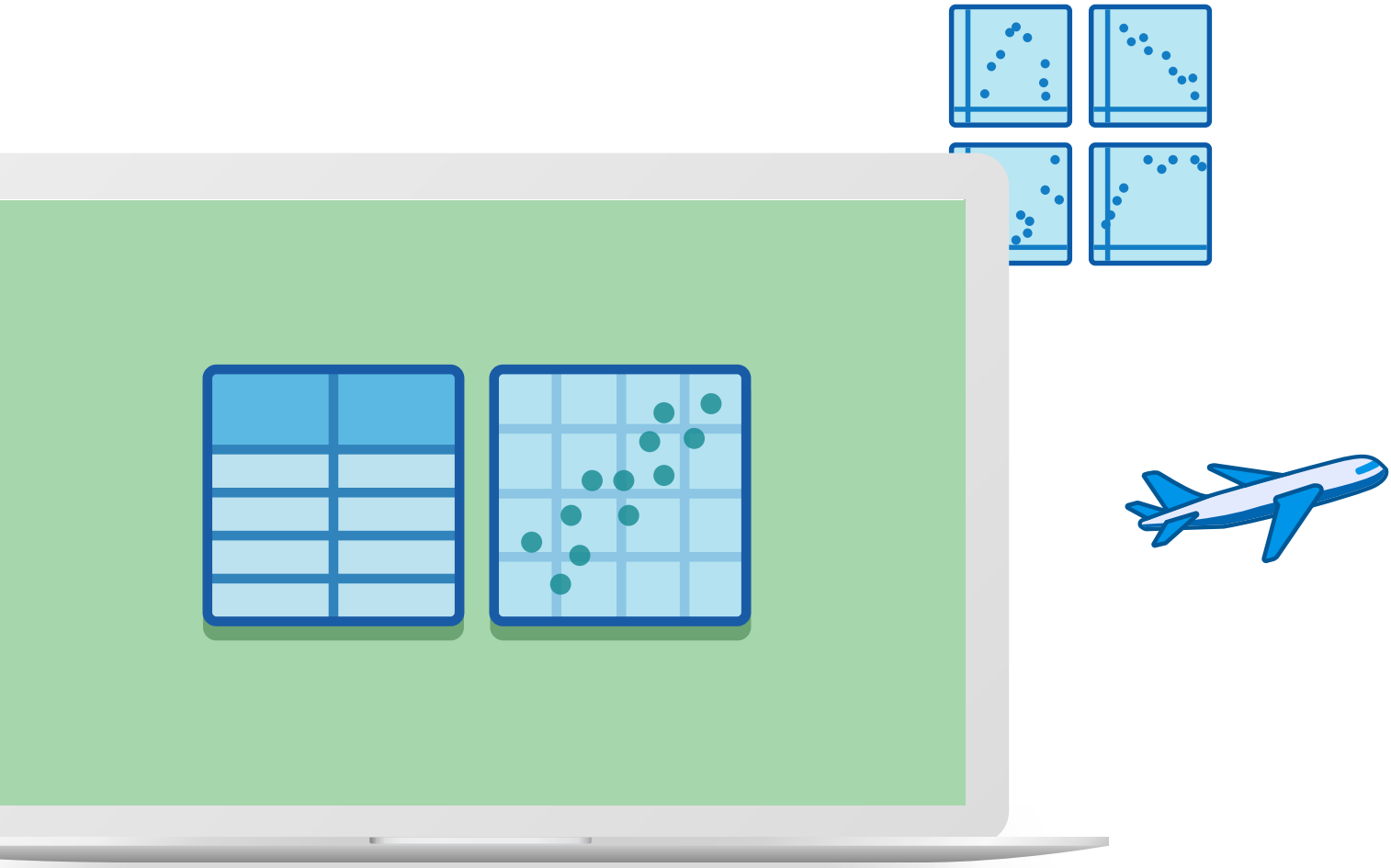
Amplify Desmos Math
CALIFORNIA

Grade 8

UNIT 6 | SUB-UNIT 1

Organizing Numerical Data



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.

