

## Dividing on Fractions

There are 3 simple steps to divide fractions:

Turn the second fraction (*the one you want to divide by*) upside down (this is now a reciprocal).

Multiply the first fraction by that reciprocal

Simplify the fraction (if needed)

### Example

$$\frac{1}{2} \div \frac{1}{6}$$

Turn the second fraction upside down (it becomes a reciprocal):

$$\frac{1}{6} \text{ becomes } \frac{6}{1}$$

Multiply the first fraction by that reciprocal:

(*multiply tops ...*)

$$\frac{1}{2} \times \frac{6}{1} = \frac{1 \times 6}{2 \times 1} = \frac{6}{2}$$

(*... multiply bottoms*)

Simplify the fraction:

$$\frac{6}{2} = 3$$

$$\begin{array}{ccc}
 \frac{1}{2} & \div & \frac{1}{6} \\
 \text{leave} & \text{change} & \text{turn} \\
 \text{me} & \text{me} & \text{me} \\
 \downarrow & \downarrow & \downarrow \\
 \frac{1}{2} & \times & \frac{6}{1}
 \end{array}$$

20 divided by 5 is asking "how many 5s in 20?" (=4) and so:

$$\frac{1}{2} \div \frac{1}{6} \text{ is really asking "how many } \frac{1}{6}\text{s in } \frac{1}{2}\text{?"}$$

Now look at the pizzas below how many " $\frac{1}{6}$  slices" fit into a " $\frac{1}{2}$  slice"?



Answer: 3

So now you can see why  $\frac{1}{2} \div \frac{1}{6} = 3$

In other words "I have half a pizza, if I divide it into one-sixth slices, how many slices is that?"

### Example

$$\frac{1}{8} \div \frac{1}{4}$$

Turn the second fraction upside down (the reciprocal):

$$\frac{1}{4} \text{ becomes } \frac{4}{1}$$

Multiply the first fraction by that reciprocal:

$$\frac{1}{8} \times \frac{4}{1} = \frac{1 \times 4}{8 \times 1} = \frac{4}{8}$$

Simplify the fraction:

$$\frac{4}{8} = \frac{1}{2}$$