

ENGAGING ENGLISH LANGUAGE LEARNERS IN
MATHEMATICAL COMMUNICATION THROUGH
DESMOS® TECHNOLOGY

NCTM 2018

Joanne Caniglia, Kent State University

Michelle Meadows, Tiffin University

TOPICS OF PRESENTATION

- Desmos[®] and the Four Language Domains.
- The Use of Polygraph.
- How to Create your own Polygraph in Activity Builder.

DESMOS AND THE FOUR LANGUAGE DOMAINS

Academic **language** is used in all **four domains** of **language** (reading, writing, speaking, and listening), and all **four domains** are needed to achieve proficiency in language.

DESMOS AND THE 4 DOMAINS

- Both passive and active language—listening and speaking, reading, and writing
- Consider learners' needs
- Includes relevant details and omits information that isn't required.
- All grade levels from elementary to high school.

AN INTRO TO DESMOS

- Desmos is an online graphing utility that requires no downloads or special hardware.
- It works on any computer, tablet, or phone. The website updates automatically and does not require any uploads.
- In addition, a Desmos iPad app is available with the same functionality as the online version. Best of all, it is free!
- Teachers and students can begin graphing right away at www.desmos.com.

DESMOS

Desmos Classroom Activities

At Desmos, our mission is to help every student learn math and love learning math. With that in mind, we've assembled a collection of unique and engaging digital activities, which are free for you and your students.



Watch the video

POLYGRAPH WITH DESMOS

The screenshot shows the Desmos Polygraph: Basic Quadrilaterals game interface. At the top, the browser's address bar displays several open tabs: 'Apps', 'Study Guide', 'Study Guide---New...', 'Tutorial:Spreadshe...', 'EasyBib: How to cit...', 'mathedjournals - ...', 'The Magic of the R...', and 'www.loyolapress.c...'. The Desmos logo is in the top left, and the user's name 'Joanne' is in the top right. The main area features a 3x10 grid of 30 quadrilateral shapes. The text 'Polygraph: Basic Quadrilaterals' is centered over the grid. Below the grid, the instruction 'Ask questions to guess which shape your classmate picked.' is displayed. At the bottom left, the word 'Classes' is followed by a table with columns for 'CLASS CODE', 'STUDENTS', and 'DATE'. To the right of the table is a green button labeled 'Create Class Code'. At the bottom right, there is a blue button labeled 'Contact us'.

desmos Joanne

Polygraph: Basic Quadrilaterals

Ask questions to guess which shape your classmate picked.

Classes

CLASS CODE	STUDENTS	DATE
		Feb 9, 2017

Create Class Code

Contact us

LET'S TRY TO USE DESMOS...

1. GO TO: teacher.desmos.com
 2. Classroom Activities
 3. "Polygraph"
 4. Find the topic that you would like.
 5. Let's try "Basic Quadrilaterals"
- https://www.youtube.com/watch?v=5Qlg1T4xc_4

Hey, students!

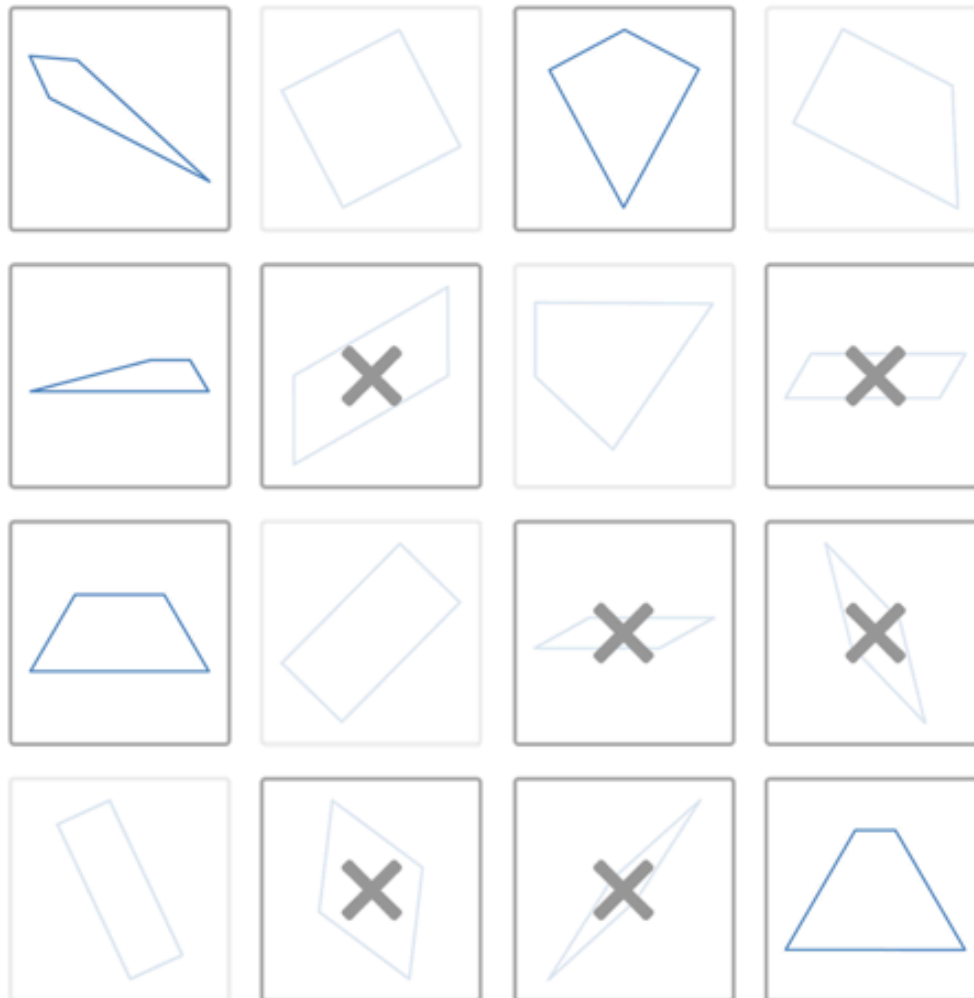
Go to student.desmos.com
and type in:

