



Student-made “Study Guides” to Help ELLs Learn Geometric Terms

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2007 MELL Conference
Texas State University-San Marcos, TX



Purpose

- ✦ To describe, model practical ideas that have been tested in classrooms with ELLs.
- ✦ To help teachers plan and implement meaningful ways to engage the English Learners in their math classrooms.

Meeting the needs of ELLs in the math classroom



Influence of Background and Culture

Culture is the lens through which we look at the world. It is the context within which we make sense of the world. It influences how we process learning, solve problems, and teach.



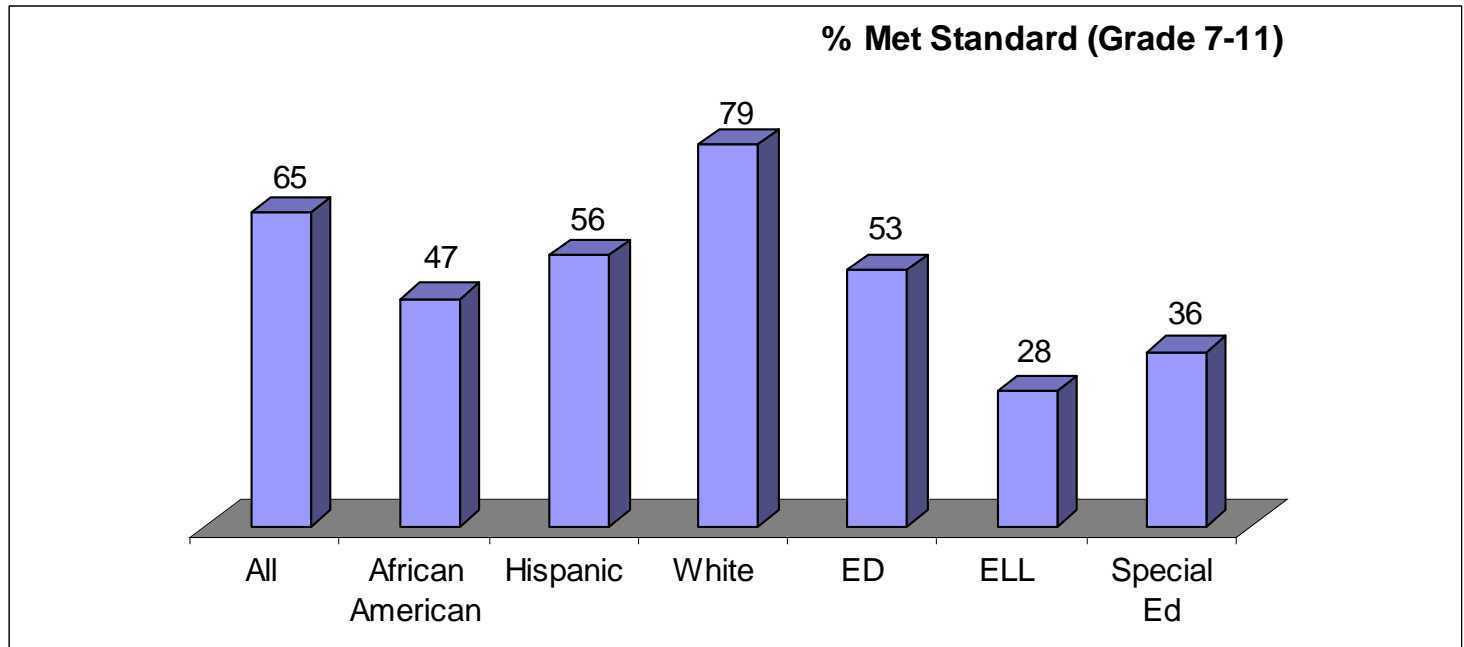
From: Classroom to Community and Back

(Northwest Regional Educational Laboratory, Portland, OR)

MELL-Mathematics for English Language Learners

- ✦ Multi-year grant awarded to the TX State University System (TSUS)
 - SHSU is one of 5 universities
- ✦ Funded by the Texas Education Agency
- ✦ One of 6 Mathematics initiatives in Texas

MATHEMATICS TAKS TEST 2006 RESULTS



ED = Economically Disadvantaged

MELL Activities

- ✦ Provide resources and ideas to improve the mathematics learning of ELLs
- ✦ Support math teachers of ELL students
 - Reyna & Claudia were teacher participants in a 5-day institute focused on content & pedagogy.

