



PreK-12 ELL Education

## CAL Webinar

### Beyond Numbers: Math and Language in the Home

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**Webinar**

April 3, 2020


CAL Professional Development Team  
 solutions@cal.org  
 @CAL\_Linguistics  
 #languageapplied

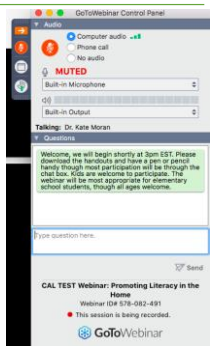

<http://cal.org/resource-center/freeresources>



## Participation in Today's Webinar

- Please keep your audio on **MUTE**.
- Enter your questions/chat participation in the Questions box.
- We will respond to as many as possible to make them visible to all.



## Last Week's Webinar/Future Posting

<http://cal.org/resource-center/freeresources>

Who We Are   What We Do   Areas of Impact   **Resource Center**   News

**Resource Center**   Home > Resource Center > Online Learning Resources



**Online Learning Resources**

In response to recent developments, the Center for Applied Linguistics (CAL) is offering **FREE** resources so that you can continue your practice, get some ready-to-use ideas, or just learn a new skill!

**LEARNING FROM HOME SERIES BY CAL SOLUTIONS:**

Click the topics below to watch the video, Handouts and PowerPoint are included in the descriptions.

- 9 Ways to Put "Technology" to Work in Language Learning Activities at Home (Handout, PPT)
- 12+ Reading & Writing Activities to Promote Literacy in Your Home (Handout, PPT)
- Beyond Numbers: Language and Math in the Home... **Live** on Friday, April 3! Register to watch the live webinar here.

## Ed Policy One-Takes

<http://cal.org/resource-center/freeresources>

### Ed Policy One-Takes

This policy-focused mini-series examines the real-time implementation of state and federal policies enacted in response to COVID-19 across the U.S. education system. We focus on how these new laws, regulations, waivers, etc. are and will affect State Education Agencies (SEAs) and Local Education Agencies (LEAs).


**WATCH NOW:**

- **The Impact of Assessment Waivers & the Future of the U.S. Education System**


**UP NEXT: Click to Register**

- **Funding Opportunities** (April 23 @ 1:00 PM EDT)
- **Virtual Instruction** (May 7th @ 1:00 PM EDT)


Stay tuned for a 3-part series of webinars for Dual language program educators.



## Introductions



- Students have different ways of communicating their feelings, thoughts, and ideas.
- One really positive way of keeping in mind the good with the bad is to identify one's bright spots of the week.
- Since we last met, name two bright spots for you and your family.




## Introductions

My two bright spots are:

1. Face-timing with my Godson in Connecticut. He just brightens my day.
2. I read 4 books that I really enjoyed in a 1 week period of time.

**Marybelle Marrero-Colón**



Annie Duguay

My two bright spots are:


1. Silly April Fool's pranks
2. Getting some solo exercise time

**Dr. Kate Moran**

My two bright spots are:


1. Face-timing with my nephews in Las Vegas and my daughter in Georgia.
2. Viewing the penguins roaming the halls at the Shedd Aquarium in Chicago

**Maria Cieslak**





## Introductions

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□ Since we last met, name two bright spots for you and your family.






## Agenda

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- Introductions
- Educator Voices
- Language and Math activities
- Brainstorming session







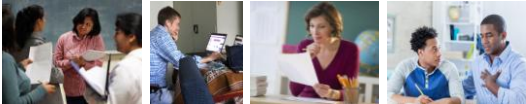
## Goals and Objectives

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- Content objectives
  - We will brainstorm resources and activities that promote interactive math language.
- Language objectives
  - We will talk and chat about how to promote math skills and language in the home.









## EDUCATOR VOICES



## Five Ingredients for English Learners in the Era of Coronavirus

Milagros M. Schwartz  
 ESOL Teacher | Resiliency Coach#239  
 Benjamin Franklin High School at Masonville Cove  
 Brooklyn Park, MD 21225







## English Learners

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- Structure
- Guidance
- Inclusion
- Flexibility
- Patience





# Activities To Do at Home

Cooking with Ingredients

# Storytelling Using L1 & L2

# Measuring liquids with a Measuring Cup

# GLOBE Student TL Engagement

Sandra A. Daniel  
Language Coordinator  
April 3rd, 2020

# Features

- Immersive Reader
- Teacher Feedback
- Student responses

Prof. 12 ELL Education

# Immersive Reader

Helps students read along, languages can be changed for families that do not speak the TL

## Feedback

- Ability to record feedback and help students
- Students peer review

## Application Problems

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.

## THE LANGUAGE OF MATH

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## Math Language is just as confusing as English

"So in English a double negative is bad, but in Math it's a positive?"

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## Take into consideration...

