

Lesson 03



# Teach the Language of Math

WITH ANN DECHENNE



# Class Objectives



## OBJECTIVE 2



Students will learn how to identify the language functions of math standards.

\*for the purposes of this lesson functions will be called purposes.



**Why look at the  
standards for  
language needs?  
Why not just look  
at our  
assignments?**

Introduction

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High stakes testing is connected to standards and students are expected to be able to perform. Teaching the students the language will help with their comprehension of the subject. Language Learners, Sped, ALL students



Introduction



Knowing the language requirements of the standards will help orientate teachers when they are developing language rich lessons.

# Q Common Core State Standard



In 2010 the United States education system adopted a comprehensive reform, the Common Core State Standards (CCSS), designed to assist K-12 students better to prepare for college and future careers. Within the CCSS for mathematics, there is a subset of 8 practices that focus on process and proficiency providing students with skills to use and adapt mathematics in their daily lives. Within these subsets is a language component designed to assist students in making sense, reasonreasoninge and support, model and explain, and be precise in computation and explanation.



# Q Oregon State Math Standards



In In October 2021 Oregon State Department of Education (ODE) adopted a truncated and streamlined version of the CCSS math standards. The newly adopted Oregon mathematic standards continue to stress math language learning and the focus on academic language in the math classroom was not diminished.



## Q National Council of Teacher of Mathematics

### According to the NCTM

Educators should center multiple modes of communication (e.g., speaking, writing, drawing, direct modeling) to simultaneously develop students' learning of both language and mathematics (Chval and Khisty 2009; de Araujo et al. 2018; Khisty 1995). Students' mathematics learning should not be put on hold as they learn English. Instead, teachers should build on students' strengths and work with support systems (e.g., language acquisition specialists) to help students gain access to mathematics while they develop language proficiency (National Academies of Sciences, Engineering, and Medicine 2018; Erath et al. 2021; Moshckovich 2015).



# CCSS:4.NF.A

Umbrella standard



4.NF.A Extend understanding of fraction equivalence and ordering

This umbrella suggests the **sequencing** and maybe some **compare and contrast** from the words equivalence and ordering. However by looking a closely at the following substandards more language purposes begin to appear.





4.NF.A.2 **Compare** two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by **comparing** to a benchmark fraction such as  $\frac{1}{2}$ . Recognize that **comparisons** are valid only when the two fractions refer to the same whole. Record the results of **comparisons** with symbols  $>$ ,  $=$ , or  $<$ , and **justify** the conclusions, e.g., by using a visual fraction model. (Grade 4 expectations in this domain are limited to fractions with denominations 2, 3, 4, 5, 6, 8, 10, 12, and 100)



## Analysis

Key words in the standard that indicate the type of language purpose will be needed in lessons.

CCSS

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**Compare** = compare, and there is potential for contrast as well. Sometimes when contrast is focused on, it reinforces the comparison lesson. It is an excellent formative assessment to see if the student understands the comparison.

**Justify** = Justification, evidence, support. Students need to use language to support their answers. This perfect opportunity for students to work with **description and elaboration** language.

# Oregon Math Standard 21: 4.NF.A.2

## CCSS: 4.NF.A.2

**Compare** two fractions with different numerators and/or different denominators, record the results with the symbols  $>$ ,  $=$ , or  $<$ , and **justify** the conclusions.

**Description and Elaboration**

**Argument and Support**

**Compare and Contra**





## Analysis

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## Oregon

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**Your Turn to  
Identify the  
Purpose language.**

CCSS

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**3.OA.D Solve problems involving the four operations and identify and explain patterns in arithmetic.**

3.OA.D.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.



**My Turn to Identify  
the Purpose  
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CCSS

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**Your Turn to  
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Oregon

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3.OA.D.9 Identify and explain arithmetic patterns using properties of operations, including patterns in the addition table or multiplication table.



**My Turn to Identify  
the Purpose  
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Oregon

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## Explanation of what I chose.

## CCSS/Oregon +

This one was pretty simple since it pretty much states in the heading what the purpose is. Based on the language language standard description, description/elaboration, and sequencing, I chose. This is just from the standards. There could always be more when problems are involved. **Identify** and **Explain** led me to description/elaboration. **Pattern** often indicates a sequence.

# Class Recap

## POINT 1



Both CCSS and Oregon State Math Standards call for more of a focus on language.



## POINT 2



The language of the standard can often point in the direction of the language purpose needed to be taught.

## POINT 3



It isn't always clear and to be honest I prefer Oregon's writing of the standards for determining the purpose. Hopefully this course will help.





# Homework



Choose a standard (CCSS, or Oregon Math) and:

- \*Identify the standards by the alpha-numeric identifier
  - \*Provide the text of the standard
  - \*List identified language purposes for the standard chosen and the words that indicate the purpose that you found.
- See the resource page on the next slide for web addresses.



# Additional Resources



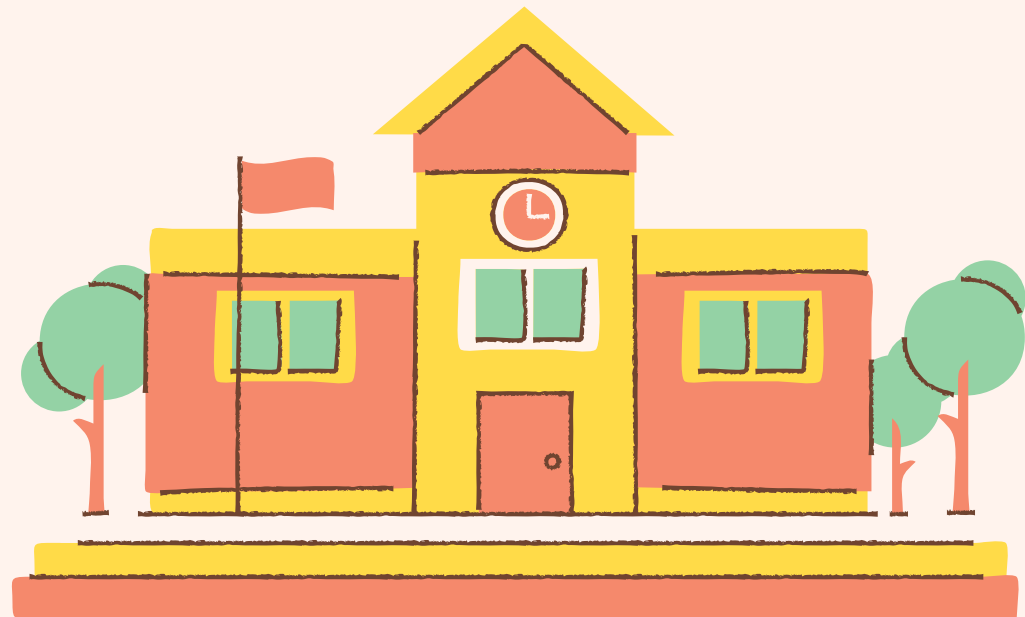
<https://learning.ccsso.org/wp-content/uploads/2022/11/ADA-Compliant-Math-Standards.pdf>

<https://www.nctm.org/Standards-and-Positions/Position-Statements/Transforming-Practices-and-Policies-So-Multilingual-Learners-Thrive-in-Mathematics/>

<https://www.oregon.gov/ode/educator-resources/standards/mathematics/Pages/MathStandards.aspx>



# Thank You



IF YOU HAVE ANY QUESTIONS PLEASE  
FEEL FREE TO CONTACT ME AT:

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