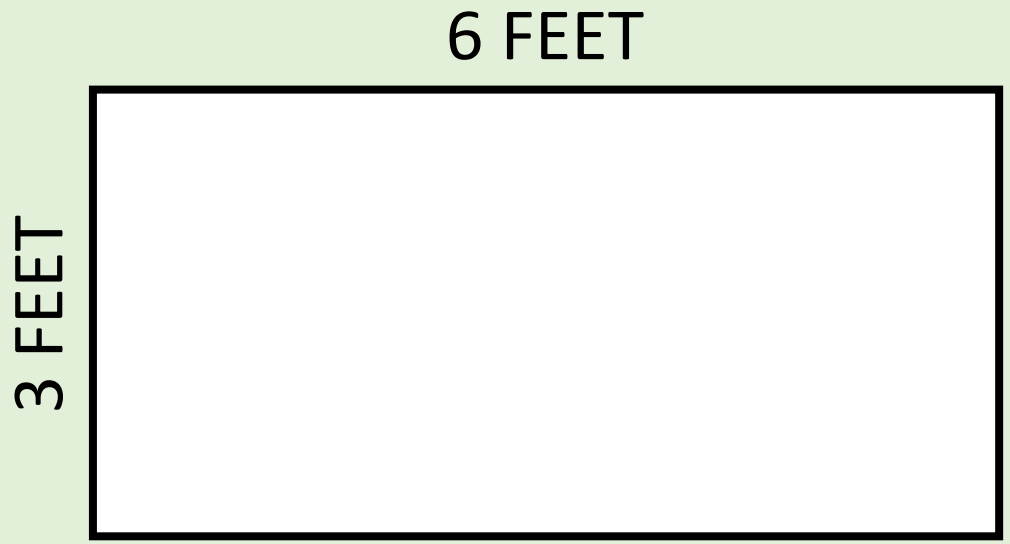
MAFS.5.NF.2.4

Find the area of a rectangle with fractional side lengths…

- By using fraction tiles and/or
- By multiplying side lengths

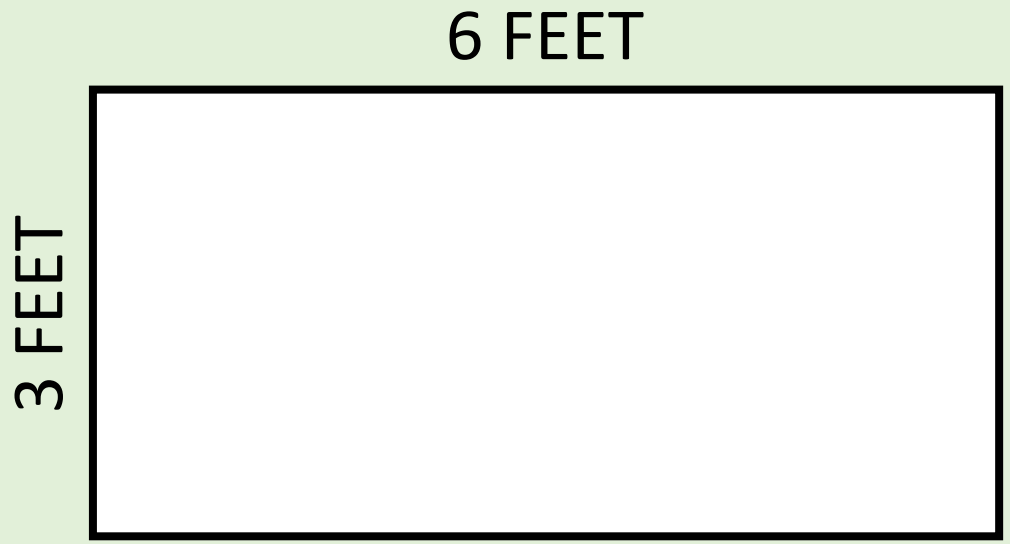
Find the area of a rectangle.

What is the “area” of a rectangle?



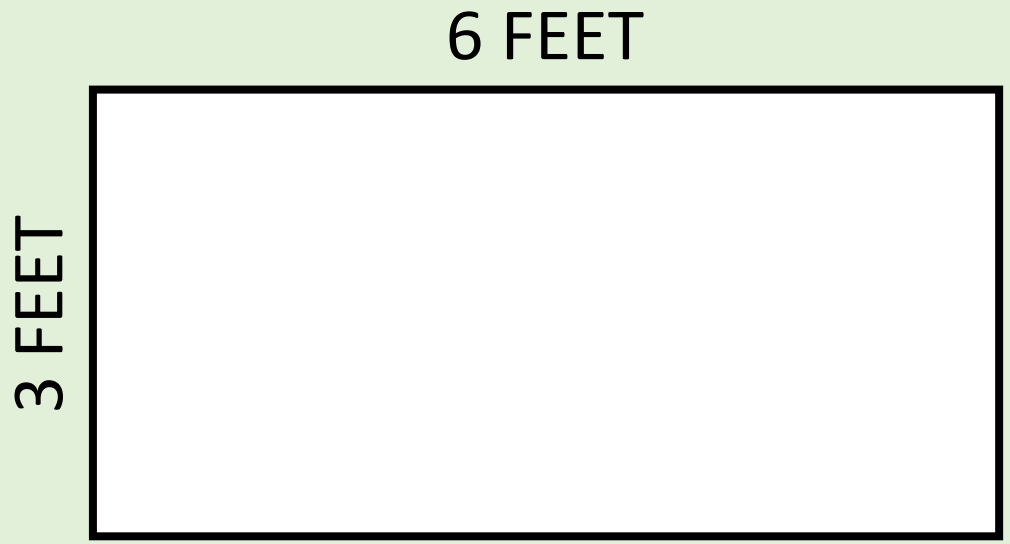
Find the area of a rectangle.

The area is the entire surface of the rectangle.



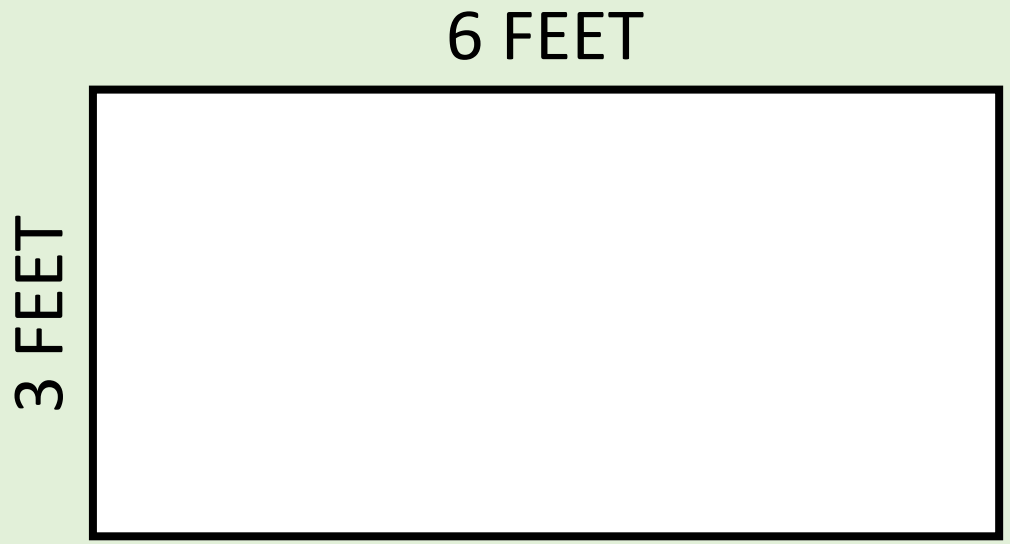
Find the area of a rectangle.

