

# UNIT 4 Connect Language Development to Mathematics

## Language Expectations for Differentiation

The chart below provides teachers with examples of what English learners can do based on their English language proficiency levels in connection with one of the Common Core State Standards (CCSS) addressed in this Unit. As you plan for the lessons in this Unit, use the examples of language expectations to help you differentiate instruction and meet the needs of your English Language Learners.

### ELL Language Expectations

**Standard 2.MD.A.1** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

LANGUAGE DOMAINS	Beginning	Intermediate		Advanced/Advanced High	
	Level 1	Level 2	Level 3	Level 4	Level 5
<b>LISTENING</b>	Follow simple oral instructions to select an appropriate tool for measuring the length of an object, using realia and visuals with a partner.	Follow simple oral instructions to measure the length of an object, using realia and visuals with a partner.	Follow oral instructions to measure the length of an object, using realia in a small group.	Follow oral instructions to measure the length of an object, using realia in a small group.	Follow complex oral instructions to measure the length of an object, using realia and a graphic organizer.
<b>SPEAKING</b>	State why a tool is appropriate for measuring the length of an object, using realia, sentence frames, and an illustrated word bank.	Provide examples of why a tool is appropriate for measuring the length of an object, using realia and visuals with a partner.	Explain why a tool is appropriate for measuring the length of an object, using realia with a partner.	Compare two tools and explain why one is more appropriate than the other for measuring the length of an object, using realia with a partner.	Compare two tools and explain why one is more appropriate for measuring the length of an object, using realia and illustrations.
<b>READING</b>	Identify the labels of an appropriate tool for measuring the length of an object, using realia and an illustrated word bank with a partner.	Read labels of appropriate tools for measuring the length of an object, using realia and a word bank with a partner.	Categorize appropriate tools for measuring the length of an object, using realia and labels with a partner.	Categorize appropriate tools for measuring the length of an object, using realia with a partner.	Compare appropriate tools for measuring the length of an object, using realia and a graphic organizer.
<b>WRITING</b>	Illustrate and label an appropriate tool for measuring the length of an object, using realia and an illustrated word bank.	Produce simple sentences explaining how an appropriate tool for measuring the length of an object was chosen, using realia and sentence frames.	Complete an explanation of choosing an appropriate tool for measuring the length of an object, using realia, sentence frames, and a word bank.	Describe the steps taken to choose an appropriate tool for measuring the length of an object, using realia, sentence frames, and a graphic organizer.	Justify choosing an appropriate tool for measuring the length of an object, using realia and a graphic organizer with a partner.

## Professional Learning

# The Process of English Language Learning and What to Expect

Adapted from *Teaching Mathematics to English Language Learners*, coauthored by Dr. Gladis Kersaint

Below are the five principles for creating effective second language acquisition-rich learning environments based on evidence-based practice. (Erben, Castaneda, and Ban, 2008)

### Principle 1

**Give ELLs many opportunities to read, to write, to listen to, and to discuss oral and written English and mathematics texts expressed in a variety of ways.**

Classroom practices that have been found to improve academic literacy development include:

- modeling reading comprehension through think-alouds
- giving explicit strategy instruction in context
- providing instruction to help students read and write mathematics
- providing mathematics assignments that require students to read and write
- providing more opportunities for ELLs to use the language of mathematics as they process new information

### Principle 2

**Draw attention to patterns of English and mathematics language structure.**

- ELLs need explicit exposure and instruction related to the language structures of English (both grammar and vocabulary use) and mathematics.

### Principle 3

**Give ELLs classroom time to use their English productively while learning mathematics.**

- When ELLs are engaged in talk, they make communication modifications that help language become more comprehensible.

### Principle 4

**Give ELLs opportunities to notice their errors and to correct their English while learning mathematics.**

- Offer explicit correction through revoicing.
- Request clarification.
- Provide metalinguistic clues.
- Provide repetitions.

### Principle 5

**Construct activities that maximize opportunities for ELLs to interact with others in English.**

- Student engagement during instruction is the key to academic success; vary the types of instructional tasks.
- Provide students with linguistic stems, frames, and questions that provide opportunities for rich and rigorous discussions with English-speaking peers.

### ELL English Language Learners: Differentiated Instruction

For ELLs, use the Differentiated Instruction charts in the Teacher's Guide to plan and prepare for specific activities in every session. Differentiation is appropriately aligned to levels of English language proficiency and the language domains of listening, speaking, reading, and writing.



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ELL English Language Learners: Differentiated Instruction		Prepare for Session 1 Use with <i>Try It</i> .
<b>Levels 1–3</b> <b>Listening/Speaking</b> Read the <i>Try It</i> problem. With partners, have students discuss what they have learned about two-digit numbers and the relationship of these numbers to tens and ones. Students can use these sentence starters: <i>The number 15 means _____.</i> <i>The number 27 means _____.</i> Provide students with base-ten blocks to make connections as needed. With partners, have students think aloud their steps to solve the problem by using the sentence starters: <i>First I _____.</i> <i>Then I _____.</i>	<b>Levels 2–4</b> <b>Reading/Writing</b> Choral read the <i>Try It</i> problem. Have students draw a representation of the numbers 27 and 15. They can choose to draw tens and ones, to use an open number line, or to use another strategy. Then have students write their steps for solving the problem using the sentence frames: <i>My first step is _____.</i> <i>My next step is _____.</i> <i>Then I _____.</i> Once complete, have students read aloud their written work with their partner. Then have them show their work using an equation, a drawing, an open number line, or another strategy.	<b>Levels 3–5</b> <b>Speaking/Writing</b> Have students read the <i>Try It</i> problem with their partner. Have partners think of how they can solve it using what they already know about adding tens and one-digit numbers. Have each student write step-by-step instructions explaining how they plan to solve the problem. Provide sentence frames: <i>When adding a two-digit number, I can _____.</i> <i>The numbers in the problem can be separated into _____.</i> <i>My first step will be _____.</i> <i>Then, my second step will be _____.</i> When complete, have them share their step-by-step instructions with their partners. Have partners give feedback to each other by using this sentence starter: <i>I think your instructions are complete/incomplete because _____.</i>