

— BE — CURIOUS

Derive understanding by
sparking curiosity

Student curiosity and ideas shared in *Be Curious*, written by Annie Fetter, starts every lesson with the opportunity to be curious about math, with a focus on exploration and sense-making.



Reveal
MATH[®]



“All students have ideas about math that are valid and worth talking about.”

**- Annie Fetter,
Contributing Author**

— BE — CURIOUS

Be Curious launches every lesson and is designed to encourage student curiosity and ideas while observing a situation, problem, or phenomenon. Students apply previously learned problem-solving strategies or knowledge to make sense of the problem or to wonder how they may approach the situation.

Be Curious offers a high-ceiling/low-floor that allows every student to explore and discuss their ideas with multiple entry points and approaches to problem-solving.

Teachers foster student’s thinking through meaningful discussions with four types of *Be Curious* sense-making routines:

- Notice & Wonder™
- Which Doesn’t Belong?
- Is It Always True?
- Numberless Word Problem

SEL

Focusing on Social and Emotional Learning helps drive a positive math classroom where students are encouraged and motivated to engage in mathematics.

Reveal Math K–5 Contributing Author



Annie Fetter worked on the project that developed the first version of The Geometer’s Sketchpad and was a founding staff member of the Math Forum until it ended in 2017. Currently, she consults with schools, districts, states, a world-famous art museum, and speaks at conferences—encouraging a focus on sense-making and leveraging students’ ideas. She is an author of McGraw Hill’s new K–5 textbook series, *Reveal Math*, and works part-time for the 21st Century Partnership for STEM Education, continuing the Math Forum’s work on two NSF grants. Her very first Ignite talk, “Ever Wonder What They’d Notice?”, has been used in countless PD sessions around the world.

Represent 4-Digit Numbers



Be Curious

**What do you notice?
What do you wonder?**



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Math is... Mindset

How does identifying your feelings and emotions help you?

Purpose Students recognize they can use 4-digit numbers to represent large quantities.

Notice & Wonder™

- What do you notice?
- What do you wonder?

Teaching Tip Have students work in pairs to discuss what they notice and wonder about the fish. This can help build a collaborative classroom culture. It also allows for greater participation among students as they share their thinking with their partners.

ETP **Pose Purposeful Questions**

The questions that follow may be asked in any order. They are meant to help advance students' understanding of 4-digit numbers and are based on possible comments and questions that students may make during the share out.

- How many digits do you think there will be in the number that represents the total amount of fish? Explain.
- How can you represent the total number of fish in different ways?
- How could you use an understanding of place value to help determine the total number of fish?

Math is... Mindset

- How does identifying your feelings and emotions help you?

SEL **Self-Awareness: Identify Feelings and Emotions**

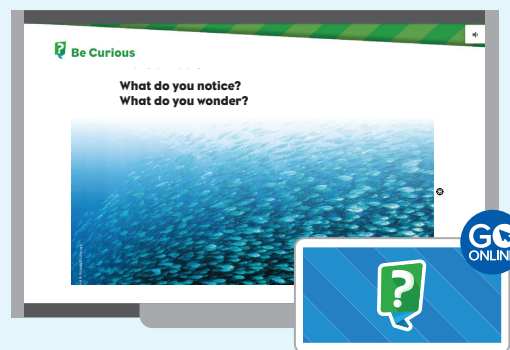
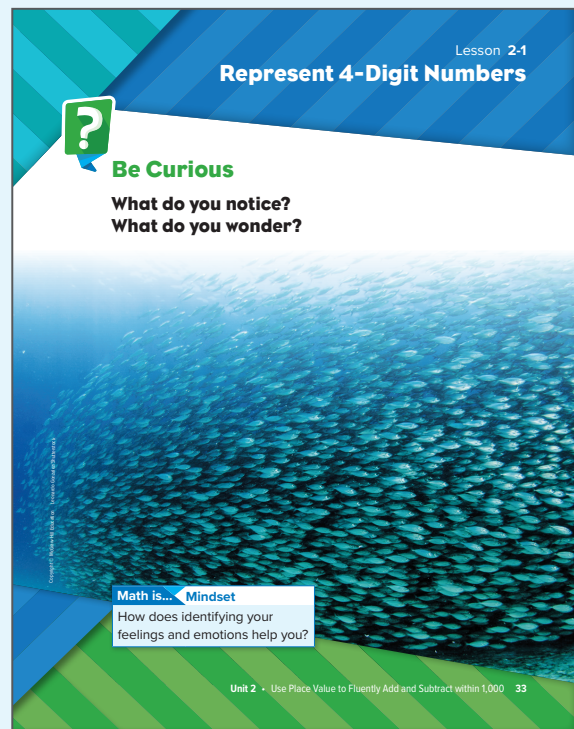
After students participate in the Notice and Wonder™ routine, invite them to share the emotions they were experiencing. Encourage students to focus on the feelings they experience when they were successful as well as when they were not. Their work throughout the lesson with representing 4-digit numbers may be challenging, and they may feel upset or frustrated. Remind students that these feelings are neither right nor wrong, but how we deal with our feelings can affect success with math work. Sharing and listening can help students build understanding of their own emotions as well as the emotions of others.

Transition to Explore & Develop

Ask questions that encourage students to think about how they can represent quantities greater than 3-digit numbers. Encourage students to discuss different ways they can represent numbers.

ETP **Establish Goals to Focus Learning**

- How can you represent numbers that are greater than 999?