How do we find the area of a rectangle?



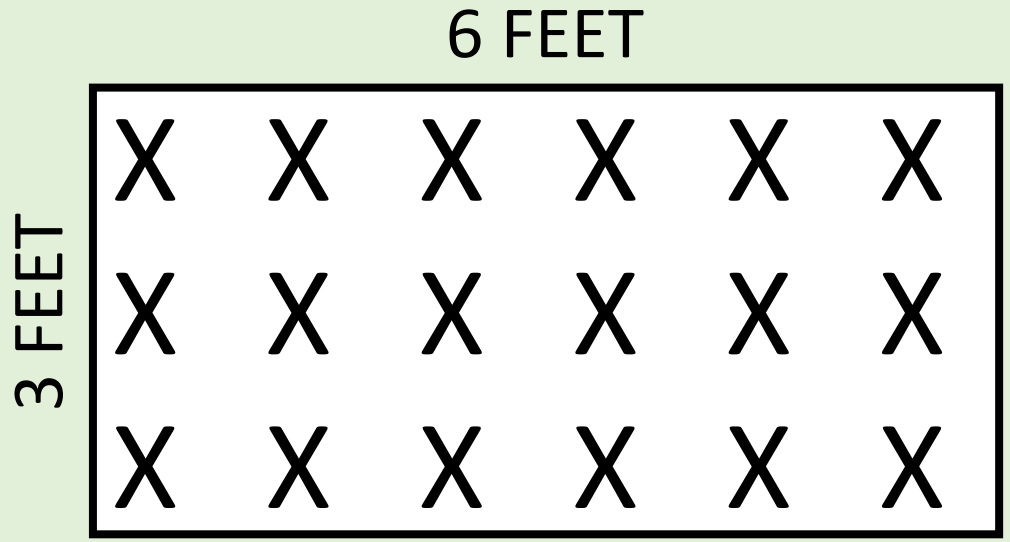
Find the area of a rectangle.

We can think of this as a multiplication array!



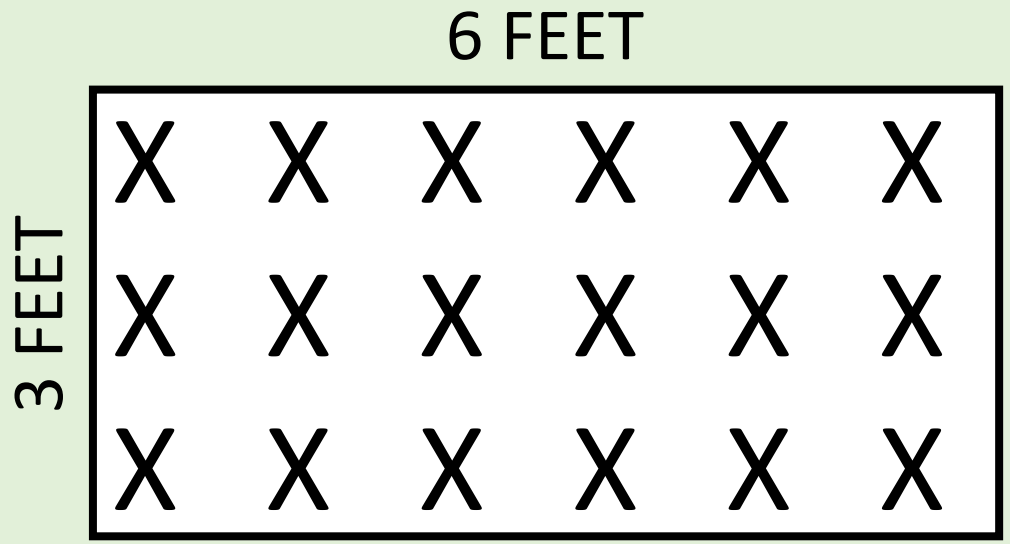
Find the area of a rectangle.

If this were an array, we would have 3 rows with 6 in each row.



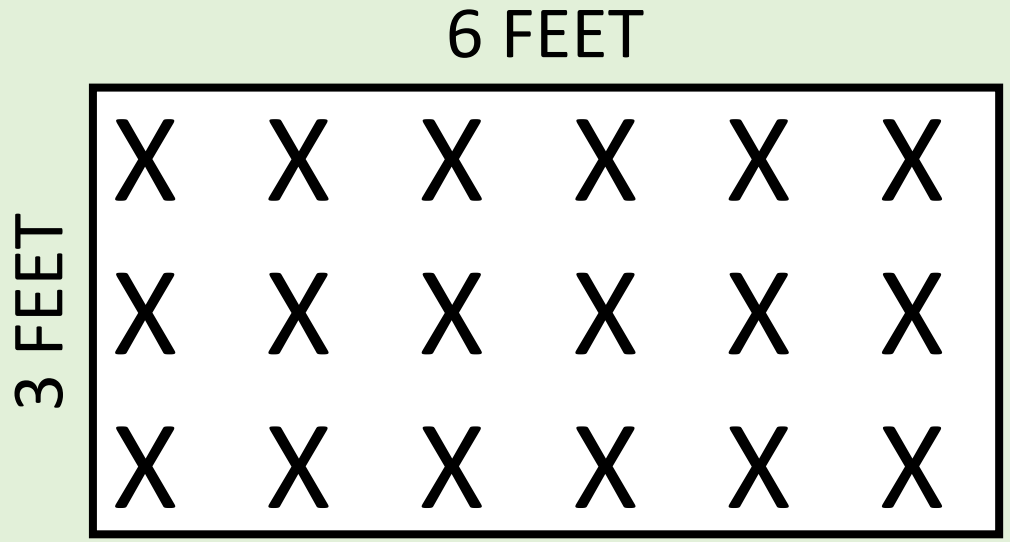
Find the area of a rectangle.

How many x’s are there all together?



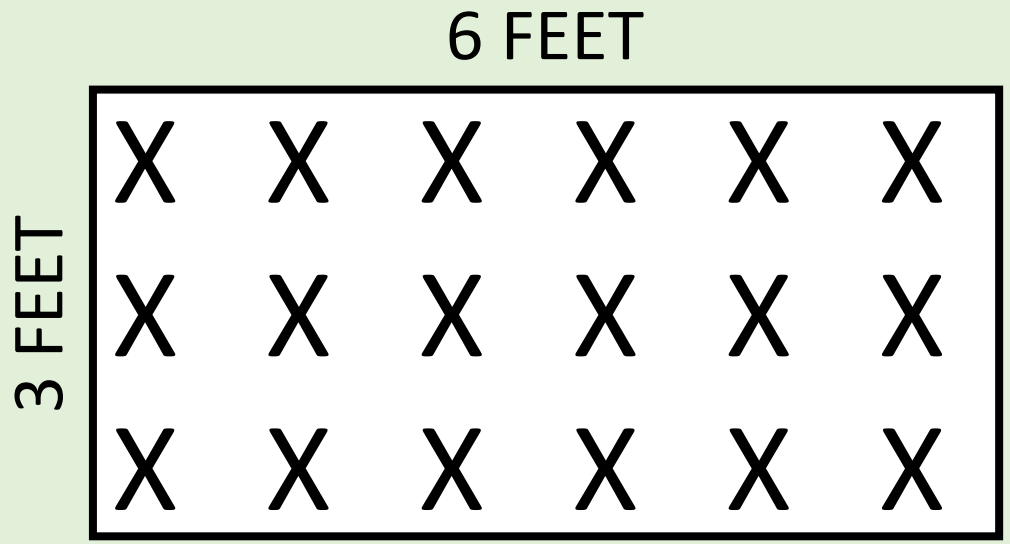
Find the area of a rectangle.

