

# Supporting English Language Learners in Math Class

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Celebrating Our Progress, Preparing for Excellence  
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# Our Mission

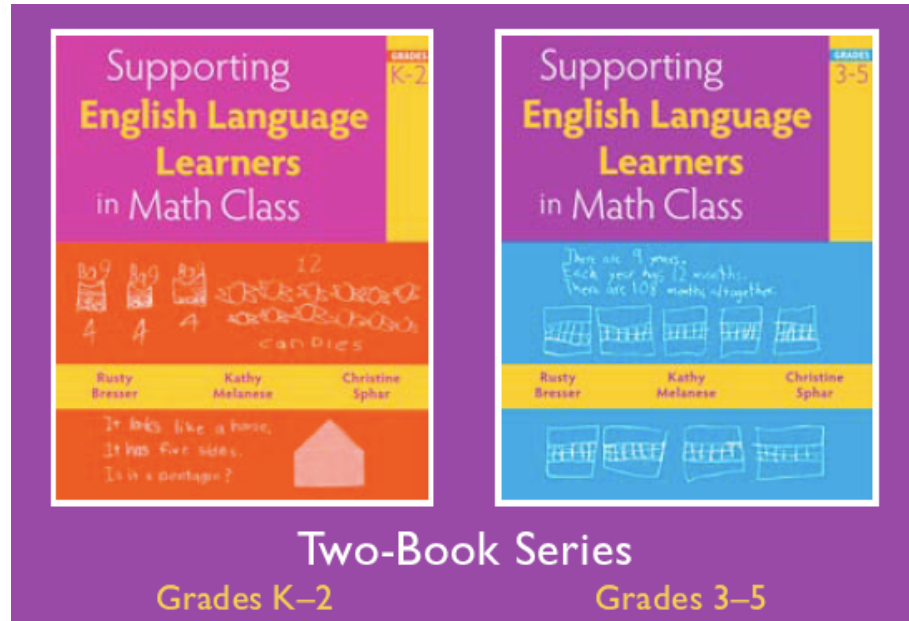
As a thriving organization responsive to a changing world, **Math Solutions** is dedicated to improving children's learning of mathematics by providing the highest quality professional development services products, and resources to educators.



*Marilyn Burns, Founder*

# Supporting **English Language Learners in Math Class**

*K-2 and 3-5*



Rusty Bresser      Kathy Melanese

Christine Sphar

# Supporting English Language Learners in Math Class

Teachers of English language learners need to accomplish two goals with their students in mathematics:

- mathematical understanding *and*
- proficiency in English.

This session will highlight ways teachers can structure experiences to accomplish these two goals.

With a focus on supporting English language learners, in this session we will:

- Consider the demands for teaching and learning mathematics
- Engage in and reflect on a professional learning experience
- Consider a variety of instructional strategies that support English Language Learners

# Demands of Teaching and Learning Mathematics

*Students must learn mathematics with understanding, actively building new knowledge from experience and prior knowledge.*

Principles and Standards for School Mathematics,  
National Council of Teachers of Mathematics 2000

Students build their understanding when instruction provides opportunities to:



- Reason
- Solve problems
- Represent
- Make and use connections
- Communicate

NCTM 2000



*It is important for all students, but especially critical for ELL students, to have opportunities to **speak, read, and listen** in mathematics classes, with teachers providing appropriate support and encouragement.*

*Teaching Mathematics to English Language Learners  
National Council of Teachers of Mathematics 2008*

Every part of learning is language dependent, from the arousal of a curiosity, to the teacher's explanation of a concept, to the formation of an understanding of that concept, to the verbalization or written expression of that understanding. Along the path from curiosity to demonstrated understanding, a learner—any learner—needs to clarify his developing understanding, test hypotheses, and solicit confirmation of his thinking. All of these activities are conducted through the medium of language. When a learner is carrying out all of this cognitive work in a second language, limitations in language can lead to limitations in learning.

