** using the language from this activity, such as *array, column, row.*
- Interact in these meaningful ways:

Interpretive	• Reading closely	ELD.PI.3.6
Productive	• Writing to describe or explain	ELD.Pi.3.10

Spanish Cognates:

English	*column*
Español	*columna*

Materials

In Activity 1, Launch, you distributed inch tiles and tools (as needed) for students to create a visual display. Students also need access to these additional materials.

In this Resource:

- *Seating Situations* PDF, one per student

Lesson Resources:

- Visual Display PDF, *Arrays* (from lesson 8)

Activity 1, Monitor

Distribute the *Seating Situations* PDF and counters to support students in making sense of Problem 2. Display the Visual Display PDF, *Arrays* to provide continued access to a visual example of an array. Read aloud Problem 2 from Activity 1.**Sample responses shown.**

Emerging

Ask:

- "What do we know from Problem 1?" **30 people.**
- "What do we need to know to solve Problem 2?" **Folding chairs. Beanbags.**

Invite students to use counters to create an array that represents the 36 folding chairs

Ask:

- "How many rows are there?" **6**
- "How many are in a row?" **6**

Invite students to write an equation in the top box that matches the array they created.

Read aloud Problem 2 again.

Repeat the above questioning as students work to determine an array and equation that represents the number of beanbags.

Expanding

Ask:

- "What do we know from Problem 1?" **30 attendees.**
- "What do we need to know to solve Problem 2?" **Ssetup folding chairs and beanbags.**

Invite students to use counters to create an array that represents the 36 folding chairs.

Ask:

- "How many rows are there?" **6 rows.**
- "How many are in a row?" **6 in each.**

Invite students to write an equation that matches the array they created.

Read aloud or invite a student to read aloud Problem 2 again.

Repeat the above questioning as students work to determine an array and equation that represents the number of beanbags.

Bridging

Ask:

- "What do we know from Problem 1?" **We know there are 30 people attending.**
- "What do we need to know to solve Problem 2?" **We need to know how to arrange the chairs and beanbags into rows and columns.**

Invite students to use the counters to represent the 36 folding chairs

Ask:

- "How many rows are there?" **There are 6 rows.**
- "How many are in a row?" **There are 6 in each row.**

Invite students to write an equation that matches the array they created.

Repeat the above questioning as students work to determine an array and equation that represents the number of beanbags.

Name _____ Date _____

Seating Situations (answers)

The next morning, the number of attendees went up to _____.

Harper only has _____ folding chairs.

_____ × _____ = _____

I added _____ *rows* of _____ to the *array*.

Harper has _____ total beanbags.

_____ × _____ = _____

She can create an *array* of beanbags by creating _____ *rows* of _____.

Notes

Visit us online to explore digital lessons and learn more.

amplify.com/mathca

Amplify.

MA0829 - 1893635