There are 18 x's. How would we solve that mathematically?



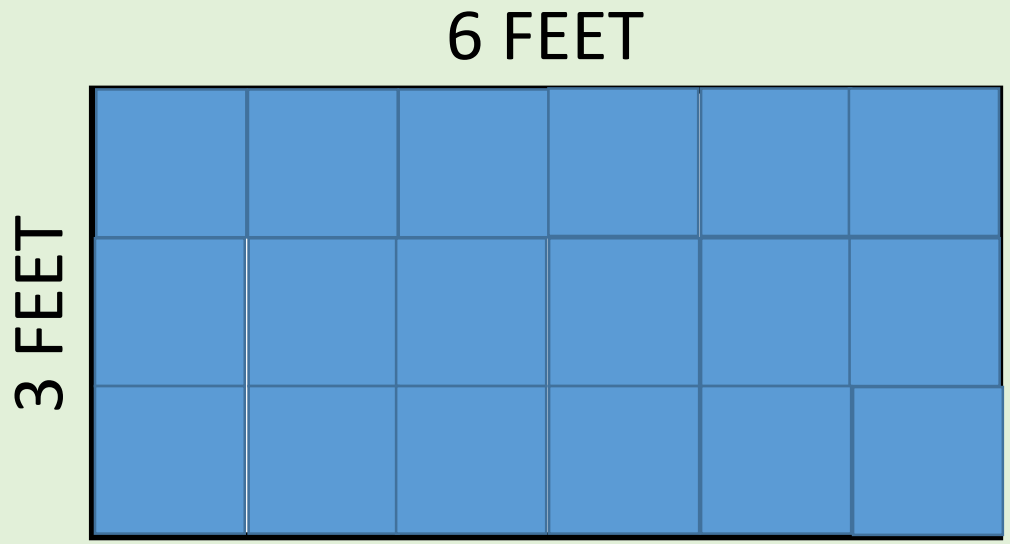
Find the area of a rectangle.

3 x 6 = 18 or 6 x 3 = 18



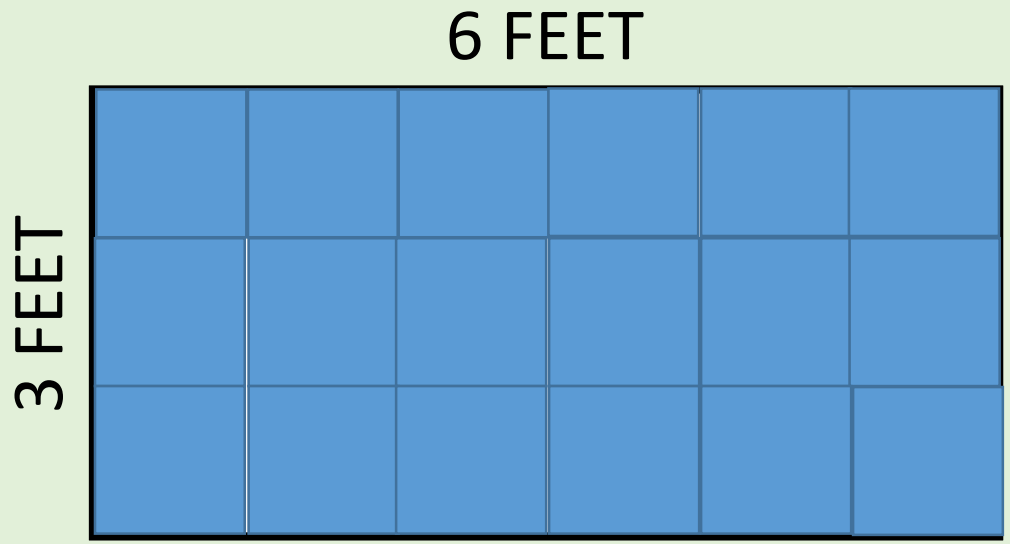
Find the area of a rectangle.

Look at the array now. What do you notice?



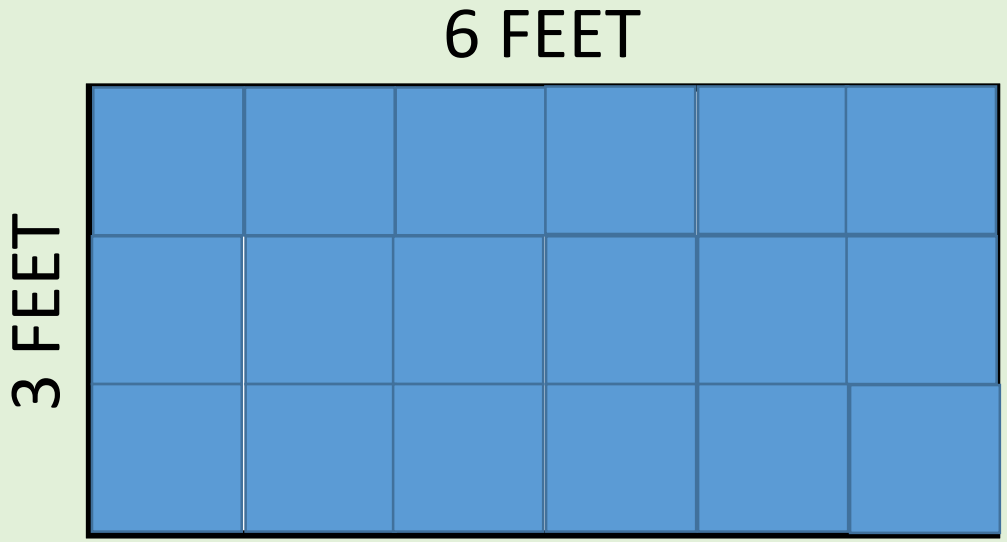
Find the area of a rectangle.

How many tiles are there?



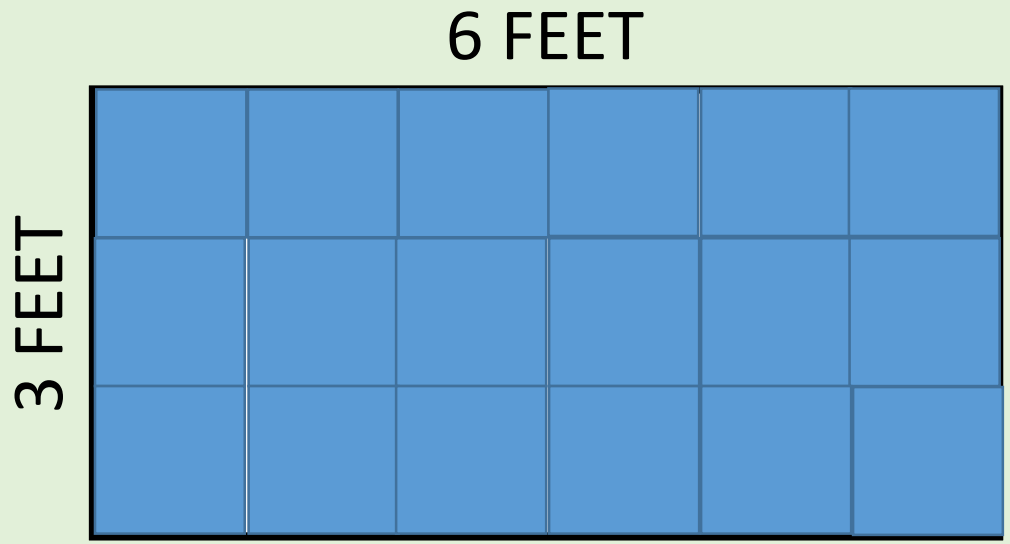
Find the area of a rectangle.

