

Multiplying Fractions

The next six pages cover how to do calculations with fractions. Let's start with multiplication.

Multiply Whole Numbers by Fractions...

When you're talking about fractions, "of" just means "times".

So calculating $\frac{1}{5} \times 20$ is the same as finding $\frac{1}{5}$ of 20.

To multiply any number by a fraction, you times by the numerator and divide by the denominator.



EXAMPLE:

What is $3\frac{5}{8} \times 16$?

1) Partition $3\frac{5}{8}$ into a whole number and a fraction: $3\frac{5}{8} = 3 + \frac{5}{8}$

2) Multiply the whole number by 16... $3 \times 16 = 48$

3) ...and multiply the fraction by 16. To work out $\frac{5}{8} \times 16$:

$$16 \div 8 = 2 \quad \longrightarrow \quad 2 \times 5 = 10$$

Divide by the denominator

Then multiply by the numerator

4) Add the two answers together. $48 + 10 = 58$. So $3\frac{5}{8} \times 16 = 58$.

You can multiply and divide in either order — just do what's easier. So here, you could do $16 \times 5 = 80$, and then $80 \div 8 = 10$.

...Or Fractions by Other Fractions

To multiply fractions:

1) Multiply the top numbers.

2) Multiply the bottom numbers.

$$\frac{3}{4} \times \frac{1}{5} = \frac{3}{20}$$

$3 \times 1 = 3$
 $4 \times 5 = 20$

EXAMPLE:

What is $\frac{1}{2} \times \frac{1}{2}$?

That's a half of a half.

Multiply the numerators together and multiply the denominators together:

$$\frac{1}{2} \times \frac{1}{2} = \frac{1 \times 1}{2 \times 2} \text{ and the answer is } \frac{1}{4}.$$

Here it is shown on a fraction bar:



You'll notice the answer's smaller, even though you're multiplying. Imagine half a cake being cut in half — you get a quarter of a cake.

"I can multiply fractions by whole numbers, and by other fractions."