*Supporting English Language Learners in Math Class, 2008*  
*Bresser, Melanese, Sphar*

# Goals for English Language Learners in Math Class

- Actively engage in understanding mathematics
- Build English proficiency



# Professional Learning Experience

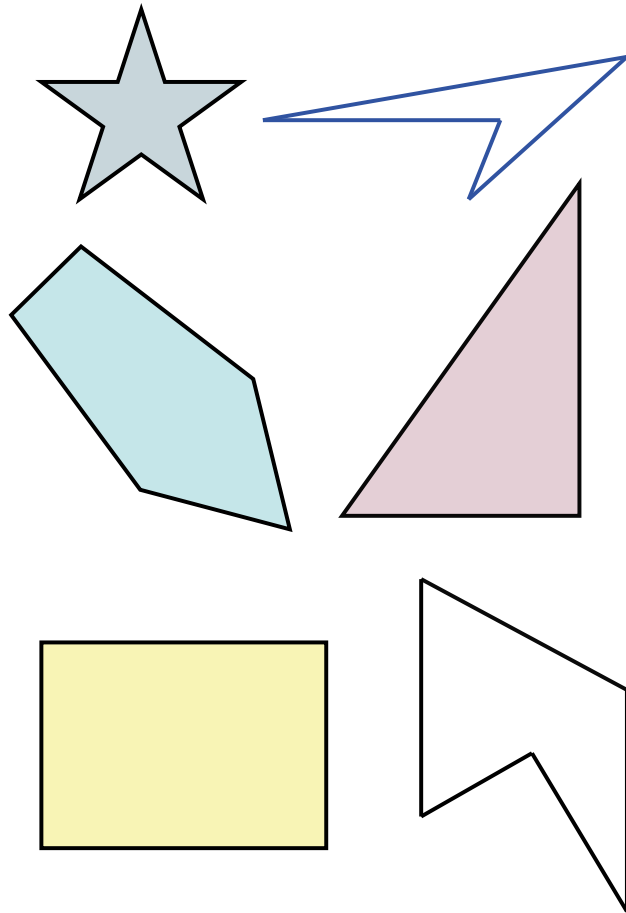
## What we'll do:

- Investigate and analyze a math task
- Determine the language requirements
- Identify and categorize instructional strategies
- **Observe classroom instruction (video)**
- Engage in a reflective conversation

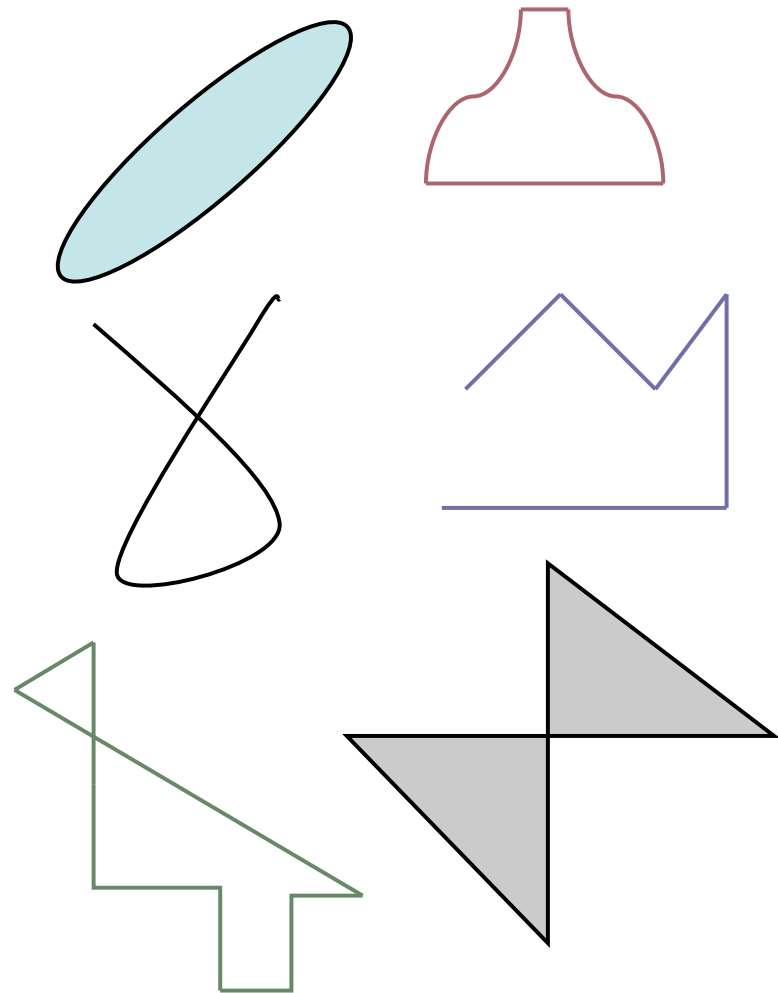
Math Goal:

