

# TELL TX

*Teaching English Language Learners in Texas*

## Integrating Math into ESL

Krista Mosher  
kdmosher@tamu.edu

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# TELL TX Workshops:



Source: Creative Commons

- Using Rubrics in the ESL Classroom
- Google Classroom for ESL Learners
- Introduction to Technology Apps for the ESL Classroom
- Integrating Math into ESL



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# Objectives

By the end of this workshop, you will be able to answer the following essential questions:

- Why do we include math in ESL Classes?
- What is different about math for Adult ELLs?
- What is the role of language in math instruction?
- How do we integrate math instruction into the ESL classroom?



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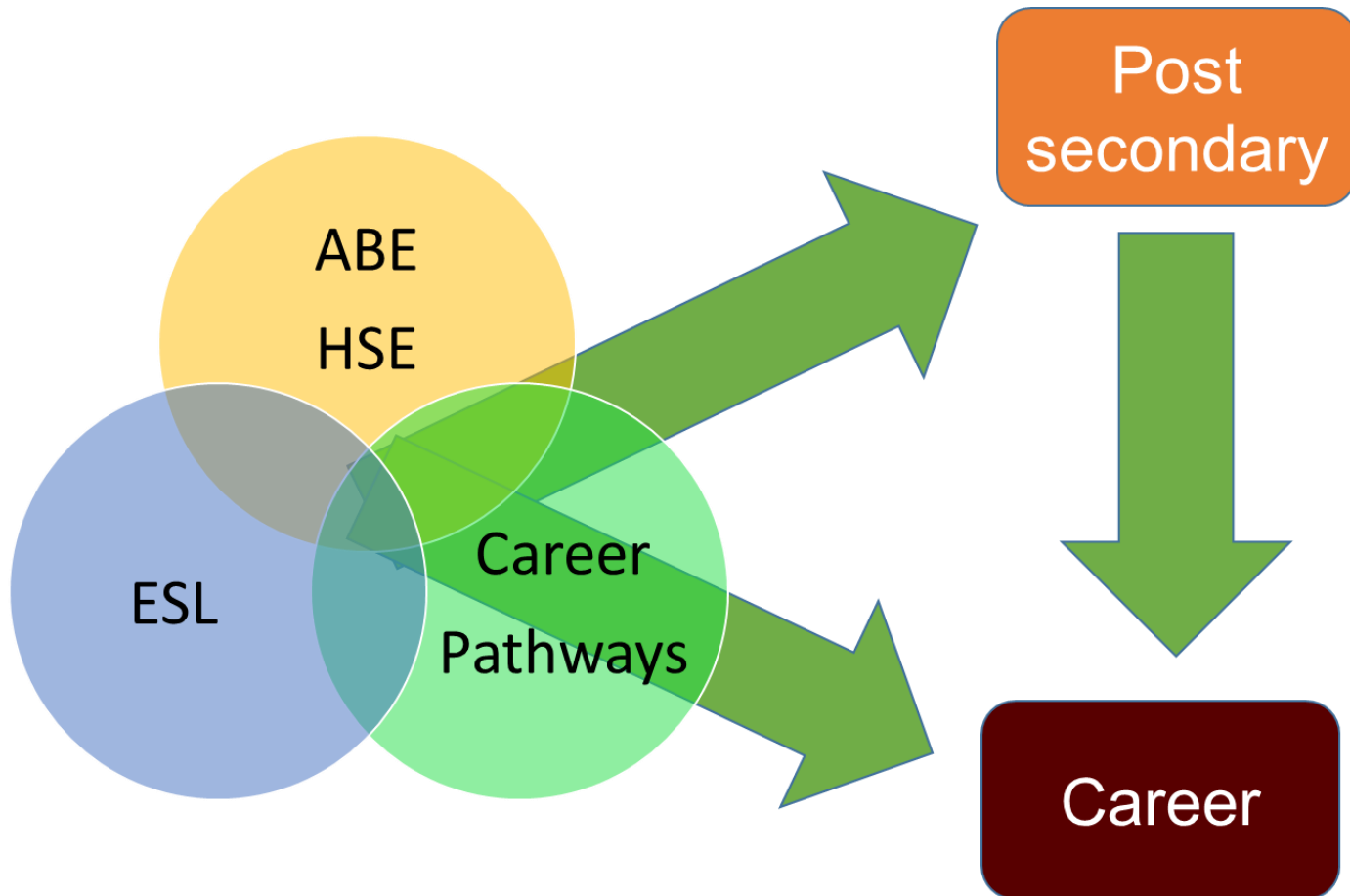
# Why Math?



