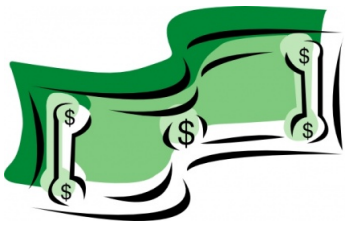
UW Math Circle

May 7, 2015

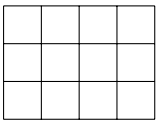
1. How many ways can you give out 5 $100 bills to 3 people? How many ways can you give them out so that each person gets at least one? What about 12 $100 bills to 5 people?



2. The digits 1 through 9 are divided into 3 groups of 3. Prove that the product of the numbers in one of the groups must be greater than 71.

3. There are 10 points drawn on a piece of paper such that no three points are in a straight line. How many triangles can you draw with these points as the vertices?

4. In a certain city, the roads are laid out in a grid, a portion of which is drawn below. If you want to take the shortest path (along the roads) from the upper left corner to the lower right corner, how many possible paths could you take?



What if you had a larger grid, like the one below?