

Stamps - Numbers and combinations

Name: _____

Postage Stamp Problem (2-stamps version)
 (Modified from *Fostering Algebraic Thinking* by Mark Driscoll.)

A certain post office is preparing for the event that they run out of all but 3¢ and 5¢ stamps. They would like to make a table showing the postage amounts for different combinations of stamps. They have started the table below. Finish filling in the table.

		Number of 3¢ Stamps							
		0	1	2	3	4	5	6	7
Number of 5¢ Stamps	0	0	3	6					
	1	5	8	11					
	2	10	13	16					
	3								
	4								
	5								
	6								
	7								

1. Explain what the numbers inside the shaded box tells a customer.

2. Look at the table carefully. Moving left to right in any row, the numbers go up by 3's. Moving down any column, the numbers go up by 5's. Moving diagonally, the numbers go up by 8's. Why do the numbers follow these patterns?

Left to right:

Down:

Diagonally:

3. Look at the boxes with thick outlines. How do they compare to one another? Why do you think the numbers turn out like that?

4. Find another pattern in the table. Tell why the numbers make this pattern.

5. The largest number in the table is 56. Is it possible to buy 3¢ and 5¢ stamps worth 60¢? How many of each would you buy? Answer the same questions for 61¢.

6. Are there any postage amounts that are impossible to get with 3¢ and 5¢ stamps? If so, what are they and why are they impossible?

7. If the post office ends up with only 3¢ and 6¢ stamps, figure out which postage amounts (if any) would be impossible to get. Why are they impossible?

8. Try to extend your thinking to n ¢ and m ¢ stamps.

(Hint: One of the ways is to look at the possibility of having 'negative' amount of stamps).

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