Homework 6

Due Wednesday, July 15th at the beginning of class

1. Suppose players $A$ and $B$ alternate rolling pairs of fair 6-sided dice. The game is won when one player rolls dice that sum to 7. If $A$ rolls first, what is the probability that $A$ eventually wins?

2. A fair 6-sided die is rolled 10 times. Let the $X$ denote the sum of the rolls, and $Y$ denote the product.

   (a) Give a sample space and probability measure modeling the rolls.
   (b) Show how $X, Y$ are defined as random variables (directly use the definition of a random variable).
   (c) ($\star$) What is $P(X = 10)$?
   (d) ($\star$) What is $P(X \leq 12)$?
   (e) What is $P(Y$ is even)?