What is the measurement of each tile?



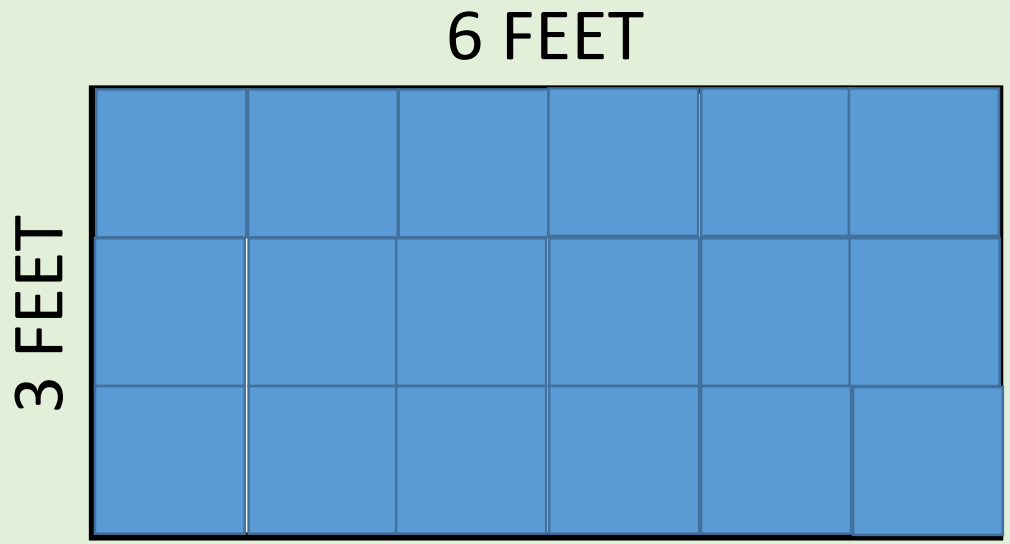
Find the area of a rectangle.

If the rectangle is 6 feet wide and there are six tiles, then each tile must be 1 foot wide.



Find the area of a rectangle.

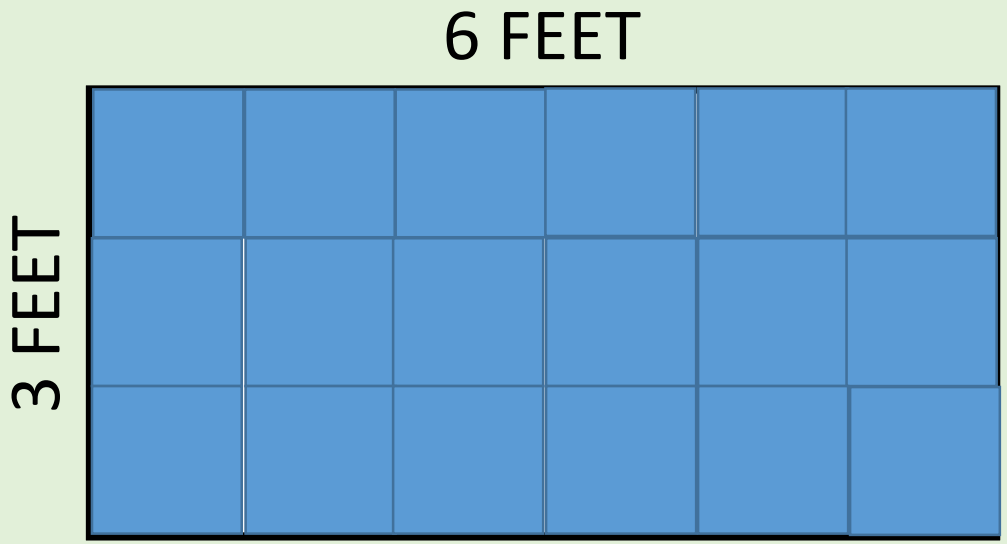
If the rectangle is 3 feet tall and there are 3 tiles, then each tile must be 1 foot tall.



Find the area of a rectangle.

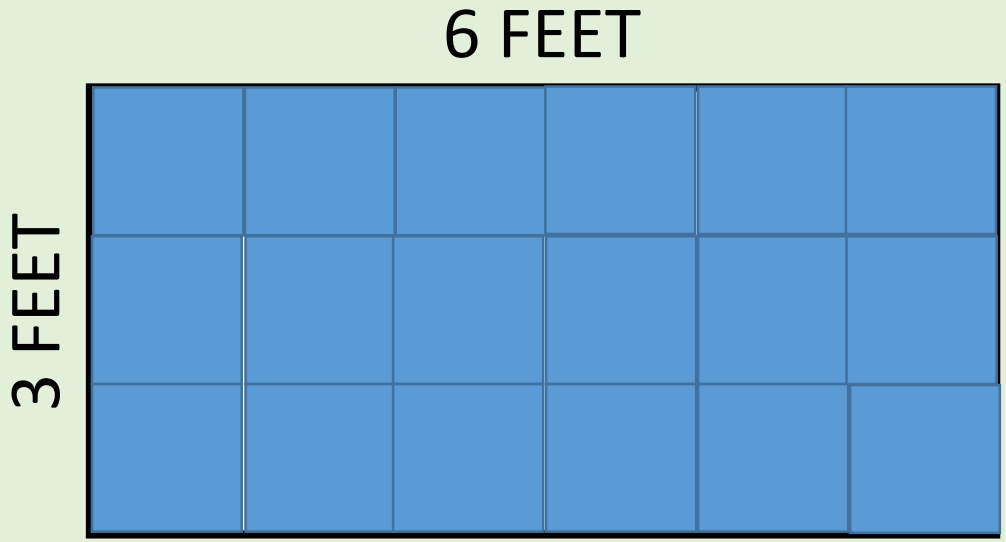
That means that each tile is 1 foot by 1 foot or 1 square foot.

