

Supporting the Language of Math

Reveal Math was developed around this belief—that mathematics is not just a series of operations, but a way of communicating—listening, speaking, reading, writing, and most importantly, thinking.

Understanding Through Thoughtful Discourse

With *Reveal Math*, teachers lead group Explore and Develop discussions to develop shared math knowledge. These discussions allow students to connect concepts to strategies and procedures. Students learn by discussing and relating multiple representations, strategies, and procedures when they solve problems as a class community.

Guided Exploration

Students extend their understanding of multiplication and division by identifying an unknown using equal groups and an array.

Facilitate Meaningful Discourse

- How does the representation with equal groups help you identify the unknown?
- What do you notice about the numbers used in the multiplication and division equations?
- **Think About It:** Why can you use either multiplication or division to determine the unknown?

Have student do a quick pair-share to discuss the location of the unknowns in the initial multiplication and division equations.

- Why do you think the unknown is in a different location for the multiplication and division equations?

Have students look at the array.

- How does the array help you determine the unknown?
- What does the unknown number in the multiplication equation represent? the unknown number in the division equation?

English Learner Scaffolds

English Learner Scaffolds provide teachers with scaffolded instruction to help students make meaning of math vocabulary, ideas, and concepts in context. The three levels of scaffolding practices within each lesson are based on WIDA – Entering/Emerging, Developing/Expanding, and Bridging/Reaching - so teachers can provide the right level of support for each student.

English Language Learner

In this unit, students are provided with a number of scaffolds to support their comprehension of the language used to present and explain multiplication and division. Because many of the words and phrases used are likely unfamiliar to ELs, students are supported in understanding and using these words.

Lesson 3-1 – *equal*
Lesson 3-2 – *enough*
Lesson 3-3 – *any order*
Lesson 3-4 – *share, sharing*
Lesson 3-5 – *like*
Lesson 3-6 – *repeated*

English Learner Scaffolds

Entering/Emerging Support students in understanding the meaning of “equal groups” by pointing out the pictures of the peach baskets. Have students chorally count to determine that each group has the same number of objects. Then have students explain how they know that the peaches are in equal groups.

Developing/Expanding Provide students the following sentence starter to help them relate multiplication to equal groups:
I know the peach baskets represent multiplication because _____.

Bridging/Reaching Have students work a partner to describe the meaning of the multiplication equation $3 \times 5 = 15$ in terms of equal groups and the number of objects in each group.

Math Language Routines

Reveal Math integrates math language routines in every lesson during Explore and Develop to support sense-making and cultivate conversation. They are based on design principles from Stanford Center for Assessment, Learning, and Equity and provide numerous benefits:

MLR1: Stronger and Clearer Each Time

MLR5: Co-Craft Questions and Problems

MLR2: Collect and Display

MLR6: Three Reads

MLR3: Critique, Correct, and Clarify

MLR7: Compare and Connect

MLR4: Information Gap

MLR Critique, Correct, and Clarify

On the board write, *There are 5 groups with 3 objects in each group.* Pair students to discuss whether this statement about the baskets of peaches is correct. Ask them to identify any mistakes and to make changes. Have students write a new, correct version of the sentence.

Language of Math

Math is not just operations and calculations but its own language from which to communicate and collaborate with others. Language of Math promotes the development of key vocabulary terms that support how we talk about and think about math in the context of the lesson content.

LOM Language of Math

Students need multiple opportunities to describe the *number of groups*, the *number of objects in each group*, and the *total number of objects*. Ask students questions that require them to use these terms when describing both representations and equations.