# Here's why...

- WIOA requires it!  
(H.R. 803, Title 2, Sec. 202.4.A.ii)
- WIOA defines literacy as:
  - “an individual’s ability to read, write, and speak in English, compute and solve problems, at levels of proficiency to function on the job, in the family of the individual, and in society.”
- ESL classes are tasked with helping participants improve all aspects of the definition of literacy.

# Transitions from the beginning: Where will they go after our class?

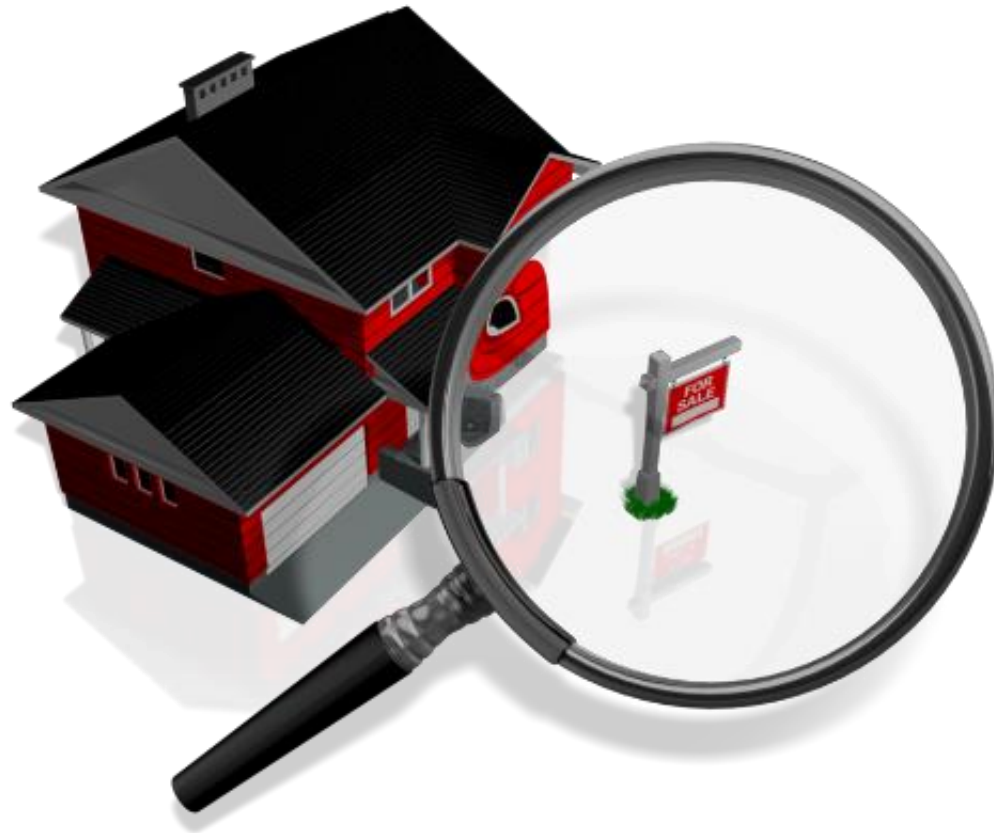


They use math in their daily lives.



