G3-M7-Lesson 21

1. Max uses unit squares to build rectangles that have a perimeter of 12 units. He creates the chart below to record his findings.

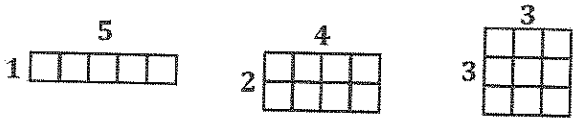
   a. Complete Max's chart. You might not use all the spaces in the chart.

Perimeter = 12 units

Number of rectangles I made: 3

Width	Length	Area
1 unit	5 units	5 square units
2 *units*	4 *units*	8 *square units*
3 *units*	3 *units*	9 *square units*

For a perimeter of 12 units, the total of all four side lengths has to be 12 units. I can think about the addition double for 12, which is $6 + 6$. That tells me that 6 units should be the sum of the length plus the width. I can find the same information by thinking about $12 \div 2$.



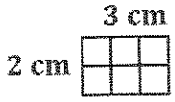
To draw my rectangles, I think about pairs of numbers that equal 6 when I add them. The pairs I use to draw my rectangles are 1 and 5, 2 and 4, and 3 and 3. Then, to find the area of each rectangle, I multiply the side lengths. $1 \times 5 = 5$, $2 \times 4 = 8$, and $3 \times 3 = 9$. Now I can complete the chart.

   b. Explain how you found the widths and lengths in the chart above.

   I know that half of 12 is 6 because $6 + 6 = 12$. I thought about different ways to break apart 6. One way to break 6 apart is into 5 and 1. So, one rectangle can have side lengths of 5 units and 1 unit. Another way is 4 and 2. The last way to break apart 6 is 3 and 3. Those numbers became my side lengths.

2. Grayson and Scarlett both draw rectangles with perimeters of 10 centimeters, but their rectangles have different areas. Explain with words, pictures, and numbers how this is possible.

Grayson's Rectangle



Scarlett's Rectangle

First I can think of 2 different ways to make a rectangle with a perimeter of 10 centimeters. Then, I can multiply their side lengths to find the area of each.

Grayson's and Scarlett's rectangles each have a perimeter of 10 centimeters. But the side lengths of their rectangles are different. That's what makes the product of the side lengths different, even though the sum is the same. The area of Grayson's rectangle is 6 square centimeters because $2 \times 3 = 6$. The area of Scarlett's rectangle is 4 square centimeters because $1 \times 4 = 4$.