Staff Development for Teachers of ELLs

Summer 2006 – 25 teachers
Pharr-San Juan- Alamo ISD
Lower Rio Grande Valley





Strategies that work for ELLs

- ✚ Help the ELL talk-to-learn (conversational language)
- ✚ Develop academic language
- ✚ Scaffolding
- ✚ Use of manipulatives (concrete, web-based)
- ✚ Use multiple representations
- ✚ Questioning strategies



Comprehensible Input

- ✦ The main concept for teaching second language learners
- ✦ Strategies, ideas, steps, processes that can make the content and the language accessible to the learner

Lesson Presentation –

- ☛ How did you organize the content? Was there a sequential arrangement?
- ☛ Consider time frame
- ☛ Strategies used in the delivery of instruction or curriculum
- ☛ Degree of student involvement
- ☛ Developmental and exploratory strategies
- ☛ Type of questioning
- ☛ Link present lesson to previous lesson

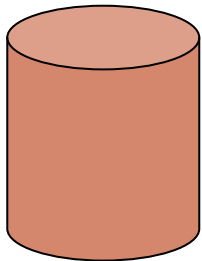
Comprehensible Input

- ✂ Make verbal communication more understandable by consciously attending to students' linguistic needs
- ✂ Make sure students are taking in and understanding what is communicated to them; paraphrase and add visuals
- ✂ Enunciate and speak more slowly but in a natural way; Adjust teacher's speech
- ✂ More repetitions as needed

Comprehensible Input

- ✚ Avoid jargon and idioms
- ✚ Use gesture, body language, pictures, and real objects to accompany words

(e. g., holding a cylindrical box while saying the word “cylinder”).



- ✚ Model what is expected of students (e.g., show how recording sheet is used)

Comprehensible Input

- ✚ Hands-on activities provide an alternative way of expressing their understanding.
- ✚ They help reduce linguistic demands.
- ✚ Use cognates (**calculate**: *calcular* instead of “determine” or “find out”) for Spanish or any Latin-based language.

What can comprehensible input do?

Help ELL understand concepts well enough to be able to tackle a new concept successfully and with efficiency.



Sheltered Instruction

- ☛ Teaching with language support
- ☛ Language goals
- ☛ Content goals



Accommodations needed (Sheltered Instruction)

1. Build rich mathematics vocabulary

- ❑ Anticipate and list helper words for students to use, define, explain, describe.
- ❑ Use vocabulary words in appropriate contexts.



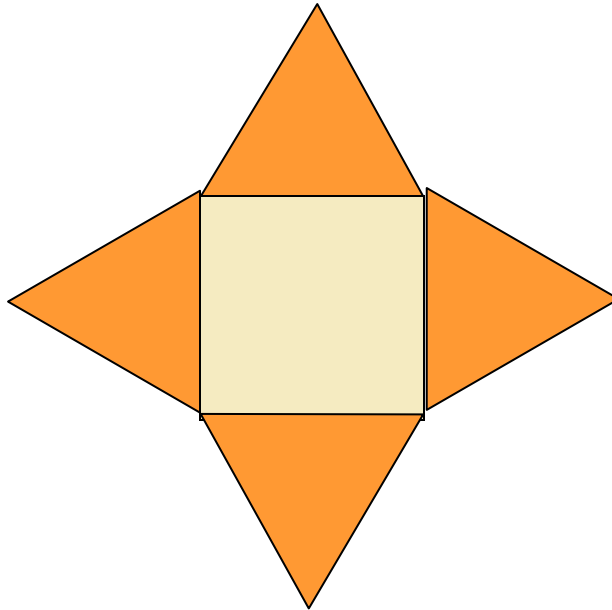
Accommodations (cont.)

2. Slice long word problems into smaller chunks



Accommodations (cont.)

3. Use drawing/ illustration/ diagram/ net





Questions to generate solutions

- Help ELLs fully understand the task
 - Discuss the task at hand
 - Explore various solution paths
 - Discuss valid solutions to “pull out” the important math concepts

Who is doing most of the talking in your class?

- 👉 Teachers talk less and listen more
- 👉 Engage learners in the process
- 👉 Assess student thinking by asking questions such as:
 - What if...
 - How do you know that?
 - Who has a different solution?