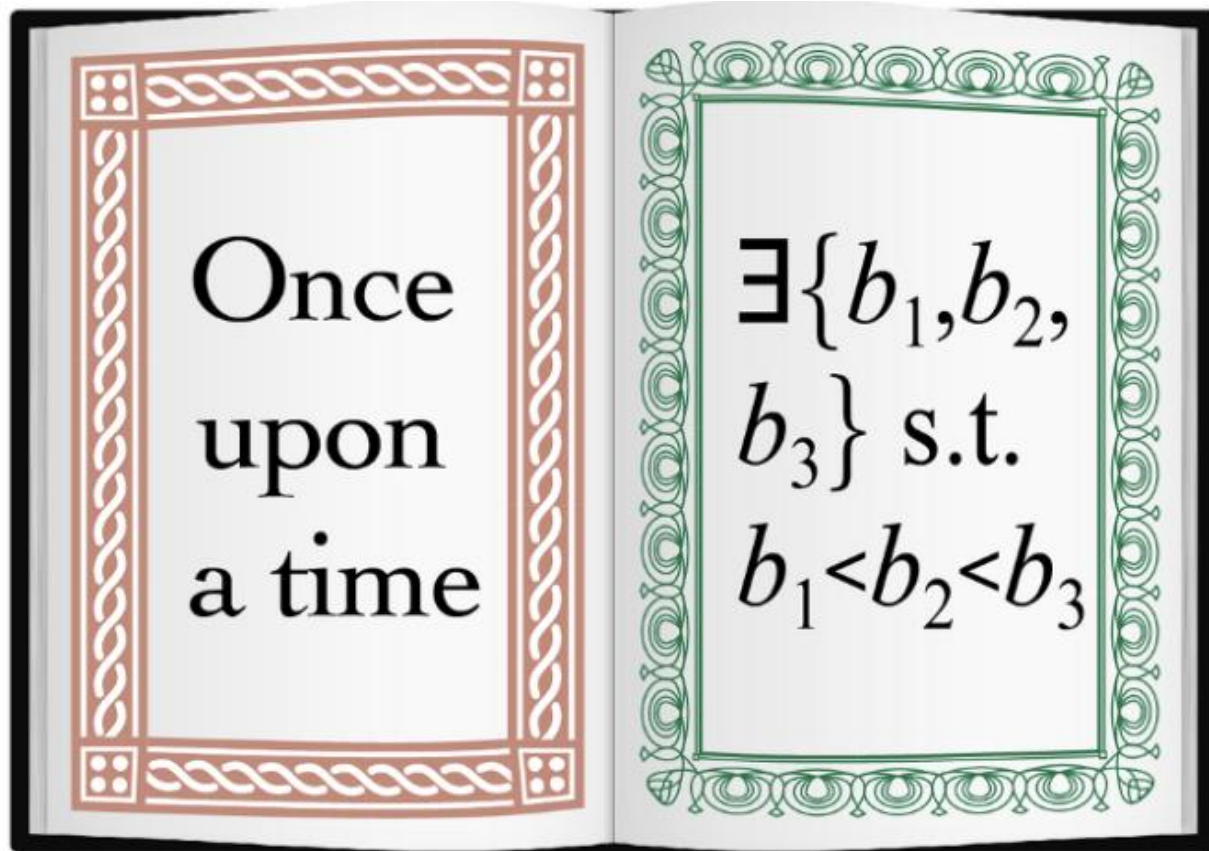


# Where do we find math?





# Considering Disciplinary Language



Mathematics is a language. We should teach it that way. To solve the problems of math education, we should study how language education solves the same problems.

# A Quick Review of BICS & CALP

## BICS

Basic Interpersonal Communicative Skills

0-3 years to develop in the second language (L2)

Language proficiency for everyday communicative contexts

Occurs in meaningful social contexts

Often includes slang, idioms, colloquial speech

## CALP

Cognitive Academic Language Proficiency

5-10 years to develop in the second language (L2)

Language use in decontextualized academic situations

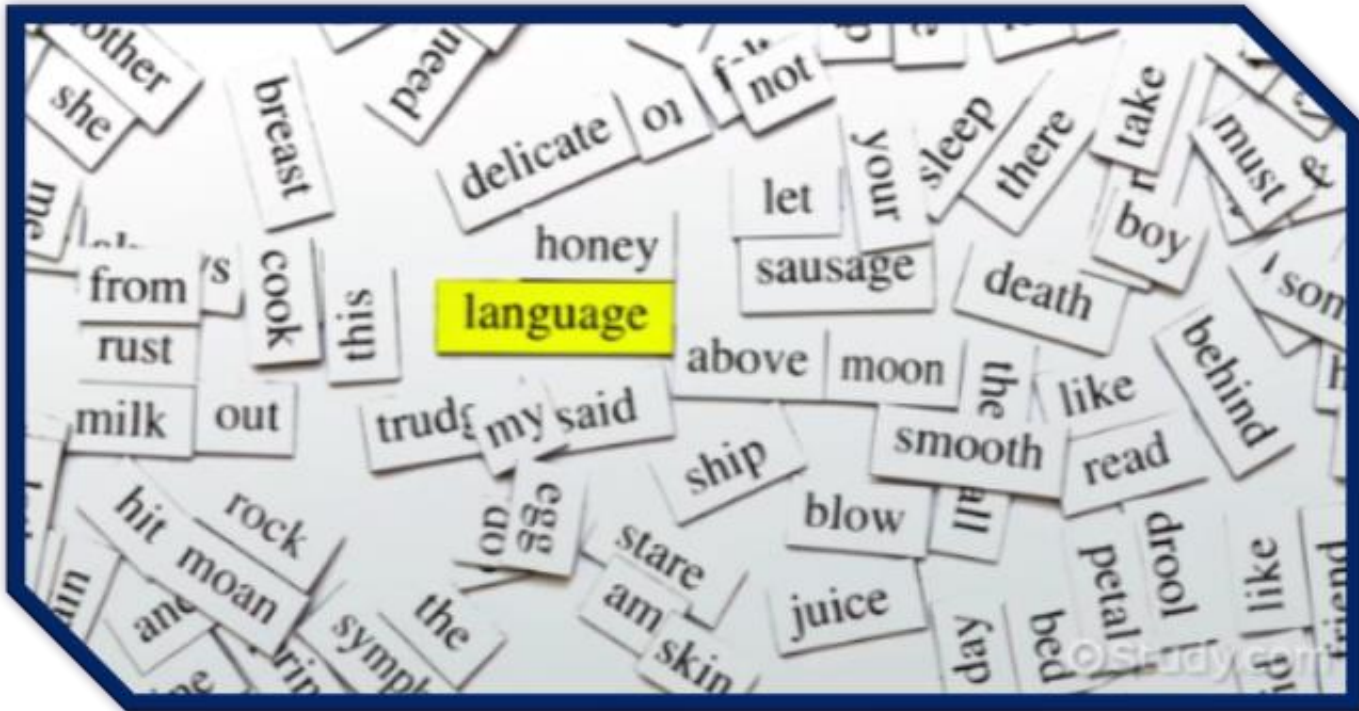
Requires time and support (scaffolding)