We can think of this as 1×1 or 1^2



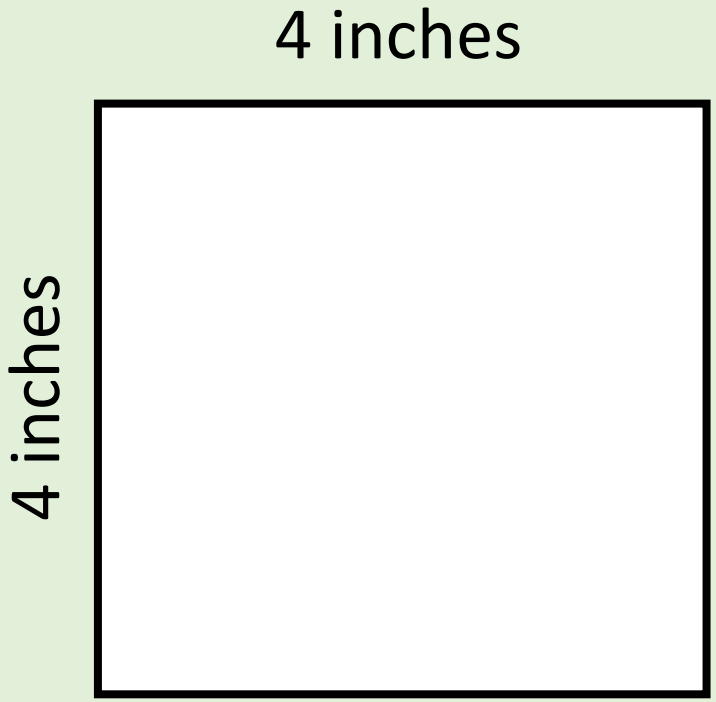
Find the area of a rectangle.

Because we are tiling the entire AREA of the rectangle, we would say that it is 18 square feet or 18^2 feet.



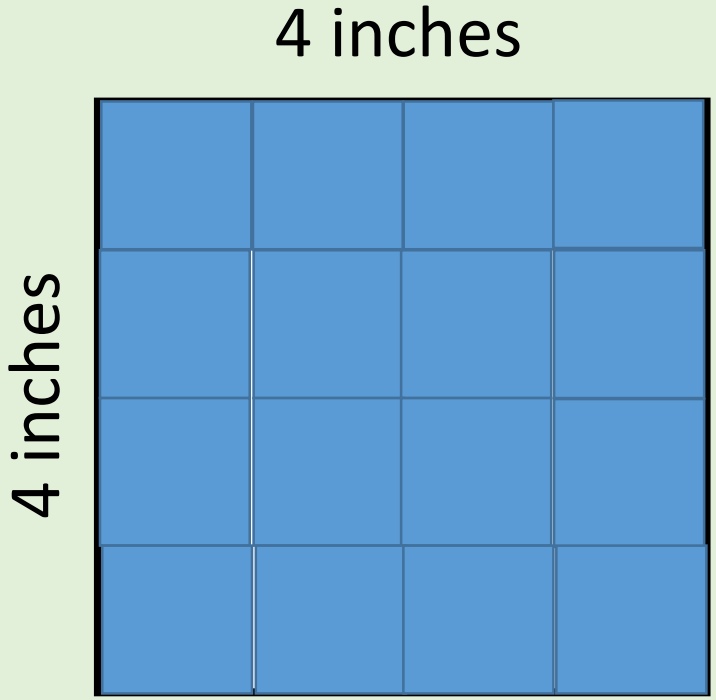
Find the area of a rectangle.

Let’s look at this rectangle. What would the array be?



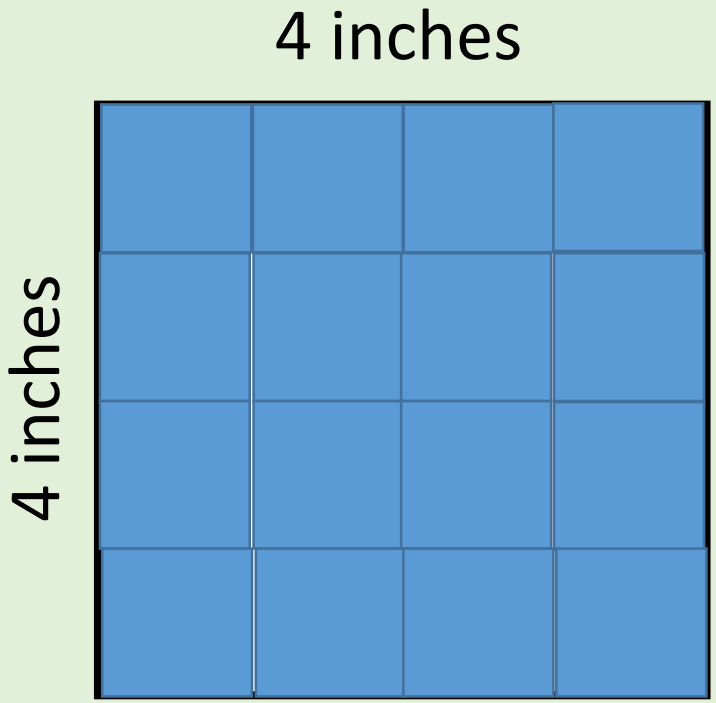
Find the area of a rectangle.

We can think of this as an array of 4 rows of 4 tiles.



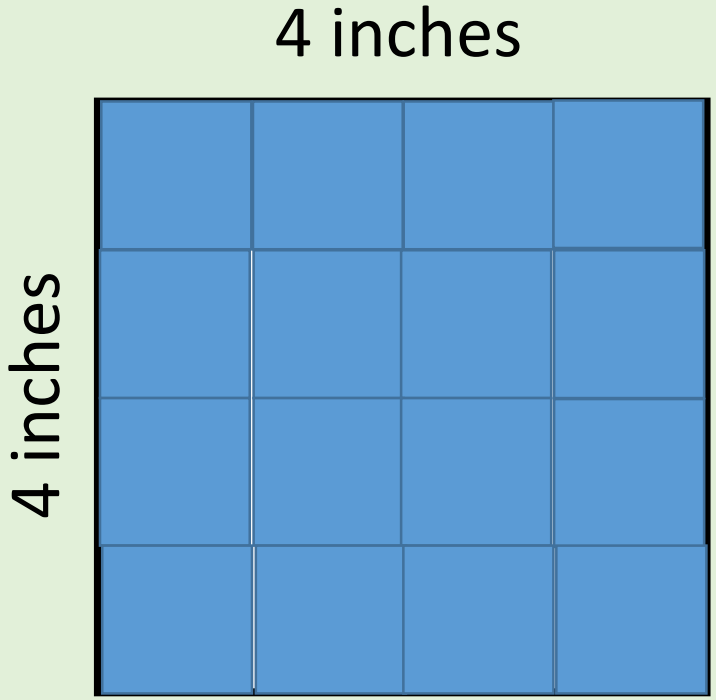
Find the area of a rectangle.

What size will each tile be?



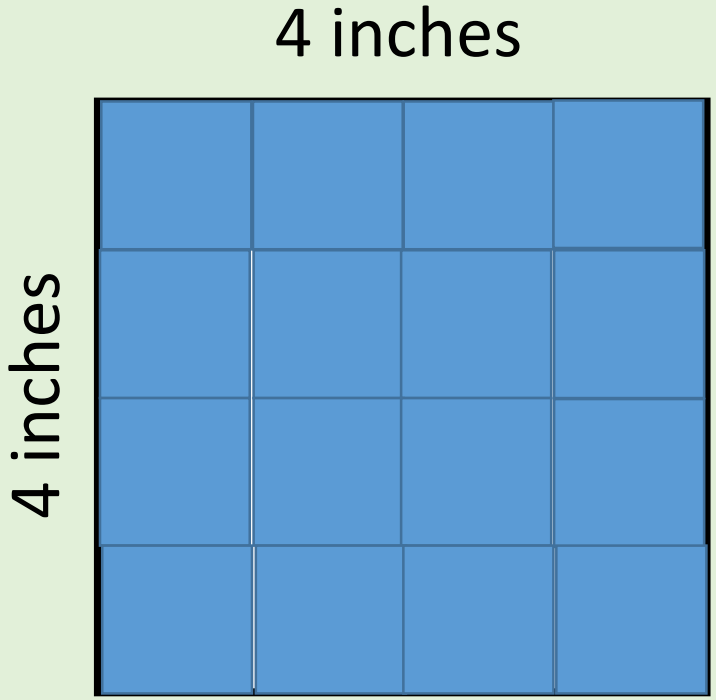
Find the area of a rectangle.