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55 Washington Street, Suite 800,
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www.amplify.com

Amplify Desmos Math
CALIFORNIA

Grade 8

Unit 6: Associations in Data

Sub-Unit 1: Organizing Numerical Data

Math Language Development Resource

Activity Pages and Teacher Support

Explore:
Changes in the Ozone Layer

EL **Multilingual/English Learners** Use these scaffolds and supports during the **Building Math Habits of Mind** part of the **Explore** to provide more support for your students as they:

- Interpret **(Reading and Listening)** and communicate **(Speaking)** about the mathematical habits of mind they strengthened during the Activity.
- Interact in these meaningful ways:

Collaborative	• Exchanging information / ideas • Offering / supporting opinions	**ELD.PI.8.1** **ELD.PI.8.3**
Interpretive	• Listening actively • Reading closely	**ELD.PI.8.5** **ELD.PI.8.6**
Productive	• Presenting information / ideas • Supporting / evaluating opinions	**ELD.PI.8.9** **ELD.PI.8.11**

Spanish Cognates:

English	*habit*	*mathematics*	*mind*
Español	*hábito*	*matemática*	*mente*

Materials

Students also need access to these materials.

In this Resource:

- *Math Habits of Mind: Hábitos mentales matemáticos* Sheet, one per student
- *Questions and Sentence Frames* Sheet (for display)

Explore, Building Math Habits of Mind

Distribute the *Math Habits of Mind: Hábitos mentales matemáticos* Sheet.

Emerging

Read aloud, or ask a student volunteer to read aloud, the first habit of mind in English and in Spanish (for your students whose primary language is in Spanish).

Invite students to collaborate with you to think about whether they used and strengthened this habit of mind during the Activity. Consider asking:

- "Did you make sense of any problems during the Activity?" Invite them to use simple words or phrases, such as **"yes"** or **"no."**
- "If you said yes, show me what part of the Activity you made sense of a problem." Invite students to point to part of the Activity.

Repeat the above for each habit of mind.

Expanding

Invite students to work with a partner to read aloud each habit of mind and then choose at least one that they used and strengthened during the Activity. If possible, pair students together who speak the same primary language and allow them to discuss their responses in their primary language.

Then invite pairs of students to share the habits of mind they chose with another pair of students. Display the *Questions and Sentence Frames* Sheet and invite students to discuss the questions on this sheet and use the provided sentence frames to help them form their responses.

Bridging

Invite students to work with a partner to read aloud each habit of mind and then choose at least one that they used and strengthened during the Activity. If possible, pair students together who speak the same primary language and allow them to discuss using a mixture of their primary language(s) and English.

Then invite pairs of students to share the habits of mind they chose with another pair of students. Display the *Questions and Sentence Frames* Sheet and invite students to discuss the questions on this sheet. Encourage them to craft their own sentences in response to the questions, using the provided sentence frames as needed.

Math Habits of Mind: Hábitos mentales matemáticos

I can slow down and first make sense of a challenging problem before trying to solve it.

Puedo reducir la velocidad y primero darle sentido a un problema desafiante antes de intentar resolverlo.

I can represent real-world problems and interpret their solutions within the context of the problem.

Puedo representar problemas del mundo real e interpretar sus soluciones dentro del contexto del problema.

I can justify my thinking and ask questions to help me understand the thinking of others.

Puedo justificar mi pensamiento y hacer preguntas que me ayuden a comprender el pensamiento de los demás.

I can apply the math that I know to solve real-world problems, making assumptions and revising my thinking as needed.

Puedo aplicar las matemáticas que sé para resolver problemas del mundo real, haciendo suposiciones y revisando mi pensamiento según sea necesario.

I can select an appropriate tool to help me solve problems.

Puedo seleccionar una herramienta adecuada que me ayude a resolver problemas.

I can communicate my thinking and solutions clearly to others.

Puedo comunicar mis pensamientos y soluciones claramente a los demás.

I can look for structure or patterns to help me solve problems.

Puedo buscar estructuras o patrones que me ayuden a resolver problemas.

I can look for repeated calculations and other repeated steps to make generalizations.

Puedo buscar cálculos repetidos y otros pasos repetidos para hacer generalizaciones.

Questions and Sentence Frames

Why did you choose this habit of mind?

Did you choose any others? Why or why not?

