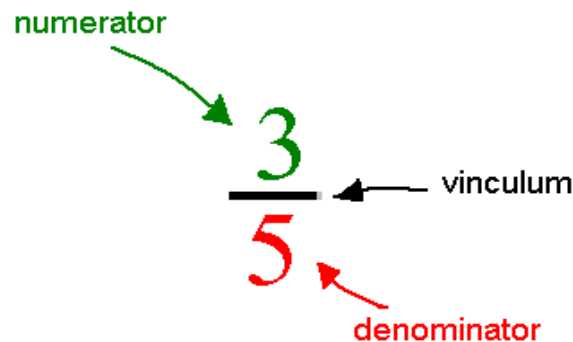


Definition of a Fraction

What is a fraction? A fraction has three components as shown on the picture below. The important parts are the numerator above and the denominator below the little line.



At first let us not even consider a fraction alone. We will just define a **fraction of something**.

Definition: $\frac{3}{5}$ of a quantity can be obtained as follows.

Step 1. We first divide the quantity into 5 equal shares.

Step 2. Let us take 3 such shares. That is $\frac{3}{5}$ of our quantity.

So the numerator tells us how many shares we have. The denominator tells us how big each share is.

Example 1. Find $\frac{3}{5}$ of \$100.

Step 1. Divide \$100 into 5 equal shares.

We break the \$100 into five twenty dollar bills. In other words, $\frac{1}{5}$ of \$100 is \$20.

Step 2. Let us take 3 such shares.

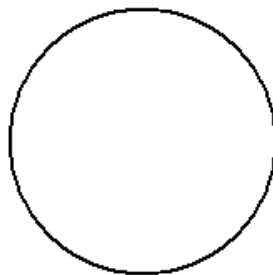
We take three twenty dollar bills, that is \$60. In other words, $\frac{3}{5}$ of \$100 is \$60.

Example 2. Compute $\frac{4}{7}$ of 42.

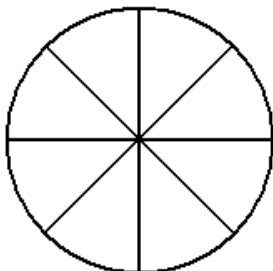
Step 1. We divide 42 into 7 equal shares. $\frac{1}{7}$ of 42 is 6.

Step 2. We take 4 such shares. $\frac{4}{7}$ of 42 is $4 \cdot 6 = 24$. The answer is 24.

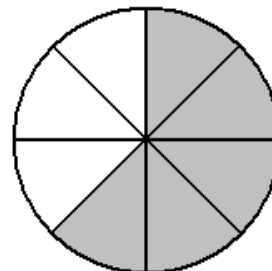
Example 3. Shade the region on the picture below that corresponds to $\frac{5}{8}$ of the circle.



Step 1. Divide the circle into 8 equal shares.



Step 2. Take 5 such shares.



Example 4. A cake was sliced into equal slices. Amy ate 2 slices and Betsy ate 3 slices. If 2 slices were remaining, what fraction of the cake was eaten?

Solution: We need to first figure out how many slices made up the cake. If 2 were eaten by Amy and 3 by Betsy and 2 more were left, then there were all together $2 + 3 + 2 = 7$ slices. 5 slices were eaten which were $\frac{5}{7}$ of the cake. So the answer is $\frac{5}{7}$.

Example 5. Compute $\frac{8}{100}$ of \$2000.

Solution: We divide \$2000 into 100 equal shares. Each share is \$20. Then we take 8 such shares, that is $8 \cdot \$20 = \160 . Thus $\frac{8}{100}$ of \$2000 is \$160.

Note: We often use fractions with 100 in the denominator. These fractions also called percents and denoted by $\%$. Thus, when we are asked to compute 8% of a quantity, that is exactly the same as $\frac{8}{100}$ of it.