

# Math Instruction for English Learners



*Best Practices & Cultural Considerations*

## ❖ Incorporate Explicit Vocabulary Instruction

➤ Mathematics has its own specialized language, grammatical patterns, and rules; therefore, ELs must be explicitly taught the unique meanings some English words have when used in a mathematical context.

- Use visual supports, hands-on activities, and model the process and language. Talk aloud while solving problems on the board.
- Highlight words that have multiple meanings (ex. table/quarter).
- Explain that there are many ways to describe a math function verbally.
- Model the variety of symbols that can be used to represent the same function.

<u>Term</u>	<u>Symbols</u>	<u>Example</u>	<u>Student Friendly Definition</u>	<u>Other words that may be used</u>
Equals	=	$2+1=3$	the same amount or value	is / are / was / were / will / be / gives / yields / sold for
Multiply	x * ( )	$3 \times 4 =$	when you add a number to itse many times	of / times / multiplied by / product of / as a factor/ twice / double / triple

## ❖ Integrate listening, speaking, reading, and writing into class.

- Allow students to discuss how they are thinking about math.
  - Ask them to share different ways they solved the math problem.
  - When a student asks you how to solve a problem, ask someone in the class if they would be able to explain instead.
  
- Begin class with warm-up activities using mathematical language to give students practice in sentence construction.
  - Write a cloze exercise (a short paragraph with key words missing).
  - Sentence starters (i.e., *Perimeter is the...*)
  - Give students a computation problem to solve, and then have them write the steps they used to solve it in complete sentences.
  - Sentence Frame ("*The answer is \_\_\_\_\_ degrees because it is a \_\_\_\_\_ triangle.*")
  - Have students translate symbols into words and write the sentence out (ex. ,  $3x + 4 = 16$  ----> "*Three times X plus four equals sixteen.*")
  - Challenge students to create their own math problems.

## ❖ Incorporate Explicit Vocabulary Instruction

- Have students translate spoken words into the correct mathematical equation. *This is a skill that is tested extensively in the yearly ACCESS for ELLs assessment.*

Example: “Alex needs to see how many rows of tomatoes he can fit in his garden. Since he will use half of the garden just for tomatoes, he divides the length of the garden, twelve feet, by two. This gives him the length of the area he will be using for tomatoes. Then he divides that answer by two again to find the number of rows, because the rows need to be two feet apart. He finds that he can have three rows of tomato plants.”

A	B	C	D
$12 \div 2 = 6$ $6 \div 2 = 3$	$12 \div 3 = 4$ $4 \div 2 = 2$	$12 \div 2 = 6$ $4 \div 2 = 2$	$12 \div 3 = 4$ $6 \div 2 = 3$

## ❖ *f* Cultural Considerations

- Students may have learned a different way to write letters and numerals (0-10).
- Some cultures use periods instead of commas to separate multiples of a thousand (*ex: 2.700.000 instead of 2,700,000*). *f* Some cultures use commas instead of decimal points (*ex: 4.2 could be written as 4,2*). *f*
- Burma, Liberia, and the U.S. are the only countries who don't use the metric system. Because of this, students may have difficulty estimating length, weight/mass, and liquid volume using standard units of measurement. They may also have difficulty understanding fractions.
- *f* Unfamiliarity with U.S. monetary system, including how to write dollar amounts, may cause confusion. *f*
- Some ELL students learn to add, subtract, multiply, and divide using different methods than what's commonly taught in the U.S.