Finding Rectangles

How many different rectangles can be made for each number on the chart? Distribute different numbers to each group of students. For example; one group may have numbers 5, 10, 12, 16, 15. In groups, students are to find all possible rectangles for their assigned numbers. Students should use square tiles and grid paper to find rectangles. Students should trace each rectangle on grid paper. Label dimensions and area of rectangles and cut out each rectangles. Complete the chart.

Number of Tiles	Dimensions of Rectangles	Number of Rectangles
1		
2	1 x 2 and 2 x 1	2
3		
4	1 x 4; 2 x 2; 4 x 1	3
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

Blank rows are available for students who want to investigate other numbers. Any number can become part of the data collection.

Visualizing Rectangles

Using butcher paper, a blank wall or a white board, create a visual using the arrays that were cut by each group of students.

See below:

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Complete the chart below. Use the data collected in column 3.

Exactly 1 Rectangle	Exactly two rectangles	More than two rectangles	An odd Number of rectangles
	2, 3	4, 6,	1, 4

What do you notice about all numbers that have an odd number of rectangles? Do you know a name for these numbers?

What do you notice about the rectangles for numbers that have only two rectangles? (How many factors?) Why is two the only even number?

Information for third grade students.
Numbers that have only two rectangles are prime numbers.
How many factors?

Numbers that have more than two rectangles are composite numbers.
What do you notice about the number of factors?

Numbers that have an odd number of rectangles are square numbers.
What do you notice about the number of factors?