What part of the Activity reminded you of this habit of mind?

Can you tell me more?

I chose this habit of mind because . . .

I also chose _____ because . . .

In the Activity, I . . .

Click Battle
Organizing Data

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 Listening)** and communicate **(Speaking and Writing)** using the language from this activity, such as *decreasing, graph, increasing, table*.
- Interact in these meaningful ways:

Collaborative	• Exchanging information / ideas	**ELD.PI.8.1**
Interpretive	• Listening actively • Reading closely	**ELD.PI.8.5** **ELD.PI.8.6**
Productive	• Selecting language resources	**ELD.PI.8.12**

Spanish Cognates:

English	*graph*	*increase*	*point*	*table*
Español	*gráfica*	*incrementar*	*punto*	*tabla*

Materials

Students need access to these materials.

In this Resource:

- *Organizing Data* Sheet, one per pair

Activity 1, Monitor

Distribute a portion of the *Organizing Data* Sheet to each student depending on the level of support needed. Display Screen 5. **Note:** The top portion of the *Organizing Data* Sheet offers emerging language supports, the middle portion offers expanding language supports, and the bottom portion offers bridging language supports.
Sample responses shown.

Emerging

For students who receive the top portion of the *Organizing Data* Sheet:

Ask, "Where do you see a time of 3 seconds and 17 clicks in the table? Graph?" **Number of clicks (or gestures to that column). Point (3, 17) on graph (or gestures to that point).**

Invite students use the word bank to complete the sentence frames on the Sheet.

Encourage students to read their sentences aloud to you or a partner once the sentences are completed to support their understanding of language structures.

Expanding

For students who receive the middle portion of the *Organizing Data* Sheet:

Ask, "How are the table and graph alike? How are they different?" **They both show the time and number of clicks. The table shows the numbers and the graph shows the points going up.**

Invite students to collaborate with a partner to complete each sentence on the Sheet.

Ask, "Do you see any other connections? What do you see?" **The *Time* column goes from 2.5 to 8. The points on the x-axis also go from 2.5 to 8.**

Bridging

For students who receive the bottom portion of the *Organizing Data* Sheet:

Ask, "How does the data appear in the table? Graph?" **The table shows the numbers. The graph shows how the clicks increase as time increases.**

Invite students to collaborate with a partner or independently to complete each sentence frame.

Then invite them to collaborate with a partner to describe any additional connections they notice.

Organizing Data

Directions: Make copies and pre-cut. Give each student the appropriate leveled support. **Note:** The top portion offers emerging language supports, the middle portion offers expanding language supports, and the bottom portion offers bridging language supports.

- The *Time* column in the table matches with the _____ on the graph and the *Number of Clicks* column matches with the _____ on the graph.
- Each row in the table appears as a _____ on the graph.
- As the time increases, the number of clicks _____.

Word bank (Banco de palabras)					
English	decreases	increases	point	x-axis	y-axis
Español	disminuir	incrementar	punto	eje de las x	eje de las y

- The *Time* column in the table matches with the _____ on the graph and the *Number of Clicks* column matches with the _____ on the graph.
- Each row in the table appears as a _____ on the graph.
- As the time increases, the number of clicks _____.

One connection between the graph and table is . . .

Another connection between the graph and table is . . .

Word bank				
data	increases	point	x-axis	y-axis

Wingspan
Plotting Data

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)** using the language from this activity, such as *dot plot, height, scatter plot, wingspan.*
- Interact in these meaningful ways:

Collaborative	• Offering / supporting opinions	ELD.PI.8.3
Interpretive	• Reading closely	ELD.PI.8.6

Materials

Students need access to these materials.

In this Resource:

- *Visualizing Data* Sheet, one per student

Activity 1, Monitor

Distribute the *Visualizing Data* Sheet while students study the dot plots on Screen 4. Invite students to complete the *Can it be answered from the dot plots?* column of the table on the Sheet before they complete Screen 4.

Sample responses shown.

Emerging

Read aloud, or ask a student to read aloud, the first question in the *Can it be answered from the dot plot column?* on the Sheet.

