Math Problems

Is it possible to number the faces of a pair of cubes in a way from that of standard dice so that the cubes can be used in any dice game and all the odds will be exactly the same as they are when standard dice are used?

Choose two random numbers from [0, 1] and let them be the endpoints of a random interval. Repeat this n times. What is the probability that there is an interval which intersects all the others?

Shakashaka

Color triangles in some squares so that the remaining white space are rectangles (possibly rotated). The triangles must be one of the following ◣�**◢**◤◥. The numbers in the black squares triangles are adjacent to it. A triangle is adjacent to a square if it shares an edge (and not just a corner) with the square.