Adjust Numbers to Add or Subtract



Be Curious

Which doesn't belong?

$$38 + 19$$

$$40 + 17$$

$$37 + 20$$

$$32 + 25$$

Math is... Mindset

How can you show others that you value their ideas?

Purpose Students think about how some equations are easier to solve than others due to the digits in the ones place.

Which Doesn't Belong?

- Which doesn't belong?

Teaching Tip Allow students to work in pairs to identify which expression they think doesn't belong. Tell each pair to be prepared to explain their choice before the group discussion begins.

ETP **Pose Purposeful Questions**

The questions that follow may be asked in any order. They are meant to help advance students' understanding that the digits in the ones place can impact on how they add, and are based on possible comments and questions that students may make during the share out.

- Which pair of addends do you think are easiest to add? Explain.
- Which pair of addends do you think are most difficult to add? Explain.
- How can you find the sum of each?

Math is... Mindset

- How can you show others that you value their ideas?

SEL **Relationship Skills: Value Ideas of Others**

As students engage in collaborative discourse around the Which Doesn't Belong? routine, remind them that valuing the ideas of others is an important part of being an effective and respectful communicator. Explain that one way to do this is by listening attentively when others are sharing their ideas about which expression they think doesn't belong.

Transition to Explore & Develop

Ask questions to encourage students to think about which digits in addition and subtraction equations make the equations easier to solve.

ETP **Establish Goals to Focus Learning**

- Let's explore how to use strategies to make equations easier to solve.

Lesson 2-8
Adjust Numbers to Add or Subtract

Be Curious
Which doesn't belong?

$38 + 19$

$40 + 17$

$37 + 20$

$32 + 25$

Math is... Mindset
How can you show others that you value their ideas?

Unit 2 • Use Place Value to Fluently Add and Subtract within 1,000 63

Be Curious


Which doesn't belong?

$38 + 19$

$40 + 17$

$37 + 20$

$32 + 25$



Understand the Commutative Property



Be Curious

Is it always true?

Hector says 5×2 equals 2×5 .



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Math is... Mindset

How can you show that you value the responses of others?

Purpose Students explore the Commutative Property of Multiplication as they consider whether the order of factors changes the product.

Is It Always True?

- Is the statement always true?

Teaching Tip Encourage students to use the support of the picture to determine whether 5×2 is always equal 2×5 . Counters can be provided for students to explore the statement. Students should be encouraged to explore this pattern with other factors.

ETP **Pose Purposeful Questions**

The questions that follow may be asked in any order. They are meant to help advance students' thinking about the order of factors and are based on possible comments and questions that students may make during the share out.

- What do you notice about the two arrays of stamps?
- What strategy could you use to find the total number of stamps in each array?
- How are the arrays alike? How are they different?

Math is... Mindset

- How have you shown that you value the responses of others?

SEL **SEL Social Awareness: Value Diversity**

As students consider the Is It Always True? routine, invite them to discuss different strategies they might use to determine whether what Hector notices is always true. As students share their unique thought processes and ideas, emphasize the value of the differences as well as the similarities so students can understand the importance of diversity within a math context.

Transition to Explore & Develop

Ask questions that encourage students to think about products of the factors and why they might be the same.

ETP **Establish Goals to Focus Learning**

- Let's explore the order of the factors in multiplication equations.

Lesson **3-3**
Understand the Commutative Property

Be Curious

Is it always true?

Hector says 5×2 equals 2×5 .

Math is... Mindset

How can you show that you value the responses of others?

Unit 3 • Multiplication and Division 101

Be Curious

Is it always true?

Hector says 5×2 equals 2×5 .

GO ONLINE

Understand Equal Sharing



Be Curious

What question could you ask?

Some friends will share some grapes.



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Math is... Mindset

How can you explain your reasoning?

Purpose Students understand that when things are shared equally, each group has the same amount.

Numberless Word Problem

- What question could you ask?

Teaching Tip Encourage students to come up with possible strategies they would use if a specific quantity of grapes was provided. This can help students see that different strategies can be used for the scenario.

Pose Purposeful Questions

The questions that follow may be asked in any order. They are meant to help advance students' understanding of equal sharing and are based on possible comments and questions that students may make during the share out.

- How can you determine how many grapes each friend should get?
- Suppose the children share the grapes equally. How could they make sure everyone received the same number of grapes?

Math is... **Mindset**

- How can you explain your reasoning?

Responsible Decision-Making: Logic and Reasoning

As students work through the Numberless Word Problem routine, have them write, draw, or speak to each of the steps of their logic and reasoning. This can help students understand and justify their thought processes as they analyze situations, choose appropriate strategies, and identify solutions.

Transition to Explore & Develop


Students should begin to think about how to show equal sharing when the total number of objects and total number of groups are known.

Establish Goals to Focus Learning

- What does *equal sharing* mean to you?

Lesson 3-4


Understand Equal Sharing



Be Curious

What question could you ask?

Some friends will share some grapes.



Math is... Mindset

How can you explain your reasoning?

Unit 3 • Multiplication and Division 105



Be Curious

What question could you ask?

Some friends will share some grapes.







RevealMATH[®]

Reveal the Full Potential in Every Student

In order to uncover the full potential in every student, *Reveal Math* champions a positive classroom environment, explores mathematics through a flexible lesson design, and tailors classroom activities to students' needs.

Learn more at [revealmath.com/k5](https://www.revealmath.com/k5)

