

Dividing and Multiplying with Unit Fractions

In this video, we will explore how models can help us divide and multiply unit fractions. $\frac{1}{3} \div 3$. Our first step is to model our dividend. We make a whole, cut it into thirds, and shade one of the thirds. Now we are going to divide the $\frac{1}{3}$ into 3 even groups. To do this, we need to divide each of the $\frac{1}{3}$ s into three groups. If we look at the shaded pieces, these are each $\frac{1}{3}$ divided into 3 groups. The quotient is the size of each of these pieces. There are now 9 pieces in this whole, so one of these individual pieces is $\frac{1}{9}$. $\frac{1}{3} \div 3 = \frac{1}{9}$. $\frac{1}{3} \times \frac{1}{3}$. Fraction multiplication translates to “of,” so we can think of this multiplication expression as $\frac{1}{3}$ of $\frac{1}{3}$. To find $\frac{1}{3}$ of $\frac{1}{3}$, we model $\frac{1}{3}$. This shaded piece is $\frac{1}{3}$. To find $\frac{1}{3}$ of this shaded $\frac{1}{3}$, we will cut the $\frac{1}{3}$ into three equal-sized pieces. Now we will shade one of them; I'm shading in blue. The double-shaded piece is our quotient. To determine the size of this double-shaded piece, we need to create equal-sized pieces throughout the whole. So, we cut each of these $\frac{1}{3}$ into 3 pieces. Now we have a total of 9 pieces in our whole, and 1 of them is double-shaded. Our product is $\frac{1}{9}$.
