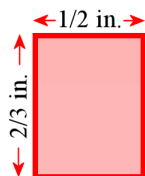


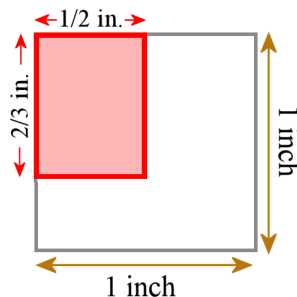
# Fraction Multiplication and Area

What is the area of this rectangle?



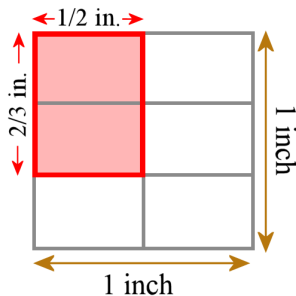
Notice, its side lengths are *fractional* ( $\frac{1}{2}$  inch and  $\frac{2}{3}$  inch).

Let's extend its sides and draw a square inch around it.



Surely the area of our rectangle is less than a half square inch. But how much is the area exactly?

To solve this problem, let's draw a grid inside our square inch:



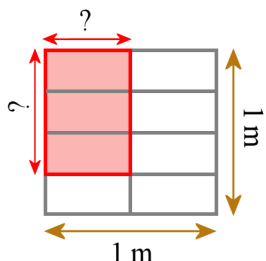
Now it is easy to see that the area of the colored rectangle is exactly  $\frac{2}{6}$  or  $\frac{1}{3}$  of the square inch.

(Why? Because the square inch is divided into 6 equal parts, and our rectangle covers two of them).

Notice that we get the same result ( $\frac{1}{3}$  square inch) if we *multiply* the side lengths, using fraction multiplication:

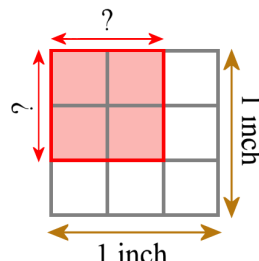
$$\frac{2}{3} \text{ in.} \times \frac{1}{2} \text{ in.} = \frac{2}{6} \text{ in}^2 = \frac{1}{3} \text{ in}^2$$

1. Each picture shows some kind of square unit, and a colored rectangle. Figure out the side lengths and the area of the rectangle from the picture.



Side lengths:  $\frac{\quad}{\quad}$  m and  $\frac{\quad}{\quad}$  m

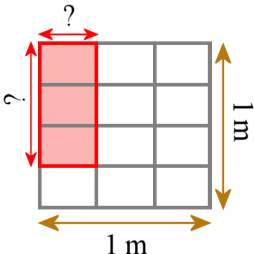
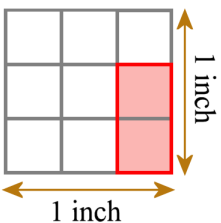
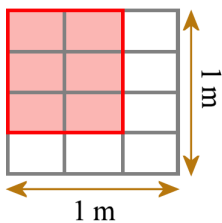
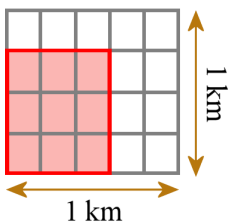
Area (from the picture):  $\frac{\quad}{\quad}$  m<sup>2</sup>



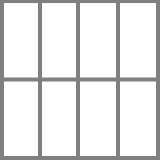
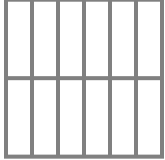
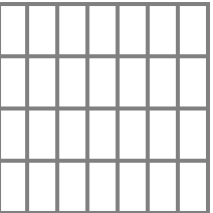
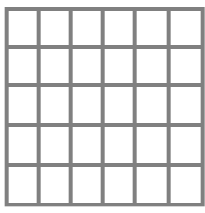
Side lengths:  $\frac{\quad}{\quad}$  in. and  $\frac{\quad}{\quad}$  in.

Area (from the picture):  $\frac{\quad}{\quad}$  in<sup>2</sup>

2. Again, figure out the side lengths of the colored rectangle from the picture. Then multiply the side lengths to find its area. Check that the area you get by multiplying is the same as what you can see from the picture.

<p style="text-align: center;"><b>a.</b></p>  <p>Side lengths: <math>\frac{\quad}{\quad}</math> m and <math>\frac{\quad}{\quad}</math> m</p> <p>Area (by multiplication):</p> $\frac{\quad}{\quad} \text{ m} \times \frac{\quad}{\quad} \text{ m} =$	<p style="text-align: center;"><b>b.</b></p>  <p>Side lengths: <math>\frac{\quad}{\quad}</math> in. and <math>\frac{\quad}{\quad}</math> in.</p> <p>Area (by multiplication):</p> $\frac{\quad}{\quad} \text{ in.} \times \frac{\quad}{\quad} \text{ in.} =$
<p style="text-align: center;"><b>c.</b></p>  <p>Side lengths: <math>\frac{\quad}{\quad}</math> m and <math>\frac{\quad}{\quad}</math> m</p> <p>Area (by multiplication):</p> $\frac{\quad}{\quad} \text{ m} \times \frac{\quad}{\quad} \text{ m} =$	<p style="text-align: center;"><b>d.</b></p>  <p>Side lengths: <math>\frac{\quad}{\quad}</math> km and <math>\frac{\quad}{\quad}</math> km</p> <p>Area (by multiplication):</p> $\frac{\quad}{\quad} \text{ km} \times \frac{\quad}{\quad} \text{ km} =$

3. Shade a rectangle inside the square so that its area can be found by the fraction multiplication.

<p style="text-align: center;"><b>a.</b></p>  $\frac{1}{4} \text{ m} \times \frac{1}{2} \text{ m} = \frac{1}{8} \text{ m}^2$	<p style="text-align: center;"><b>b.</b></p>  $\frac{1}{2} \text{ in.} \times \frac{4}{6} \text{ in.} = \frac{4}{12} \text{ in}^2$
<p style="text-align: center;"><b>c.</b></p>  $\frac{3}{4} \text{ ft} \times \frac{2}{7} \text{ ft} =$	<p style="text-align: center;"><b>d.</b></p>  $\frac{3}{5} \text{ km} \times \frac{5}{6} \text{ km} =$