## I. Random variables

1. Suppose that we roll two die and let $X$ be equal to the maximum of the two rolls. Find $P(X \in 1, 3, 5)$ and graph the PMF for $X$.

2. When rolling two die, let $Y$ be equal to the first die roll. Are $X, Y$ independent random variables?

3. I flip a fair coin $n$ times. Let $X$ be the number of heads I get. What is the PMF of $X$? What if the probability of heads is $p$?

4. I roll two fair four sided die with sides numbered $1 - 4$. Let $X$ be the product of the two numbers rolled. Find the range of $X$ and graph the PMF for $X$.

5. Diana is at the gym shooting half court shots on the basketball court. The probability that she makes each shot is .1 Assuming she shoots until she misses, what is the probability she takes more than 10 shots?

6. A coin is biased so that the probability of heads is $2/3$. What is the probability that exactly four heads come up when the coin is flipped seven times, assuming that the flips are independent?