Who is doing the thinking in your classroom?



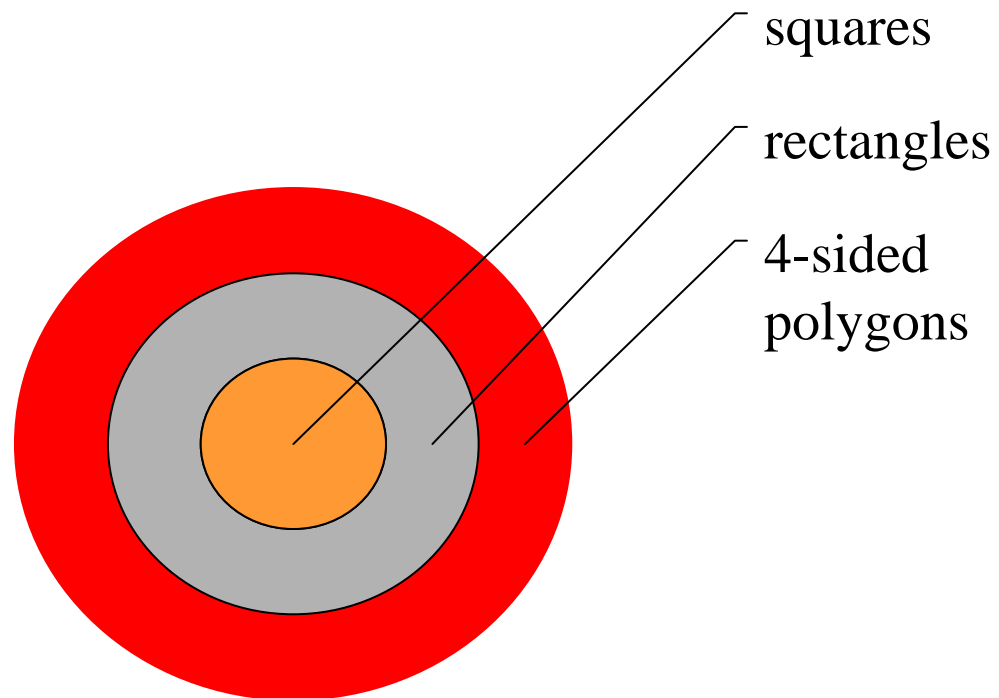


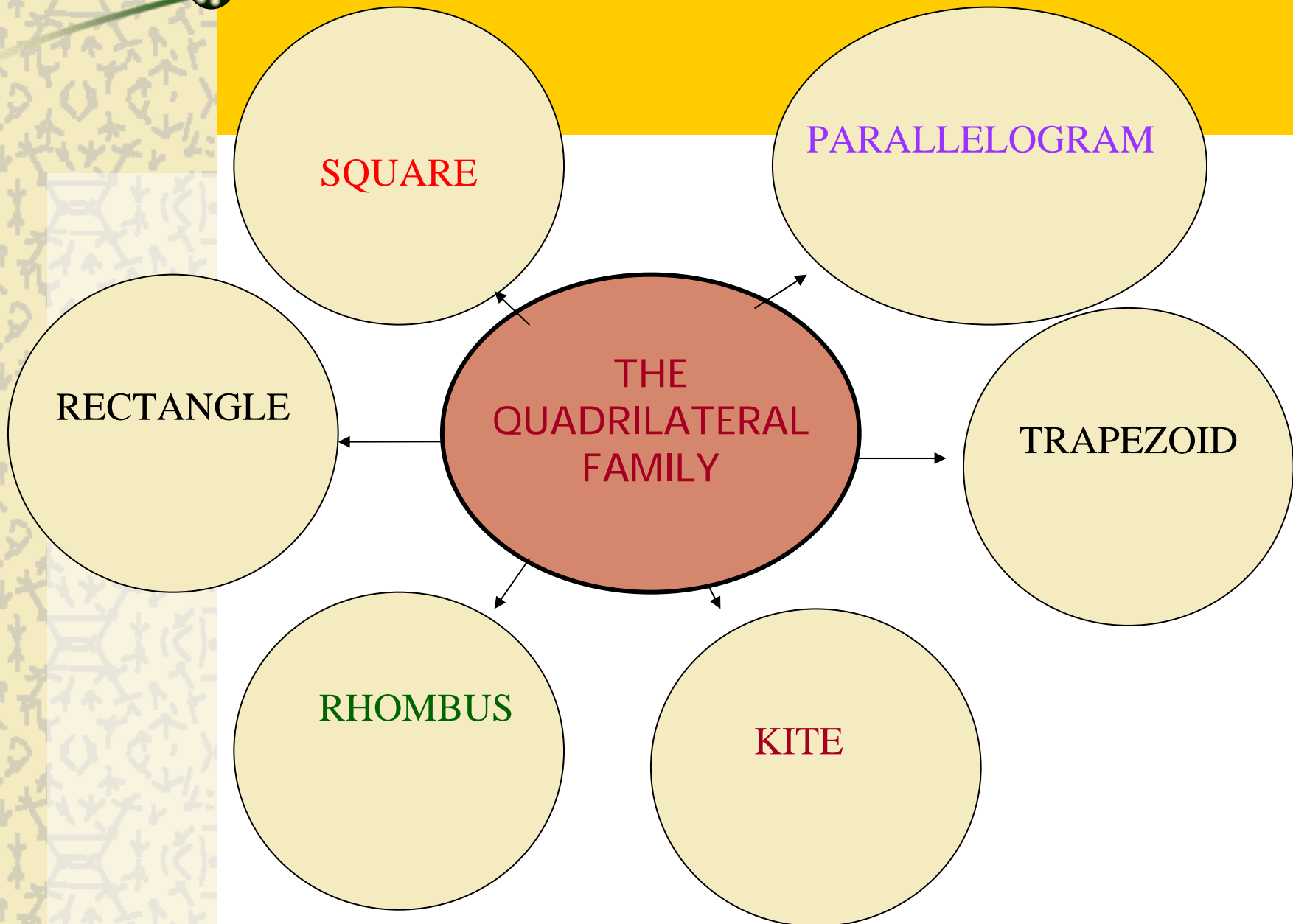
Accommodations (cont.)

5. Tap prior knowledge or build in a systematic recall of prior knowledge

Instructional accommodations (cont.)

