Homework Week 2

Please show ALL your work when submitting your homework and show your work completely. Round to two or four decimal places for your final answer. **Turn in your homework at the beginning of class. Late assignments will be accepted.**

1. As a marketing manager you analyze the sales record for all people under your guidance. When a new campaign for your product is introduced, Joan averages 10 calls per day and is successful selling the product 75% of the time. Margo averages 16 calls per day and is successful selling the product 45% of the time.

1. (2 pts) What is the probability that each person makes exactly 6 sales on any given day?
2. (2 pts) What is the probability that each person makes more than 6 sales on any given day?
3. (3 pts) What did you discover about your employee's productivity using the new campaign?

2. Suppose the average price of electricity for a New England customer follows the continuous uniform distribution with a lower bound of 12 cents per kilowatt-hour and an upper bound of 20 cents per kilowatt-hour.

1. (2 pts) Calculate the average price of electricity for a New England customer.
2. (2 pts) What is the probability that a New England customer pays less than 15.5 cents per kilowatt-hour?
3. (3 pts) A local carnival is not able to operate its rides if the average price of electricity is more than 14 cents per kilowatt-hour. As the carnival owner, should we be worried that we will not be able to operate our business? Why or why not?

3. (4 pts) A vaccine has been found to be 95 percent effective. What is the probability that it is not effective for 1 and only 1 individual out of 20 individuals?

4. Cars arrive at coffee shop drive-thru at the rate of two per minute during morning hours (8 am – 11 am).

1. (4 pts) What is the probability that more than two cars will arrive at the coffee shop during a one- minute interval in the morning?
2. (4 pts) You have decided to stock the store with 400 coffee cups for the 3-hour morning shift. Assuming most people only buy one cup, would this be enough to meet the demand? Please explain why or why not.

5. (3 pts) It is known that mean yearly healthcare costs for a family of four are normally distributed with a mean of $3,300 and a standard deviation of $500. The insurance company has offered to offer reductions in healthcare premiums if the health expenses for a family do not exceed a certain amount per year. What should the highest expense amount that is eligible for the premium reduction be set to if company wants to offer the reduction to those families that have the lowest 25 percent of yearly expenses?