

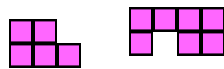
A prime number has only 2 factors: 1 and itself. We refer to it as the “straight skinny” because if you take square tiles, a prime number can only form a rectangle with a width of one square.

For example, it is impossible to create a solid rectangular array more than one square in width with 5 or 7 square tiles. No matter how these tiles are arranged there will be “holes” in the rectangle. These tiles must be arranged in a rectangular array that is one square in width in order to create a shape with no holes in it.

MATERIALS:

-Square tiles

EXAMPLES OF HOLES:



Divide the class into small groups and pass out 24 **square tiles** to each group. Challenge students to create a rectangular array with no holes in it, using only 5 or 7 tiles.

? Why is it impossible to do this?

Explain that any number that is not a prime number is known as a composite number. Composite numbers will form a solid rectangular array more than one square in width with no holes.

Now have students figure out how many rectangular arrays they can form with the 24 tiles without forming any holes.

- ? What is your strategy for coming up with all the patterns?
- ? How do you know if you have all the patterns? *They could use trial and error, they could think about all the factors of 24, etc.*
- ? How many different rectangles can you create with 24 tiles? *4 (1 x 24, 2 x 12, 3 x 8, 4 x 6)*

RECTANGLES WITH 24 TILES

