Dear Parents and Guardians,

During Unit 7, your child will apply their understanding of composing and decomposing fractions to develop a conceptual understanding of multiplying a fraction by a whole number. Students also use and extend their previous understandings of multiplication with whole numbers and relate that understanding to fractions.

MULTIPLYING FRACTIONS BY WHOLE NUMBERS

Students need to:

- Interpret a multiplication equation as a comparison, e.g. interpret \(35 = 5 \times 7\) as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. (This standard is addressed in this unit to include multiplication of fractions and apply the understanding of “times as much” to multiplying a fraction by a whole number.)

- Understand a fraction \(\frac{a}{b}\) as a multiple of \(\frac{1}{b}\). For example, use a visual fraction model to represent \(\frac{5}{4}\) as the product \(5 \times (\frac{1}{4})\), recording the conclusion by the equation \(\frac{5}{4} = 5 \times (\frac{1}{4})\). (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)

- Understand a multiple of \(\frac{a}{b}\) as a multiple of \(\frac{1}{b}\), and use this understanding to multiply a fraction by a whole number. (For example, use a visual fraction model to express \(3 \times (\frac{2}{5})\) as \(6 \times (\frac{1}{5})\), recognizing this product as \(\frac{6}{5}\). In general, \(n \times (\frac{a}{b}) = (n \times a) / b\))

- Solve word problems involving multiplication of a fraction by a whole number, e.g. by using visual fraction models and equations to represent the problem. (For example, if each person at a party will eat \(\frac{3}{8}\) of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?)

WAYS PARENTS CAN HELP

Help your child to make real world connections to the multiplication of whole numbers and fractions when you can. For example, when following a recipe that calls for \(\frac{3}{4}\) a cup of something, have your child help you measure by using a \(\frac{1}{4}\) measuring cup. Have them figure out that they will need to use the \(\frac{1}{4}\) measuring cup 3 times in order to have \(\frac{3}{4}\). In other words, 3 “groups of” \(\frac{1}{4}\) cup equals \(\frac{3}{4}\) cup, \(3 \times \frac{1}{4} = \frac{3}{4}\).

KEY VOCABULARY

- Associative property
- Benchmark fraction
- Denominator
- Equation
- Estimate/Estimation
- Expression
- Factor
- Mixed number
- Multiple
- Multiplicative comparison
- Numerator
- Product
- Unit fraction

BACKGROUND INFORMATION AND EXAMPLES FOR PARENTS

NOTE: For CCPS videos, you may need to download the video to view it.

Using Models and Repeated Addition to Multiply a Fraction and a Whole Number

Using a Number Line to Multiply a Fraction and a Whole Number

Visual Model to Multiply Whole Number and a Fraction

Fraction Multiplication on a Number Line

Multiply Unit Fraction and Whole Number