Name: _____

Group _____

1) The ideal size of a first-year class at a particular college is 150 students. The college, knowing from past experience that on the average only 30 percent of these accepted for admission will actually attend, uses a policy of approving the applications of 450 students.

a) What is this distribution? What are the parameters?

b) Can you approximation this distribution with a normal distribution. Why or why not?

c) What is the probability that more than 150 students attend this college? Do this problem with and without the continuity correction.

d) What is the probability that fewer than 130 students attend this college? Do this problem with and without the continuity correction.

e) Is the number of students that the college admits appropriate? Why or why not?

2) Rafael is pursuing a major in computer science. He notices that a memory chip containing 12¹² = 4096 bits is full of data that seems to have been generated, bit-by-bit, at random, with 0's and 1's equally likely, and the bits are stored independently. If each bit is equally likely to be a 0 or 1, estimate the probability that there are actually 2140 or more 1's stored in the memory chip?

- 3) In a math class with 200 students, suppose that the students' decision to attend the class are independent, and each student attends with probability 93%. On a given day, find the approximate probability that 179 or less students attend.
- 4) Consider a group of students who are assigned to work a random number of hours. The hours per student, per week, are modeled by a Binomial random variable with n = 20 and p = 0.8 (Each hour assigned to work will count as a "success" in the Binomial model.) If there are 100 students in the fraternity, and the numbers of hours spent working are independent, find an estimate for the probability that all of the students work between 1580 and 1620 (exclusive) during a given week.