

Standard 5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. Use strategies to divide fractions by reasoning about the relationship between multiplication and division.

Division of a fraction by a fraction is not a requirement at this grade.

- a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for $(1/3) \div 4$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$.
- b. Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for $4 \div (1/5)$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (1/5) = 20$ because $20 \times (1/5) = 4$.
- c. Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, for example, by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if three people share $1/2$ lb. of chocolate equally? How many $1/3$ -cup servings are in two cups of raisins?

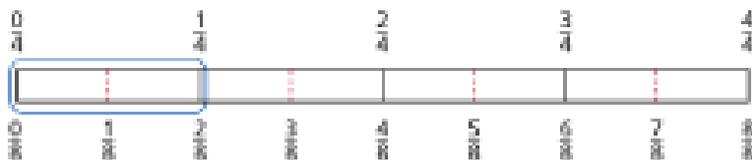
Please Note: Apply and extend previous understandings of multiplication and division to multiply and divide fractions (Standards 5.NF.3–7).

Make sure that students know the difference between dividing a fraction by a whole number or another fraction versus simplifying to find the least common denominator.

Fraction and division connection: If 3 sub sandwiches are shared equally among 5 people each person's share can be described as both 3 divided by 5 and also as $3/5$ of sandwich. It is important to make this connection between division and fractions. They are written differently, but have the same meaning.

Students have a difficult time deciding which part is the whole and which part is the number of parts being shared. 3 divided by 5 is 3 wholes being shared 5 ways. Or, how many 5's are in 3? How many groups of 5 can fit into 3 wholes?

Key Elements: Students may use comparison bars, number lines, area models, and bar models to solve division problems.



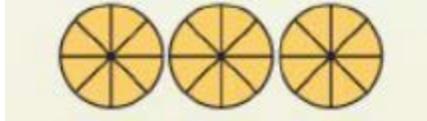
This is not in the 5th grade

core. They don't have to divide a fraction by a fraction.

This model shows $1/4$ divided by $1/8$. How many $1/8$ pieces are in $1/4$? If you divide the whole into 8 pieces, you will need 2 $1/8$ pieces to equal $1/4$.

Divide a whole number by a unit fraction

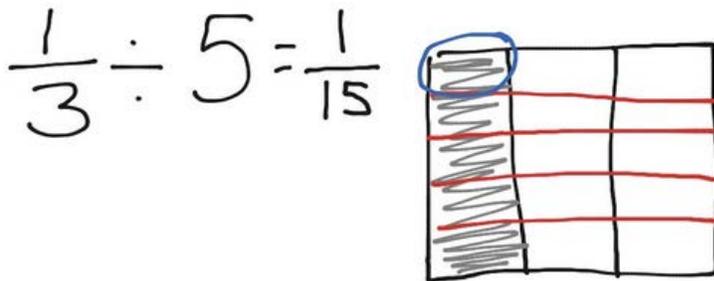
In this visual model below, it illustrates that for any whole number (w) and any unit fraction ($1/d$)



$w \div \frac{1}{d} = w * d$. Because there are 8 eighths in 1 whole, there are 3 sets of 8 in 3 wholes. That is the same as 3 times 8. $3 \div \frac{1}{8} = 3 \text{ times } 8 = 24$.

Divide a unit Fraction by a Whole Number

Consider the case of $\frac{1}{3} \div 5$. This can be stated as dividing $\frac{1}{3}$ into 5 parts and then deciding how big each part is in relation to the whole.



One rule when dividing with fractions is that if the dividend is a fraction and the divisor is a whole number, the final quotient will be a fraction. If the dividend is a whole number and the divisor is a fraction, then the answer will be a whole number.