If the total width of the rectangle is 4 inches and that is 4 tiles, then each tile must be 1 inch wide.



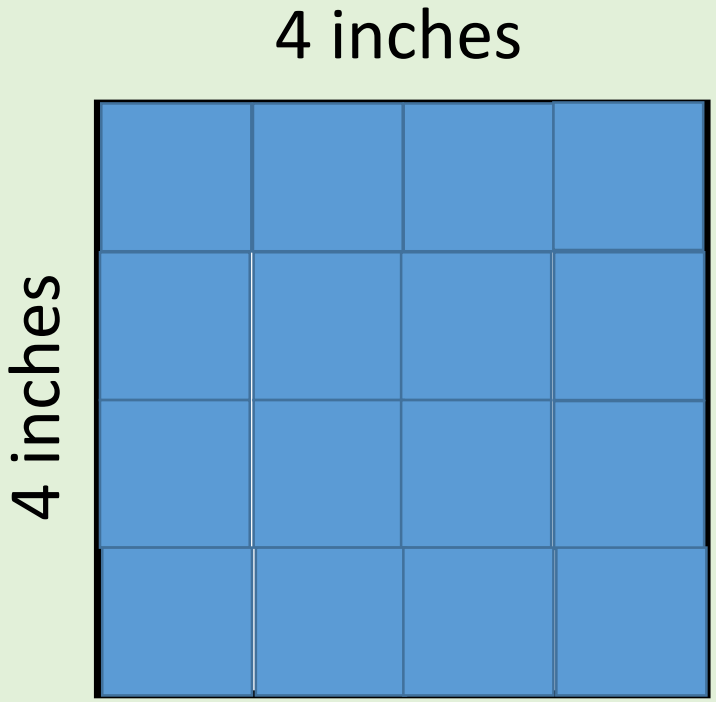
Find the area of a rectangle.

If the total height of the rectangle is 4 inches and that is 4 tiles, then each tile must be 1 inch high.



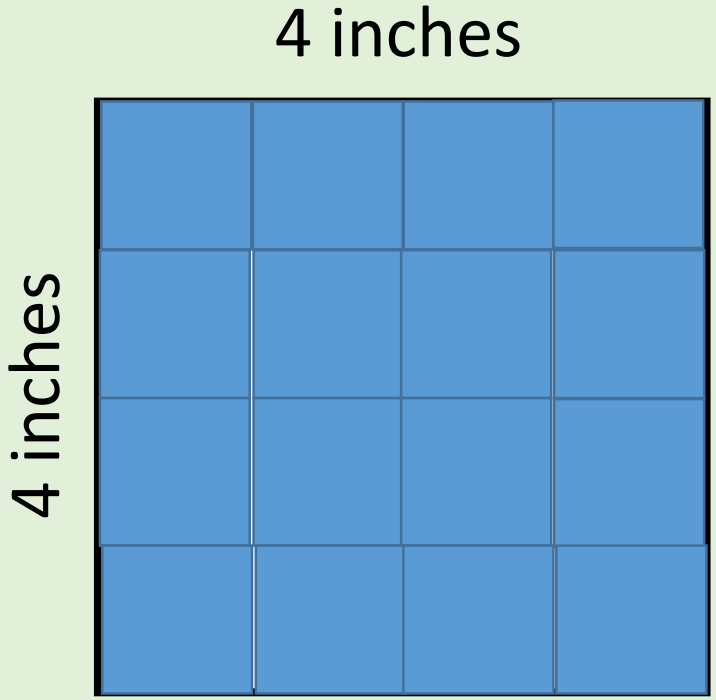
Find the area of a rectangle.

That means each tile is 1 x 1 or 1 square inch.



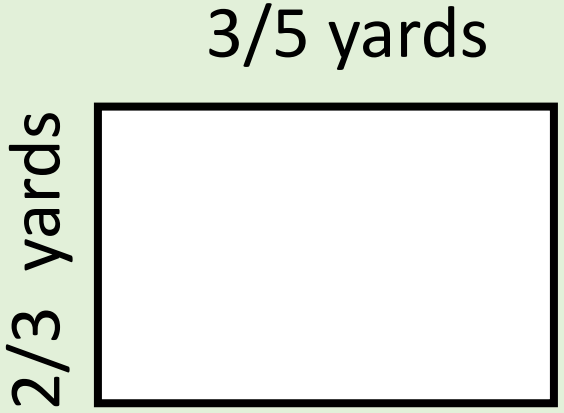
Find the area of a rectangle.

If each tile is 1 square inch, then when we multiply 4 x 4 to find the area, we will have 16 square inches.



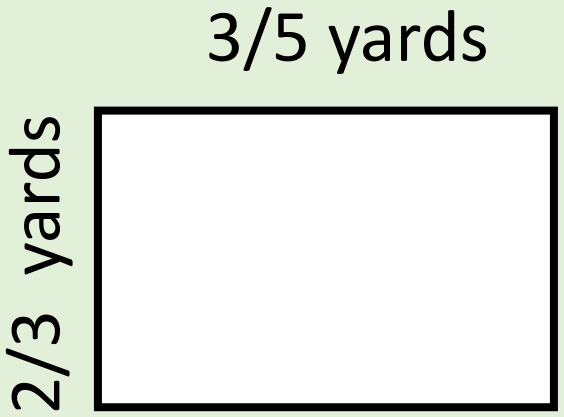
Find the area of a rectangle.

What happens if the side lengths of the rectangle are fractions?



Find the area of a rectangle.

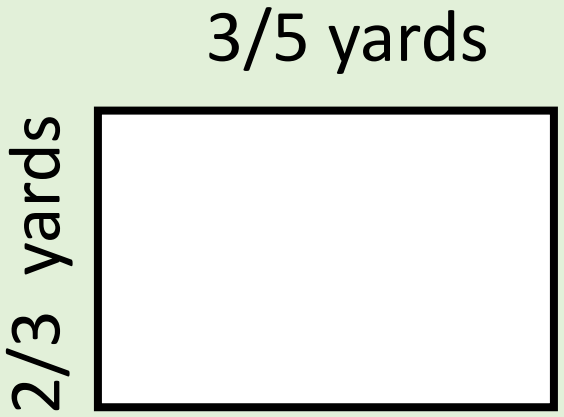
We can just multiply 2/3 x 3/5. What is the area?



Find the area of a rectangle.

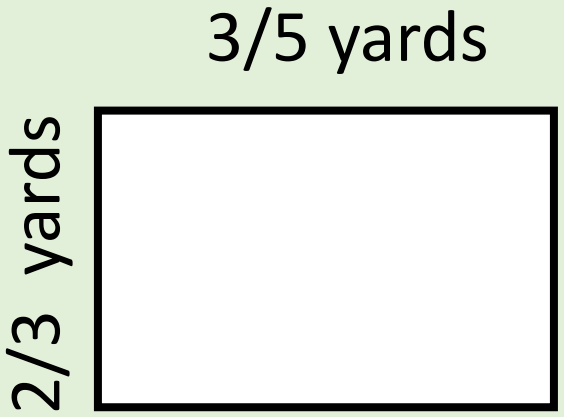
2/3 x 3/5 = 6/15

So, the area of the rectangle is 6/15 square yards.



