

4. DON'T NEED TO DO THIS ONE. A ball is selected at random. Let $X = 1$ if it is blue and $X = 0$ otherwise. Suppose there are 10 of each color.
- (a) How is X distributed?
- (b) What is the p.m.f. of X ?
5. Bowl A contains three red and two white chips, and bowl B contains four red and three white chips. A chip is drawn at random from Bowl A and transferred to bowl B. Compute the probability of then drawing a red chip from bowl B.
6. A hospital obtains 40% of its flu vaccine from Company A, 50% from Company B, and 10% from Company C. From past experience, it is known that 3% of the vials from A are ineffective, 2% from B are ineffective, and 5% from C are ineffective. The hospital tests five vials from each shipment. If at least one of the five is ineffective, find the conditional probability of that shipment's having come from C.

7. If $P(A) = 0.8$, $P(B) = 0.5$ and $P(A \cup B) = 0.9$ are A and B independent? mutually exclusive? why?

8. Let X equal the larger outcome when a pair of four-sided dice is rolled. The p.m.f. of X is

$$f(x) = \frac{2x - 1}{16}, \quad x = 1, 2, 3, 4.$$

Find the mean, variance and standard deviation of X .