

## When you divide six by $\frac{2}{3}$ , why do you flip and multiply?

This was similar to a question in the TES staff-room at...  
<http://www.mathagonyaunt.co.uk>

Explore...

$$\frac{6}{2}$$

For 6 divided by two we ask "How many 2's in six?" Three!

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

For 6 divided by half we ask "How many halves in six?" Twelve!  
For each one of the 6 we make two halves.

$$\frac{6}{\frac{1}{3}}$$

For 6 divided into thirds, we have three thirds for each one of the six whole ones. Eighteen!

6 divided by 2/3

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

For 6 divided up make groups of two thirds...

Multiply 6 by three to get the number of thirds then divide by two to find the number of groups, because it's two to a group.

That's 6 times 3, divided by 2, i.e.  $6 \times 3/2$

So 6 divided into groups of 2/3, is 6 times 3/2.

\*\*\*\*\* Mind your language! \*\*\*\*\*

Note: 6 divided by 2/3 of the students would lead us to give a total of  $6 \times 3/2$  to divide amongst all the students ( $all = 3/2$  times 2/3).

\*\*\*\*\* For the visual learner \*\*\*\*\*

It's easier to see this type of relationship using large and small division symbols...

$$\frac{6}{2/3} \qquad \frac{6}{\frac{2}{3}}$$

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