6. Use diagrams/thinking maps





Thinking maps

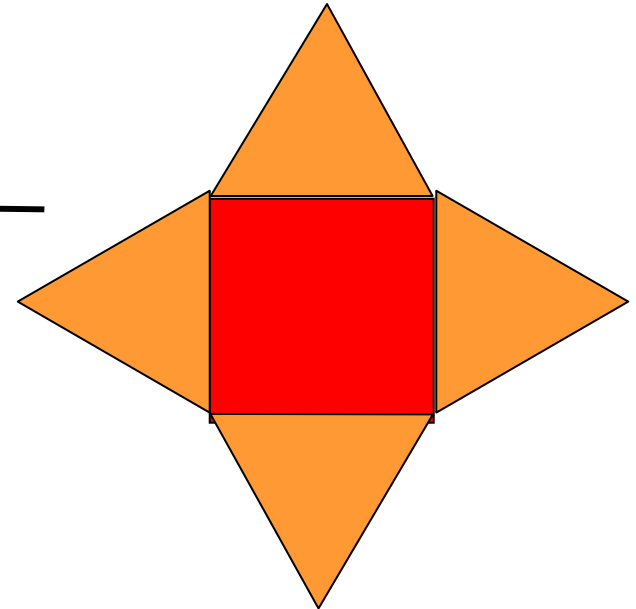
Use drawing/ illustration/ diagram/ net

**Surface
Area of
Square
pyramid**

Area of
base with a
square shape

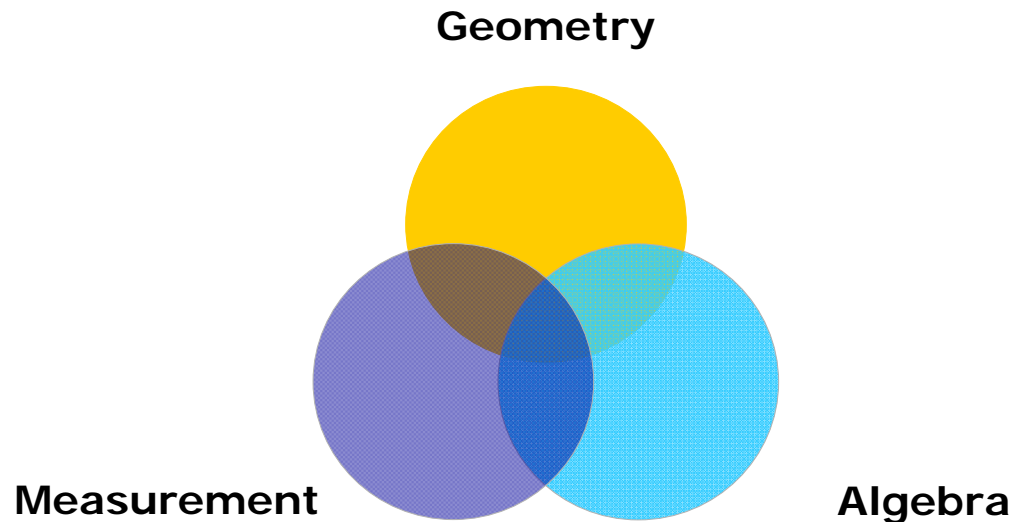
Area of
one
triangular
side
(lateral
side)

Area of
4 lateral sides
plus
Area of
base



Instructional accommodations (cont.)

7. Make a deliberate effort to teach for connections





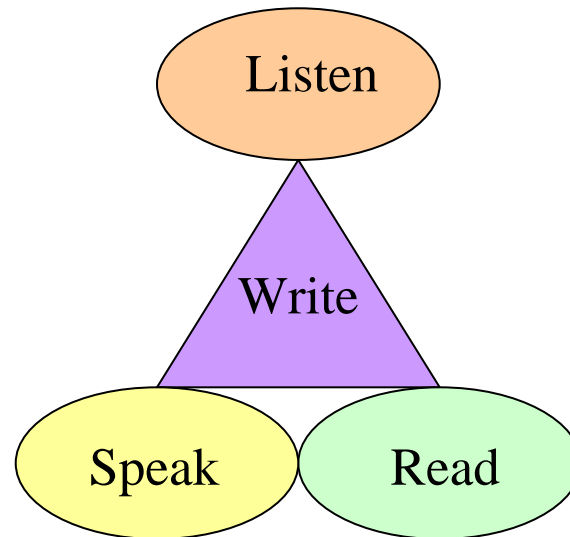
Reference:

English Language Learners in the Mathematics Classroom

(Coggins, Kravin, Coates, & Carrol, 2007)

Lesson Plan Format adapted from SIOP

Deliberate use of 4 ESL processes





Live from the classroom!