Language necessary for academic success

Unlimited in nature

Skills, ideas, and concepts transfer from L1 to L2

# Workplace Language



Similar to CALP this is the language that is used at the workplace to talk about work related topics and idea to coworkers and other in the same industry.

There are some common workplace words but many of them are specific to the industry or type of work.

# Identifying BICS, CALP, and Workplace Language

Sort the words below into the 3 categories: BICS, CALP, and Workplace Language.

Cash	Good morning	Agree
Multiplication	Commutativity	Approximate
Resume	Decimal	Dozen
Polygon	Finance	Night shift
Symmetry	Overtime	Correlation
Investigate	Round	Significance

# BICS, CALP, or Workplace Language

Cash	Good morning	Agree
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# How does BICS/CALP apply to math in ESL?

Define the follow term in the given context

Term	Everyday use	Math
angle		
mean		
table		
volume		
area		
gross		
operation		
degree		
expression		
power		
odd		
even		
prime		

# Try This

1. Write this number out in word form: 9,300
  - ✓ ninety-three hundred
  - ✓ nine thousand three hundred
  - ✓ Nine and three hundred thousandth
  - ✓ nine point three
2. Solve this equation.

$$74 \overline{)3}$$

Be prepared to explain your work.

- ✓  $74 \div 3 = 24$  with a remainder of 2
- ✓  $74/3 = 24 \frac{1}{3}$
- ✓  $74/3 = 24.\overline{46}$



# English Standard Units of Measure

<b>Length</b>	<b>Weight</b>	<b>Fluid volume</b>
<b>Inch</b>	Ounce	Gallon
<b>Foot</b>	Pound	Quart
<b>Yard</b>	Ton	Pint
<b>Mile</b>		Cup

Not to mention:

- Acre
- Fahrenheit
- Fluid ounces
- Peck
- Bushel

And those are just the common units

# How Do We Put Math into ESL Curriculum/ Lessons?

Consider :

- Using a “Themed” approach
- Writing it into the objective
- Aligning instruction with adult education content standards.

Traditional math instruction is broken down into the topics listed below.

- Numbers & Operations
- Measurement
- Geometry
- Data Analysis & Probability
- Algebra with concrete, pictorial, and symbolic representation
- Problem-solving strategies

How do we address them in ESL? Or  
do we?

# Math Topics

- Numbers & Operations
- Measurement
- Geometry
- Data Analysis & Probability
- Algebra with concrete, pictorial, and symbolic representation
- Problem-solving strategies

Think about where these math topics show up in your students' everyday life and how you address them through ESL instruction

- come up with at least one example for each math topic

# Instructional Strategies

- Provide for peer-group collaboration.
- Integrate math skill needs and functional needs.
- Include possibilities for more than one way to solve the same problem.
- Offer “Think Aloud” modeling of ways to solve problems.
- Encourage students to relate mathematical learning to their own lives.
- Include math/numeracy instruction from the beginning.
- Use graphic organizers, manipulatives, games and realia.

Thank  
you



[kdmosher@tamu.edu](mailto:kdmosher@tamu.edu)



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