W68WX

You can also share this link with your students:

<https://student.desmos.com/?prepopulateCode=W68WX>

TEACHER DASHBOARD



Questions Asked: 2

Your Partner: Jenny

YOU ASKED

Does it have at least one right angle?

JENNY CHOSE

No

YOU ELIMINATED



YOU ASKED

Are the opposite sides the same length?

JENNY CHOSE

No

Select quadrilaterals to eliminate based on Jenny's answer. Then press the button below.

Eliminate Selected

HOW TO CREATE YOUR OWN POLYGRAPH

- Custom
- New Polygraph
- Add Title
- Build Suspects
- Details
- DONE!

GREEN GLOBS

▼ Green Globes

$$(x - 0)^2 + (y - 0)^2 \leq \frac{1}{10}$$

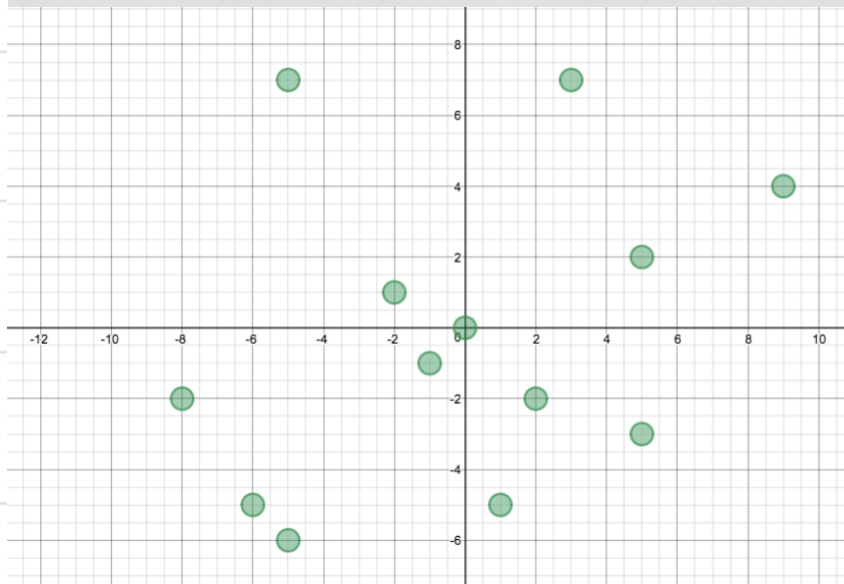
$$(x + 1)^2 + (y + 1)^2 \leq \frac{1}{10}$$

$$(x + 8)^2 + (y + 2)^2 \leq \frac{1}{10}$$

$$(x + 6)^2 + (y + 5)^2 \leq \frac{1}{10}$$

$$(x + 5)^2 + (y + 6)^2 \leq \frac{1}{10}$$

$$(x + 5)^2 + (y - 7)^2 \leq \frac{1}{10}$$



▼ Scoring

1 glob = 1 point

2 globs = 2 points

3 globs = 4 points

4 globs = 8 points

5 globs = 16 points

6 globs = 32 points

VOCABULARY RESOURCES

- http://www.doe.virginia.gov/instruction/mathematics/resources/vocab_cards/math_vocab_cards_4.pdf
- <http://www.k-5mathteachingresources.com/>