Name:

Elementary Statistics **HW 6.7 part 1**

1. The SAT uses multiple-choice test questions, each with possible answers of a, b, c, d, and e. Each question only has one correct answer.

    a. For people who make random guesses for answers to a block of 25 questions, identify what each of the following variables represent and find their values:

    p =

    q =

    μ =

    σ =

    b. We want to find the probability of getting exactly 10 correct answers for someone who makes random guesses for answers to a block of 25 questions. If we plan to use the methods of this section with a normal distribution used to approximate a binomial distribution, are the necessary requirements satisfied?

For questions 2-3, determine if the requirements of $np \geq 5$ and $nq \geq 5$ are both satisfied. If so, estimate the indicated probability by using the normal distribution as an approximation to the binomial distribution. If the requirements are not satisfied (so either np < 5 and/or nq < 5), then state that the normal approximation should not be used.

2. With n = 12 and p = 0.7, find P(fewer than 8)

3. With n = 25 and p = 0.4, find P(more than 9)

For questions 4-5, use a normal approximation to find the probability of the indicated number of voters. In each case, assume that 100 eligible voters aged 18-24 are randomly selected. The most recent Census Bureau results show that among eligible voters aged 18-24, 22% of them voted.

4. Find the probability that fewer than 20 voted.

5. Find the probability that at least 25 voted.