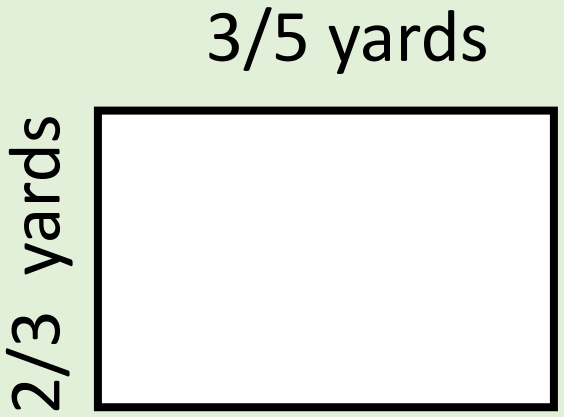
Find the area of a rectangle.

How can we find this area with tiles? What size will the tiles be?



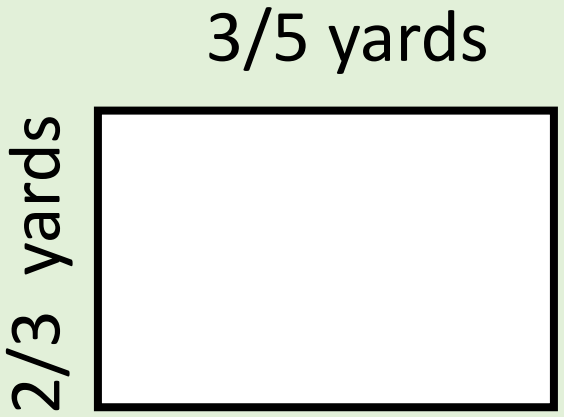
Find the area of a rectangle.

Use the numerator to tell you how many tiles you will use. 3/5 will use 3 tiles that are each 1/5 yard wide.



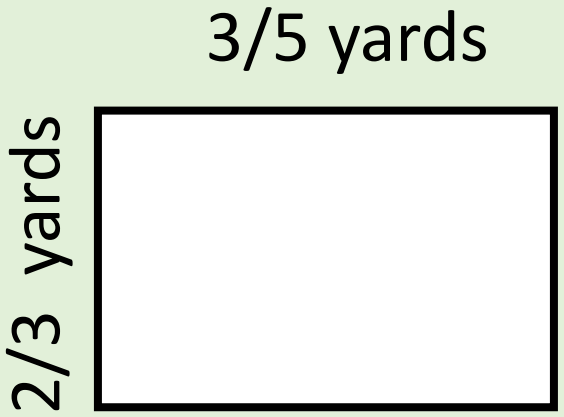
Find the area of a rectangle.

2/3 will use 2 tiles that are each 1/3 yard tall.



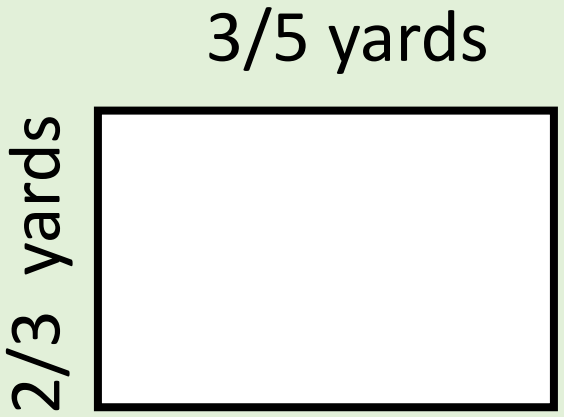
Find the area of a rectangle.

That means each tile will be 1/3 yard tall and 1/5 yard wide.



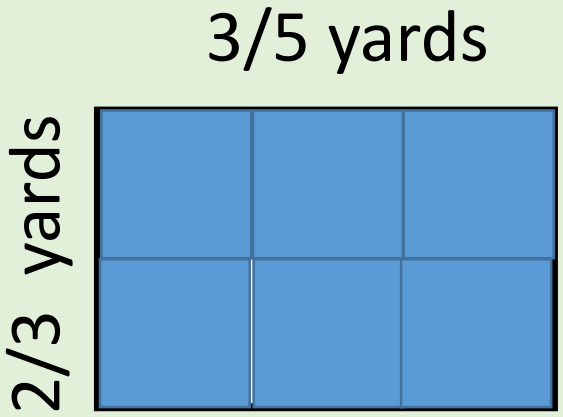
Find the area of a rectangle.

How many tiles will that be all together?



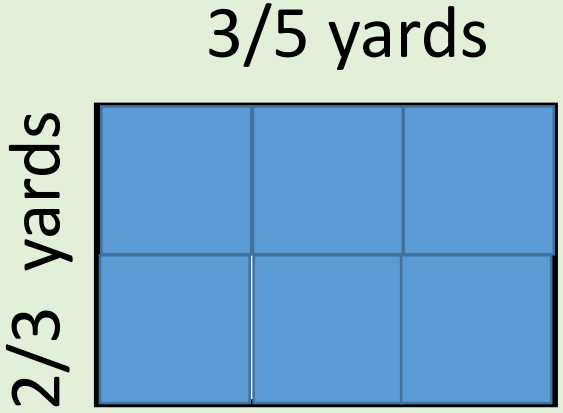
Find the area of a rectangle.

There are 6 tiles that measure 1/3 by 1/5.



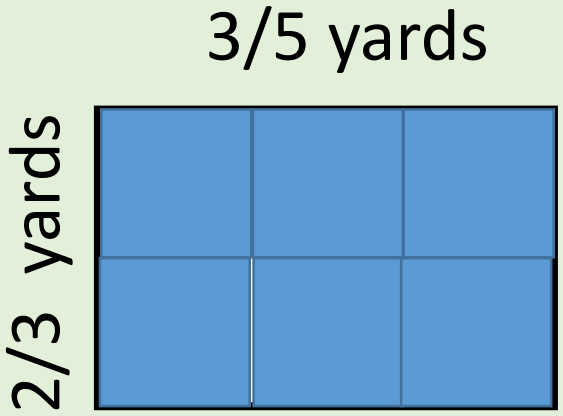
Find the area of a rectangle.

We have to multiply 1/3 x 1/5 to find the area of each tile.



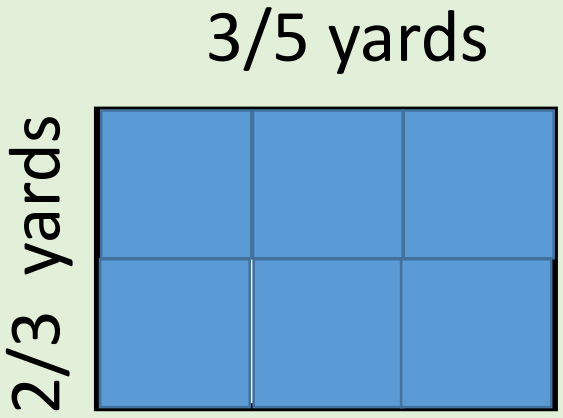
Find the area of a rectangle.

