LESSON PLAN

MULTIPLYING FRACTIONS BY WHOLE NUMBERS
GRADES 3–5

SUMMARY

Students connect repeated addition of fractions to multiplying fractions by whole numbers.

COMMON CORE STANDARD(S)

5.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

DURATION

Two 45-minute classroom periods

Engage and Explore, Explain, Elaborate page 1—one 45-minute classroom period
Elaborate page 2, Evaluate—second 45-minute classroom period

ENGAGE AND EXPLORE

Engage students by having them solve problems that come up as Zoe has her friends over for a party. Activate their prior knowledge of multiplication of whole numbers and addition of fractions as they solve these problems.

Ask students to consider the following problem: Zoe has 6 friends over for a party. Each friend brings two bags of snacks. How many bags of snacks did they bring in all? [12 bags]

Direct students to write an addition and multiplication expression they could use to solve the problem. Have students present their expressions then have the class discuss "How are addition and multiplication related?"

Ask students to consider the following problem: Zoe divided a bag of snacks into three bowls equally. She and her friends ate 1 of the 3 bowls of snacks before they played some games. How can you represent the amount they ate with a fraction? [$\frac{1}{3}$] Then after they played the games, they ate another bowl of snacks. Can you write an addition equation to show how much they ate in all? [$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$. They ate $\frac{2}{3}$ of the bowls of snacks.]

Prompt students to share which part of the fraction $\frac{2}{3}$ is the numerator and which part is the denominator.

Have students discuss "What do the parts of a fraction represent?" Review with them that the denominator represents the number of equal parts in the whole–in this case 3. The numerator represents the number of those equal parts–in this case 2.

In pairs, direct students to find the following sums.

$$\frac{1}{5} + \frac{1}{5} + \frac{1}{5} =$$ $$\frac{2}{4} + \frac{2}{4} =$$ $$\frac{2}{5} + \frac{2}{5} + \frac{2}{5} + \frac{2}{5} =$$

Have them record the sums in their notebook.
Facilitate a conversation using the Before Discussion Questions.

EXPLAIN

WATCH THE GENERATION GENIUS MULTIPLYING FRACTIONS BY WHOLE NUMBERS VIDEO AS A GROUP
Facilitate a conversation using the Discussion Questions.

Return to your discussion about what the students observed when finding the sums at the end of Engage and Explore. Did the patterns that they saw match what they saw when multiplying a fraction by a whole number? Ask students to rewrite each of the addition problems as a multiplication problem.

ELABORATE

Direct students to use their new understanding to complete the practice problem worksheets. Page 1 contains bare mathematical problems to solidify understanding of the process. Page 2 contains application problems for students to apply the process to solve real-world problems.

Challenge: If any advanced learners finish the problems early, challenge them to discover how they could find $6 \times 4\frac{1}{5}$.

EVALUATE

Have students gather in groups of 2 or 4 to compare and discuss their answers to the problems. Allow students enough time to communicate with their peers about their process and their thinking. Encourage students to use correct mathematical language when discussing their process. Have each group choose two questions they want more information about, or they want to discuss as a class.

When groups are ready take questions from students. Encourage groups to answer questions brought up by other groups.

Students can play the online Kahoot! quiz game located below the video. It provides downloadable scores at the end of the quiz game. Alternatively, you can use the paper quiz, or the exit ticket questions. All these resources are located below the video in the assessment section.