1) Suppose you can put whatever positive values that add up to 20 on the sides of a fair six sided die. I have another fair six sided die with the values 1, 1, 1, 3, 6, and 8 on its sides. Can you choose your values so that when we compare our results yours is higher more often? (you are more likely to have a higher value)

2) In how many ways can cover a strip one inch wide by seven inches long with blocks that are either one inch by one inch or one inch by two inches? The three covers that are shown below are considered different.
3) A circle of radius one is placed so that it is tangent to two lines that are perpendicular to each other. What is the radius of the largest circle that fits between the circle of radius one and the two perpendicular lines?

4) If you are only allowed to follow the lines on this grid, in how many ways can you cut this square up into two identical pieces?

5) Find three points so that the region bounded by the parabola of the form $y=ax^2+bx+c$ and at least one of the lines determined by the three points has more area than the circle they determine? Indicate your points on a Cartesian coordinate system.