Fraction Multiplication and Area
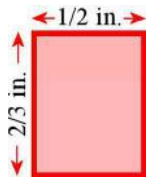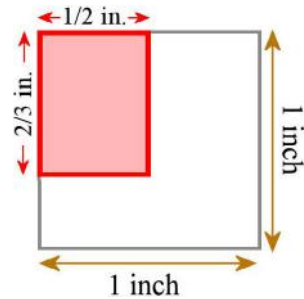
What is the area of this rectangle?
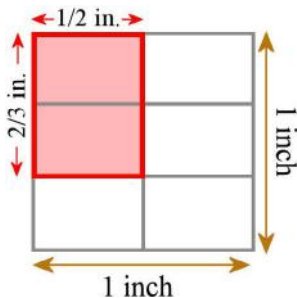

Notice, its side lengths are *fractional* (1/2 inch and 2/3 inch).

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 2/6 or 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 (1/3 square inch) if we *multiply* the side lengths, using fraction multiplication:

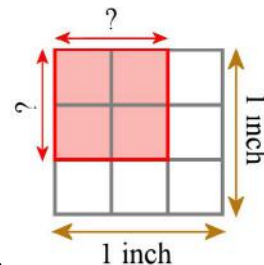$$\frac{2}{3} \text{ in} \times \frac{1}{2} \text{ in} = \frac{2}{6} \text{ in}^2 = \frac{1}{3} \text{ in}^2$$

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.
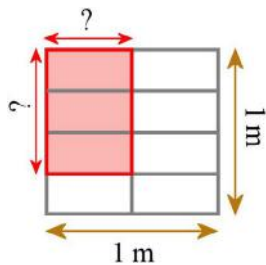
a.

Side lengths: ――― m and ――― m

Area (from the picture): ――― m^2

b.

Side lengths: ――― in and ――― in

Area (from the picture): ――― in^2