1/3 x 1/5 = 1/15, so each tile has an area of 1/15 square yards.



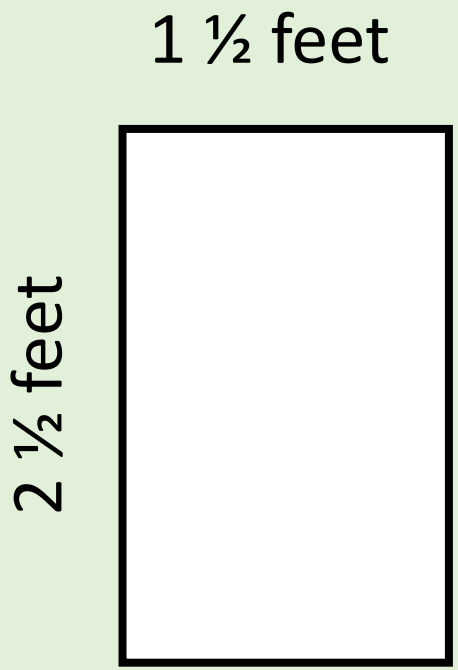
Find the area of a rectangle.

Six tiles times 1/15 square yards is
6 x 1/15 = 6/15 square yards.



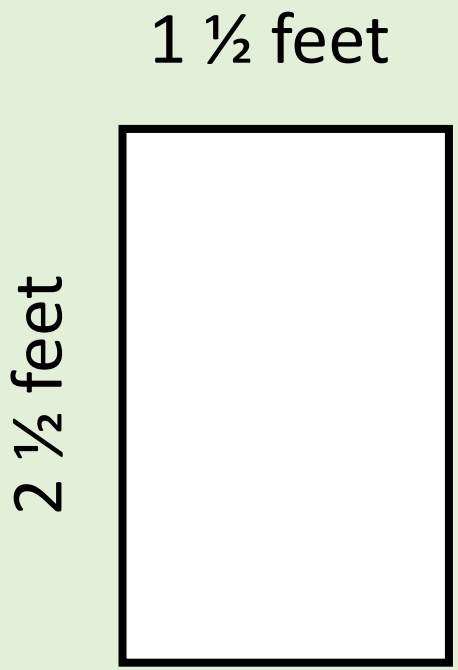
Find the area of a rectangle.

Let’s try another one!



Find the area of a rectangle.

First, convert the mixed numbers to fractions.

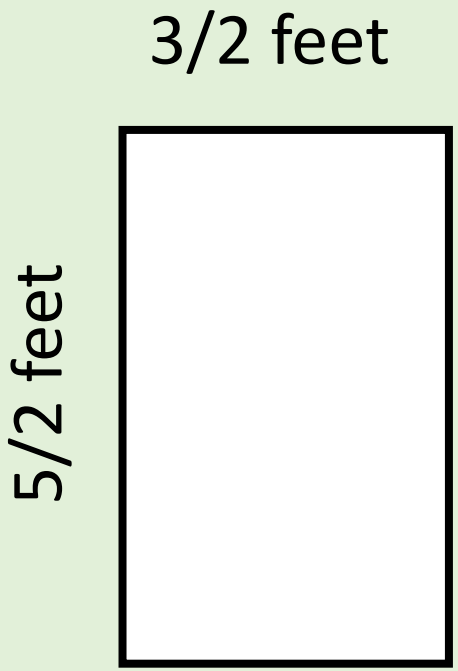


1 ½ = 2/2 + ½ = 3/2

2 ½ = 4/2 + ½ = 5/2

Find the area of a rectangle.

Next, multiply the fractions.

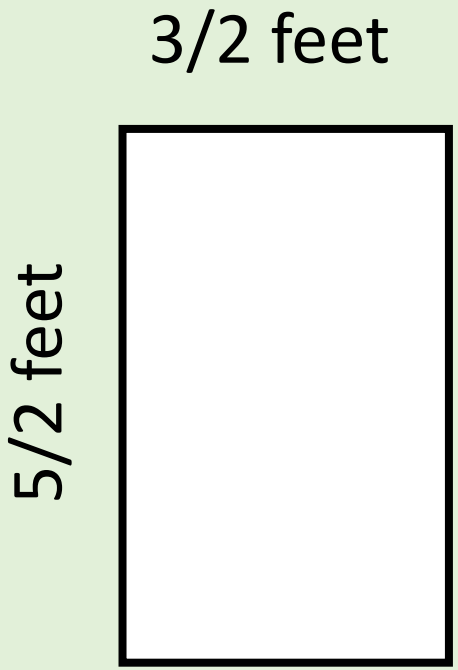


3/2 x 5/2 = 15/4

The area of the rectangle is 15/4 square feet.

Find the area of a rectangle.

How many tiles would it take to cover the area, and how big is each tile?

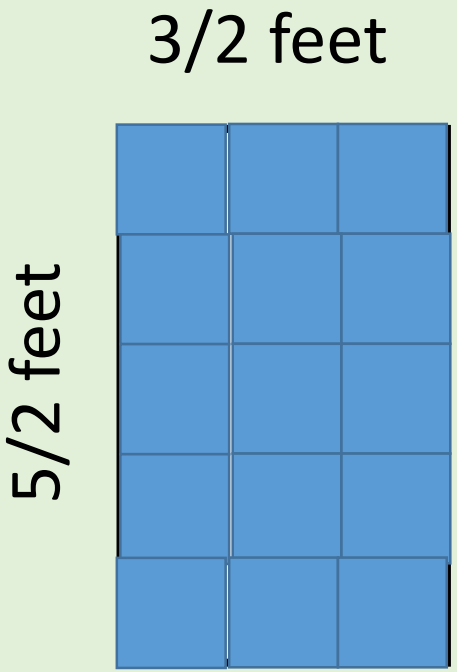


Think…

The numerator indicates how many tiles and the denominator tells the size of each tile.

Find the area of a rectangle.

How many tiles would it take to cover the area, and how big is each tile?

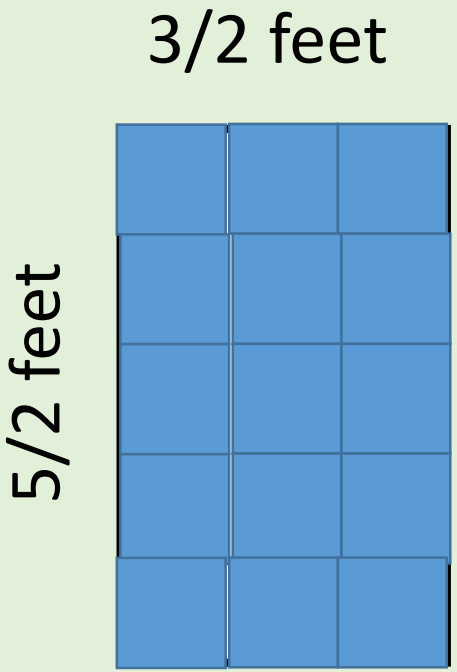


3 tiles across by
5 tiles down

Each tile is ½ foot wide and ½ foot tall

Find the area of a rectangle.

How many tiles would it take to cover the area, and how big is each tile?



3 x 5 = 15 tiles

½ x ½ = ¼ square feet

15 tiles that are each ¼ square foot.

Practice in your math book!

Go Math!

Chapter 7, Lesson 7

Pages 317 - 320