- College and career readiness standards require educators to consider that math has unique language features.
- Many math teachers have their students do journaling on the math learning and math use experiences.
- Some math teachers make use of cooperative learning-- an environment that encourages students to communicate mathematical ideas.
- Most math assessment instruments require that students explain what it is they are doing as they solve the math problems in the assessment.
  - Taking this into consideration, what does it mean for ELs learning math in the English speaking classroom?

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## Math Language

- prepositions:** *add to, subtract from, multiply by, divide by, take away from, decrease by, increase by, etc.*
- formula and equation language:** *The value of a equals five less than b.  $d = r \times t$ .*
- steps of a process:** *When solving a word problem, first identify all the important information.*
- signal words for addition:** *altogether, combined, in excess, sum, greater, in all, both, total, raise, made larger, added to, increased, plus, more, and, etc.*

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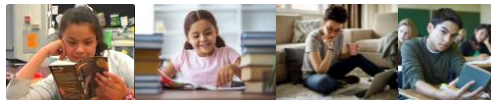
## Math Language, cont.

- **signal words for multiplication:** *times, multiply by, multiplicand, multiplier, percent of, interest on, times as much, product, doubled, tripled, etc.*
- **signal words for division:** *divide, ratio, fraction, quotient, average, equal pieces, per group, in each group, goes into, contained in, every, shared, etc.*



## Identify the Language Challenges

- Have you ever noticed that when people eat at a restaurant, they usually leave a little extra money for the server? This extra money is called a *service tip*, and in the United States, it usually amounts to about 15 to 20 percent of the total bill. The greater the restaurant bill, the greater the tip will be. To calculate the tip, you multiply the amount of the bill by the percentage tip you want to leave. For example, say you go to a restaurant with a friend and the total bill is \$20.00. If you want to leave a 15% tip, here is how you can calculate it:
  - *Multiply \$20.00 by 15%, or 0.15. This is the amount of the tip.*  
 $\$20.00 \times 0.15 = \$3.00$
  - *Next, add the tip to the price of the bill. This is the total amount you will pay.*  
 $\$20.00 + \$3.00 = \$23.00$
- Therefore, \$23.00 is the total price for the meal, including the service tip.



## MATH AND LANGUAGE ACTIVITIES



## CAL Connections Flipgrid

K-2

<https://flipgrid.com/b37f2410>

**Grade 8-2**

**Fair Share**  
 10 shares    100 shares

**Fraction: half and fourths**  
 1/2    1/4

**Word Bank**  
 portion    whole    share  
 equal    part    more  
 didn't    half of    greater than  
 equally    halves    less than  
 pieces    groups    compare

**Draw a Picture**  
 I would rather share Plate A equally because \_\_\_\_\_

## CAL Connections Flipgrid

Gr 3-5

<https://flipgrid.com/94e19680>

**Grade 3-5**

**Word Bank**  
 chocolate    nut    delicious  
 delicious    nut    chocolate  
 chocolate    multiply    delicious  
 nut    product    nut?

**Option A** \_\_\_\_\_

**Option B** \_\_\_\_\_

I would rather buy \_\_\_\_\_ because \_\_\_\_\_



## CAL Connections Flipgrid

Gr 6-8

<https://flipgrid.com/77415157>

**Grade 6-8**


**Word Bank**  
 40 kilometers per hour    30 meters per second  
 30 meters per second    40 kilometers per hour

**Draw a Picture**  
 I would rather drive a car at a rate of 40 kilometers per hour or drive a car at a rate of 30 meters per second because \_\_\_\_\_



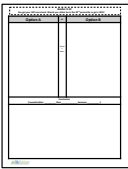


## CAL Connections Flipgrid

**Gr 9-12**

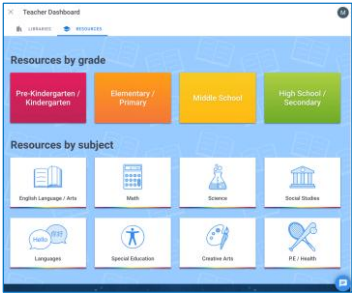


<https://flipgrid.com/5f521f0b>


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## Book Creator

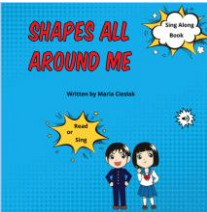



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## Book Creator




**PreK-2**  
<https://bit.ly/2ymM2T>





**High School**  
<https://bit.ly/2UQeGnX>



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## Forget the Question

- The Obstacle:** Sometimes when we put a problem on the board, students notice the question and got into one of two modes:
  - I don't understand, I'll never get this.
  - I know exactly what to do, let me work as quickly as I can.
- The Solution:** Use "I Notice, I Wonder" Brainstorm, but include only the mathematical scenario. Leave out the question.
  - Only after all students understand the scenario thoroughly, reveal the question
  - Ask students, "If this story were the beginning of a math problem, what could the math problem be?"

