Module 3B Questions:

These are the questions that correspond to each of the distributions that we cover during the video (except the Normal distribution because we will use that for Z-scores)

A. What is the probability of having 110 novel mutations (mutations that neither of your parents have) if the mean mutation rate of the human genome is 115?
B. A research colony has **50 mice**, of which **12** carry a **CRISPR knockout of Gene X** and the remaining **38** are wild type. You randomly select **8 mice** for a behavioral assay **without replacement**. **What is the probability that exactly 3 of the selected mice carry the Gene X knockout?**
C. A chromosome is 2 Morgans in length (recall that one Morgan corresponds to the genomic distance of a mean of one crossover event). Is a mean observed position of the crossover is at 1 Morgan with a variance of 1/2 consistent with a uniform distribution of crossover events along the 2 Morgan chromosome?
D. A bee is foraging and stops at flowers at a constant rate, $\alpha = 0.05$ per meter. What is the mean distance travelled between flowers?