Invite students to collaborate with you to determine whether this question can be answered from the dot plot, writing **"Yes"** or **"No."**

Consider asking:

- "What are some words in the question that help you?" **How many**
- "Which dot plot(s) help you answer this question?" **Height (or gestures)**
- "What part of the dot plot helps you answer this question?" **The number of dots above 62 (or gestures)**

Invite students to collaborate with you to complete the remaining questions for the dot plots.

Repeat the above for the *Can it be answered from the scatter plot?* column before students complete Screen 6.

Expanding

Read aloud, or ask a student to read aloud, the first question in the *Can it be answered from the dot plot column?* on the Sheet.

Invite students to collaborate with a partner to determine whether this question can be answered from the dot plot, writing **"Yes"** or **"No."**

Consider asking, "Where can you find this information in the dot plot?" **The number of dots above 62 in the Height dot plot.**

Invite students to collaborate with a partner to complete the remaining questions for the dot plots.

Repeat the above for the *Can it be answered from the scatter plot?* column before students complete Screen 6.

Bridging

Invite students to collaborate with a partner to complete the first question in the *Can it be answered from the dot plot column?* on the Sheet.

Consider asking, "How do you know if this question can be answered from the dot plot?" Invite students to provide details from the graph. **I can look for any dots above 62 on the Height dot plot.**

Invite students to collaborate with a partner to complete the remaining questions for the dot plots.

Repeat the above for the *Can it be answered from the scatter plot?* column before students complete Screen 6.

Name: Date: Period:

Visualizing Data

Question	Can it be answered from the dot plots? (Screen 4)	Can it be answered from the scatter plot? (Screen 6)
How many people are 62 inches tall?		
What is the wingspan of a person who is 60 inches tall?		
How many people are taller than 65 inches?		
Is there a relationship between height and wingspan?		
Who is the tallest person?		

Robots
What a Point on a Scatter Plot Means

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 **(Reading)** and communicate **(Writing)** using the language from this activity, such as *coordinates, scatter plot, x-axis, y-axis*.
- Interact in these meaningful ways:

Collaborative	• Interacting in written English	**ELD.PI.8.2**
Interpretive	• Reading closely	**ELD.PI.8.6**
Productive	• Writing to describe or explain	**ELD.PI.8.10**

Spanish Cognates:

English	*coordinate*
Español	*coordinadas*

Materials

In Activity 2, Launch, you distributed the Activity 2 Cards. Students also need access to these additional materials.

In this Resource:

- *Challenge Creator* (Tell a Story) Sheet, one per student

Activity 2, Monitor

Distribute the *Challenge Creator* (Tell a Story) Sheet. Invite students to use the sheet after they create their challenge on the Screen 6, but before they **Tell a Story**. Ask, "What context did you choose? Circle it on the sheet."

Emerging

Read aloud the labels on each axis for the context each student chose.

Invite students to collaborate with you to tell a story about the large blue point they placed on their graph. Allow them time to think of a story using their primary language and/or the sentence frame and word bank on the Sheet and to write their story in their primary language first.

Expanding

Invite students to read aloud the labels on each axis for the context they chose.

Invite students to collaborate with a partner to tell a story about the large blue point they placed on their graph. Encourage them to use the sentence frame and word bank on the Sheet.

Bridging

Invite students to read aloud the labels on each axis for the context they chose.

Invite students to work independently or with a partner to tell a story about the large blue point they placed on their graph. Encourage them to use complete sentences and the sentence frame / word bank on the Sheet, as needed. Challenge them to include details, such as "My point is close to the other points" or "My point is far away from the other points."

Challenge Creator (Tell a Story)

My Challenge:

What context did you choose?

 Fuel efficiency

 Quarterback wins

 Book page count

 Foot width

 Animal lifespan

 Flight time

 Energy use

 Oil imports

The x-axis represents . . .

The y-axis represents . . .

The large blue point on my graph . . .

Word bank (Banco de palabras)	
English	**Español**
animal	animal
book	libro
distance	distancia
energy	energía
flight	vuelo
foot	pie
fuel	combustible
heart rate	ritmo cardiaco
length	longitud
lifespan	esperanza de vida
oil	aceite
page	página
quarterback	jugador de ataque
temperature	temperatura
time	tiempo
vehicle	vehículo
weight	peso
width	ancho
word	palabra

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