Adapted from NCTM, Beginning to Problem Solve with "I Notice, I Wonder"

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## Collaborative Google Slides

- Collaborative Google Slides Template- Alice Keeler.com <https://bit.ly/2R2cnwV>
- Forget the Math Question




<https://bit.ly/2yt5zCd>



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## Poll

- How confident are you in accessing and creating digital resources for the instruction English learners?
  - Beginner
  - Intermediate
  - Advanced
  - Proficient



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## Beat the Clock Ball Toss

- One student becomes the Timekeeper. The timekeeper:
  - Sets the timer, turns the card with number concept (e.g., *Counting by 2s up to 30, 6 times tables up to 6 x 12, names of geometric shapes (2D and 3 D)*), and chooses the first participant by tossing the ball.
- That student thinks of an association with the concept and then tosses the ball to another student who thinks of another.
- Repeat until the ball has gone around the group 2x or until all answers are given.
- Stop the timer and as a group summarize what was covered during the game.
- The timekeeper writes out the summary for the group.
- The last student holding the ball becomes the new timekeeper for the next go-around.



## Multiplication Dominos

- Dominos are placed face down on the table.
- Students take and turn two dominos over.
- Students then:
  - Add the pips on each domino  $8 \times 6 = 48$
  - Multiply the pips
- The student with the greatest/lowest (students decide) number wins.
- Variation: Each domino is taken as a fraction and is added, subtracted, multiplied or divided. For example:

$$3/5 + 1/5 = 4/5$$



## Math Battleship

1. Students are given a math worksheet (i.e. simple algebraic equations) to solve. They compare their answers prior to playing the game.
2. Each equation is then given coordinates to a secret location on their game board (i.e. C3, A5, D1, etc.).
3. Students are given a game board with 2 sections. In section 1 they will fill in their secret locations, section 2 is where they record their hits and misses.
4. Students take turns guessing where their opponents answers are. If they are write, it's a "Hit". If they are wrong, it's a "Miss".
5. The first student to "Hit" all of their opponents answers, wins.



## Race to 27

- Deal out all of the playing cards to the players. Players put their pile of cards in front of themselves face down
- 1<sup>st</sup> player turns over their top card and places it in the center.
- The next player turns over their card placing it on top of the first card. This player adds the value of the two cards.
- The next player does the same adding the value of their card to the previous total.
- Play continues until the total reaches 27 or over. The player who puts down the card that takes the total to 27 takes all of the cards in this pile and shuffles them into their pile.
- Play continues for a set time or until one player has no cards left. The winner is the person with the most cards.
- For a more advanced version you can play Race to 50 or Race to 100



## Race to 27



## Mnemonics to Recall & Use

Hey diddle diddle,  
the median's the middle;  
YOU ADD AND DIVIDE FOR THE MEAN.  
The mode is the one that appears the most,  
and the range is the difference between.

www.PrometheanPlanet.com

Promethean Planet is an online community for teachers in the 21st century classroom.



### Mean, Median, Mode, & Range Game

- In this activity students use plastic cups, blocks, or other object that can be easily stacked.
- They are given a specific amount of time (i.e. 1 minute, 30 seconds, etc.) to build a tower.
- They then record the number of cups, blocks, or other objects used.
- They do rounds where they do the building various times (trials) and copy down the data.
- From the round data, they figure out the mean, median, mode, and range.
- Let's see what this looks like...



### Mean, Median, Mode, & Range Game

Round 1 – 1 Min		Round 2 – 30 Sec	
Trial	# of Cups	Trial	# of Cups
1	24	1	21
2	26	2	20
3	32	3	21
4	24	4	22
<b>Totals</b>	<b>82</b>	<b>Totals</b>	<b>62</b>



Collect Cups



Trial	Mean	Median	Mode	Range
Round 1	26.5	25	24	8
Round 2	21	21	21	2



### Backward Building (story problems)

- Purpose: to help learners link language to operations in story problems
- Start with a full visual equation:



- Begin to build in language first by naming the equation orally: *eight times three minus nine equals fifteen*
- Add objects: *Three bowls with eight marbles in each bowl, take away nine marbles*



### Backward Building (story problems)

- Add people: *I have three bowls with eight marbles in each bowl. I take away nine marbles. How many marbles do I have left?*
- Change the people and the containers: *Maria has three boxes of chocolates. Each box contains eight chocolates. She gives nine chocolates to her friends. How many chocolates does Maria have left?*
- See how many different ways learners can create stories for the equations.
- Highlight the words that show operations.



### Backward Building (story problems)

- Practicing backwards helps learners think flexibly when moving from a story problem to an equation
- Demonstrates the variety of language that can be used to show the same equation
- Can be differentiated for learners at different grade levels
- Easily adaptable to a flip grid activity
- Can be done at home with everyday objects



### Teddy Bear Hunt

- Many communities are doing “teddy bear hunts”—check with your neighborhood Next Door apps or other community groups.
- Ask students to create and analyze data charts depending on their grade levels.
  - Tally marks, data tables, bar graphs, pie charts

