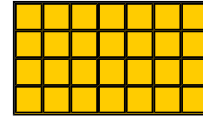


Fraction Multiplication and Area

To find the area of a rectangle, you multiply the lengths of the sides. For example, in the rectangle on the right, the sides are 4 units and 7 units, so the area is $4 \times 7 = 28$ square units.



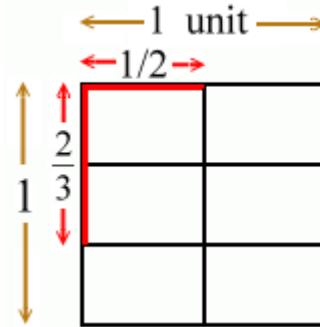
We can apply the same idea to fractions, too.

- The square has sides that are each 1 unit long.
- So the total area of the square is 1 square unit.
- Let's color a rectangle inside it that has sides that are $\frac{1}{2}$ and $\frac{2}{3}$ unit long.

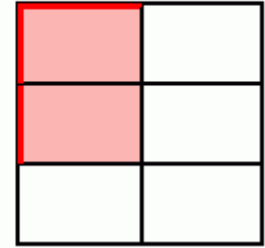
$$\frac{1}{2} \times \frac{2}{3} = \frac{2}{6} = \frac{1}{3}$$

side length side length

The **AREA**, compared to the total area



$\frac{2}{6} = \frac{1}{3}$ of the area is colored.

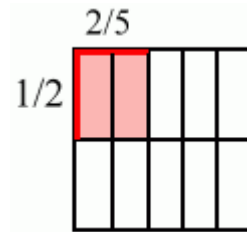


Remember: The two fractions being multiplied represent the *lengths of the sides* of the rectangle, and the answer represents the *area* that the sides enclose.

Example. On the top side, $\frac{2}{5}$ of the side is colored.
On the left side, $\frac{1}{2}$ of the side is colored.

We multiply those fractions: $\frac{1}{2} \times \frac{2}{5} = \frac{2}{10} = \frac{1}{5}$

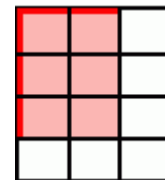
The answer means that $\frac{2}{10}$, or $\frac{1}{5}$, of the total area is colored.



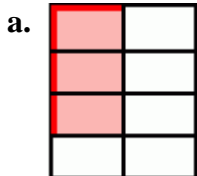
Example. On the top side, $\frac{2}{3}$ of the side is colored.
On the left side, $\frac{3}{4}$ of the side is colored.

We multiply those fractions: $\frac{2}{3} \times \frac{3}{4} = \frac{6}{12} = \frac{1}{2}$

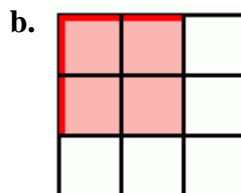
So $\frac{6}{12}$, or $\frac{1}{2}$, of the whole area is colored.



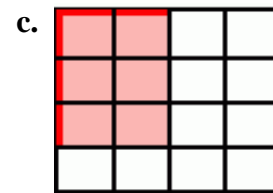
1. Write the multiplication sentence that describes each picture.



$$\frac{\text{side length}}{\text{side length}} \times \frac{\text{side length}}{\text{side length}} =$$



$$\frac{\text{side length}}{\text{side length}} \times \frac{\text{side length}}{\text{side length}} =$$



$$\frac{\text{side length}}{\text{side length}} \times \frac{\text{side length}}{\text{side length}} =$$