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Conjecture: When a and b are integers greater than or equal to 0 in the expression 3a+5b then you can get all positive integer values with the exception of 1, 2, 4, and 7. Perfect.

Proof:

3a+5b

3(0)+5(0)= 0	3(3)+5(0)= 9	3(3)+5(1)= 14	3(3)+5(2)= 19
3(1)+5(0)= 3	3(0)+5(2)= 10	3(5)+5(0)= 15	
3(0)+5(1)= 5	3(2)+5(1)= 11	3(2)+5(2)= 16	
3(2)+5(0)= 6	3(4)+5(0)= 12	3(4)+5(1)= 17	
3(1)+5(1)= 8	3(1)+5(2)= 13	3(6)+5(0)= 18	

Our conjecture for the expression 3a+5b is true because you can get to the numbers 0, 3, 5, 6, 8, 9 and an infinite number of values above 9. It is shown that you can get to 0, 3, 5, 6, 8, and 9 in our table above, but there is no way to achieve getting the values 1, 2, 4 and 7. If you look at our chart above we put the lowest possible values in for a and b and you can see that none of them come out with the answer 1, 2, 4, or 7. Good.

After you get to the value 9, you can get from 10-19 and use these numbers to get to every single other positive number. Once you get from 10-19, as you can see we did in our chart above, you will be able to continuously add 10 (which is 5x2) to get to the next set of 10 numbers after 19. For example, if you take the number 14 which is 3(3)+5(1), then you can get to 24 by raising the b value by 2 (which is the same thing as adding 10), then 34 by raising the b value by 2 again. You can continuously raise the value of b by 2, which is repeatedly going up 10, to get to the next set of 10 numbers with the same 1s place value. You can do this for any number by looking at its 1's digit and adding the appropriate number of 10s.

Outstanding!