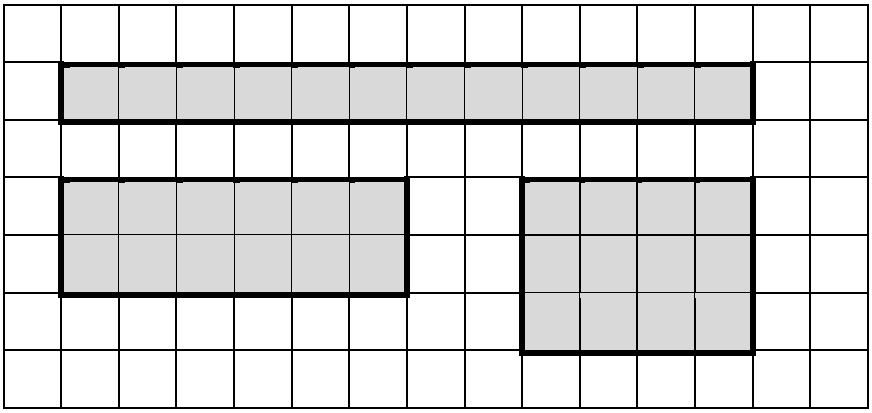
Exploring Rectangles Name _____

Here's a picture of all of the rectangles that enclose 12 squares.



Notice that it doesn't matter which direction the rectangles are facing. A 1 by 12 rectangle has the same dimensions as a 12 by 1 rectangle. If we cut them out, we could easily rotate them.

If I make a list of the different rectangles using 12 squares I would have:

12
1 x 12
2 x 6
3 x 4

I could keep going, but the second half of the list is just a repeat of the rectangles in the first half of the list.

We would say that the factors of 12 are 1, 2, 3, 4, 6, and 12.

One way to think about this is that 1, 2, 3, 4, 6, and 12 are the dimensions of all of the possible rectangles we can make with 12 squares.

12
1 x 12
2 x 6
3 x 4
4 x 3
6 x 2
12 x 1

Sketch all of the rectangles that can enclose 16 squares.

Did you get three rectangles? You should have a 1 x 16, a 2 x 8 and a 4 x 4 rectangle. Remember that squares are just special rectangles where all four sides are the same length.

List the factors of 16. When listing factors, please list them from smallest to largest.

Complete the chart. You can draw rectangles if it is helpful.

Number	Factors	How many factor are there?
1	1	1
2	1, 2	2
3		
4		
5		
6		
7		
8		
9		
10		
11		
12	1, 2, 3, 4, 6, 12	6
13		
14		
15		
16	1, 2, 4, 8, 16	5
17		
18		
19		
20		

Which numbers have exactly 2 factors? List them.

Now list the factors of 72.

Chances are that you don't want to draw all of rectangles first. Plus, not having a systematic method will probably result in missing some factors. Did you get all 12 factors?

It is time to add some more tools to your mathematical tool kit to make a task like this more manageable.