

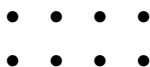
Problems

1. Three *A*s, three *B*s, and three *C*s are placed in the nine spaces so that each row and column contain one of each letter. If *A* is placed in the upper left corner, how many arrangements

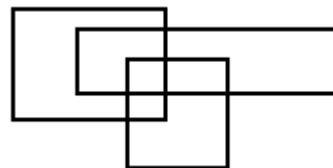
are possible? (*AMC-8 2008.14*)

A		

2. How many non-congruent triangles have vertices at three of the eight points in the array shown below? (*AMC-8 2009.20*)



3. How many whole numbers between 1 and 1000 do not contain the digit 1? (*AMC-8 2009.22*)
4. Everyday at school, Jo climbs a flight of 6 stairs. Jo can take the stairs 1, 2, or 3 at a time. For example, Jo could climb 3, then 1, then 2. In how many ways can Jo climb the stairs? (*AMC-8 2010.25*)
5. In a town of 351 adults, every adult owns a car, motorcycle, or both. If 331 adults own cars and 45 adults own motorcycles, how many of the car owners do not own a motorcycle? (*AMC-8 2011.6*)
6. Angie, Bridget, Carlos, and Diego are seated at random around a square table, one person to a side. What is the probability that Angie and Carlos are seated opposite each other? (*AMC-8 2011.12*)
7. A fair 6-sided die is rolled twice. What is the probability that the first number that comes up is greater than or equal to the second number? (*AMC-8 2011.18*)



8. How many rectangles are in this figure? (*AMC-8 2011.19*)
9. How many 4-digit positive integers have four different digits, where the leading digit is not 0, the integer is a multiple of 5, and 5 is the largest digit? (*AMC-8 2011.23*)
10. Ten chairs are evenly spaced around a round table. Five married couples are to sit in the chairs with men and women alternating, and no one is to sit either next to or across from his/her spouse. How many seating arrangements are possible? (*AMC-10B 2008.21*)
11. How many even integers are there between 200 and 700 whose digits are all different and come from the set $\{1, 2, 5, 7, 8, 9\}$? (*AMC-10A 2011.13*)
12. Each vertex of convex pentagon $ABCDE$ is to be assigned a color. There are 6 colors to choose from, and the ends of each diagonal must have different colors. How many different colorings are possible? (*AMC-10A 2011.22*)