Assessment: 10th Grade – Geometry

BUILD A CITY



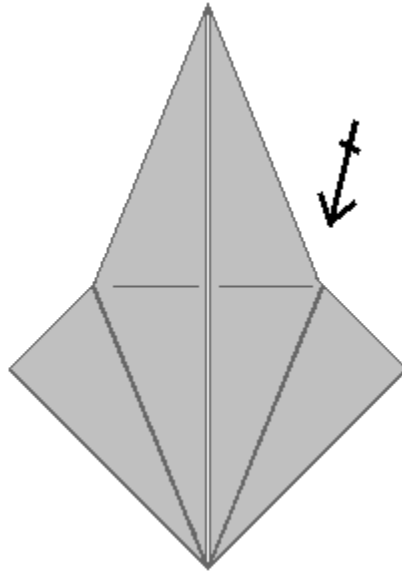
Review Math Vocabulary

- To help ELL students review math concepts
- To prepare ELLs for math tests

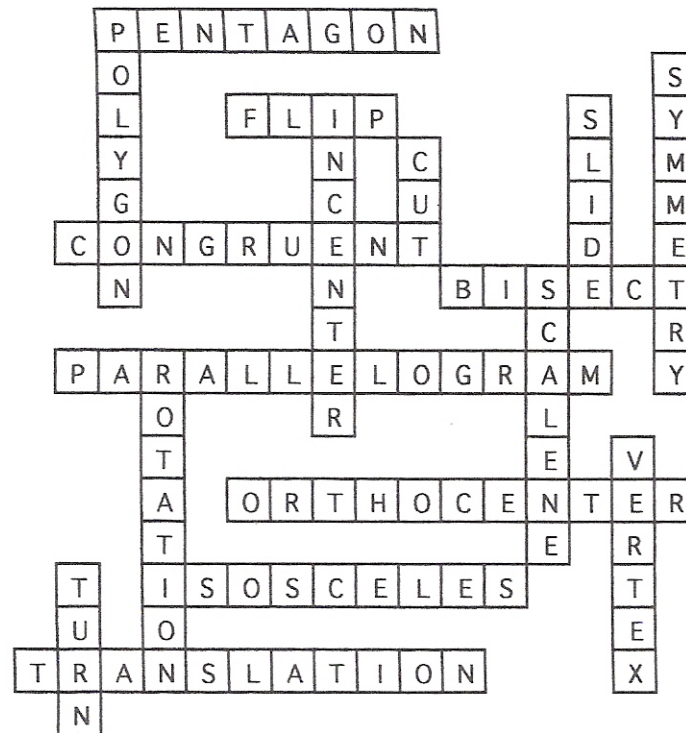


Vocabulary building

- ✚ Use hands-on activities such as origami (paper folding)



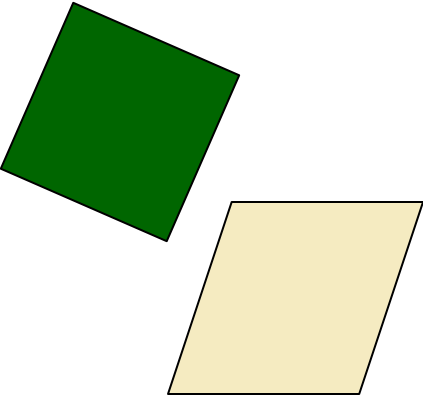
Build or Review Math Vocabulary Crossword puzzle



Source:

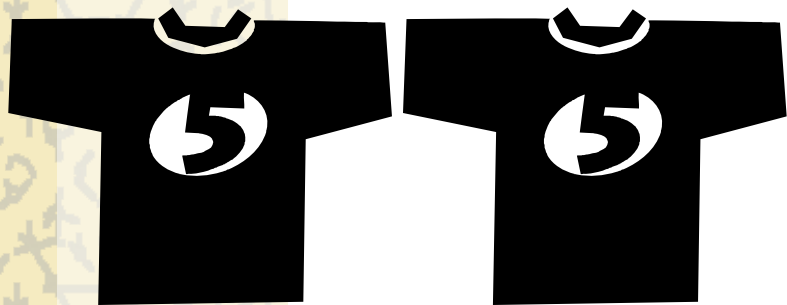
Mira Activities for the Middle Grades, p. 93; Mira Math Company

Students create glossaries

English Term	Spanish Term	Picture or Diagram	Critical Properties
Rhombus	Rombo	 A green rhombus is shown above a yellow parallelogram. The rhombus is tilted, and the parallelogram is oriented horizontally.	<ul style="list-style-type: none">✂ <i>closed figure</i>✂ <i>straight sides</i>✂ <i>4 equal sides</i>✂ <i>opposite sides parallel</i>

Going to a Ball Game

*From: Teaching Mathematics Through Problem Solving (Gr. 6-12),
NCTM, 2003*



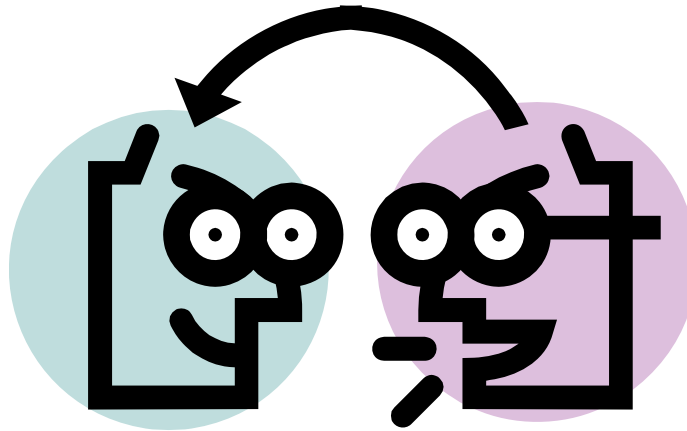
→ \$44.00



→ \$30.00

What is the problem? Explain your solution.

What are your thoughts?



For More Information

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(Email Sylvia Taube for 3 attachments about "Design a City")

✚ Reyna Torres ---

✚ Claudia Ramirez ---