MTH 245, Quiz #5, Spring 2022 Name _____

Instructions: Show all work (that work can be in the form of a spreadsheet submitted along with the quiz or done by hand on paper; if you use your calculator, say what functions you used). Report answers to the standard number of decimal places, or to the number requested in the problem. Be sure to answer all parts of the questions, including requests for interpretation and explanations. Be as thorough as possible.

1. Use the table below to answer the following questions:

EYE COLOR	Black	Brown	Blue	Green	Gray	Total
Female	20	30	10	15	10	85
Male	25	15	12	20	10	82
Total	45	45	22	35	20	167

   a. What is the probability of having green eyes in this sample?

   b. What is the probability of having grey eyes **and** being male?

   c. What is the probability of having grey eyes **or** being male?

   d. What is the probability of having black eyes given that the person is female?

   e. According to the data in the table, is having brown eyes independent of gender? Show calculations to explain your reasoning.

2. Complete the table below for a binomial distribution with $n = 8$, and $p = 0.8$. Round your answers to 3 decimal places.

x	0	1	2	3	4	5	6	7	8
$p(x)$									

3. A fair twelve-sided die is rolled.
   a. What is the probability that a 3, 5, 8, 10 or 12 will come up?

   b. Call the set of results in (a) "success". What is the probability of getting exactly 6 successes if the die is rolled 11 times?

   c. What is the probability of getting 6 or more successes if the die is rolled 11 times?

   d. What is the mean number of successes one show expect in 11 rolls?