Students will identify and describe the features of polygons and the features of figures that are not polygons.

# Polygons



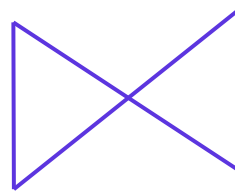
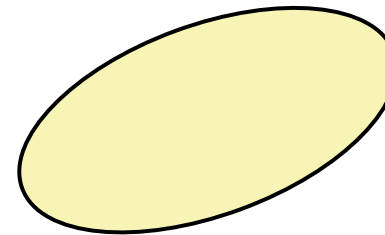
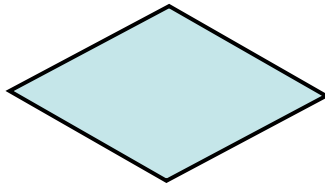
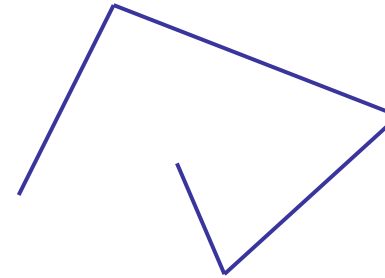
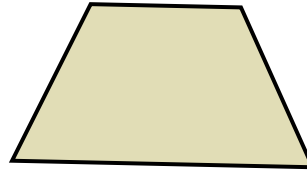
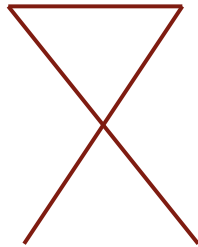
# Not Polygons



# Sorting Task

1. Sort the figures into two categories:  
*polygons* and *not polygons*.
3. Describe the figures as you sort them and give reasons for your decisions.
3. As you sort the figures, think about the key vocabulary words and language you used as you identified and sorted the shapes.





# Vocabulary and Language Goal

Closed  
Curved  
Intersect  
Line segment  
Open  
Polygon  
Sides  
Straight  
Vertex/Vertices

**Identify and describe**  
polygons and figures that  
are not polygons.

This shape has . . .

This is a . . . because . . .

This is not a . . . because . . .

# Identifying and Describing Polygons

## Video Lesson Vignette

- Introducing Academic Language
- Introducing Polygons
- Exploring Polygons Independently
- Summarizing the Lesson

# Instructional strategies that:

- Make math comprehensible
- Provide opportunities for talk
- Support talk

In what ways does the teacher make the **math content comprehensible** and support students in understanding math concepts?

What **opportunities to talk** about their mathematical thinking are students given?

What strategies does the teacher use to **support students in talking** about their mathematical thinking?

## Strategies that Support English Language Learners

- identify a math and a language goal
- use sentence frames
- create vocabulary banks
- make manipulative materials available
- pose problems in familiar contexts
- elicit nonverbal responses
- utilize partner talk
- ask for choral responses
- provide visuals
- demonstrate and model
- use dramatization and gestures
- design questions and prompts for different proficiency levels

# To think about . . .

- How did the ideas in this session connect to what I already know?
- What did I see, hear, or talk about that gave me something new to consider?
- What else do I want to know?

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# Questions?





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