Part 8.7: Mixed Questions

1. The number of dishes dropped by a waiter during his 100 hours training is 4.
    a. Choose a distribution to model this situation and justify your choice.
    b. Calculate the probability:
        i. During the next hour he drops exactly one dish.
        ii. During the next three hours he drops no dishes.
        iii. In his next 100 hours of working he will drop no dishes. State whether the assumptions you made doing this calculation are valid.
    c. In what period of time will the probability of him dropping one dish be exactly 0.1?
2. The number of gumdrops in a 2 L tub of ice cream is on average 40.
    a. Choose a distribution to model this situation and justify your choice.
    b. Calculate the probability:
        i. That in a 300 mL bowl there are less than 3 gumdrops.
        ii. That in five 2 L tubs there are more than 220 gumdrops.
        iii. That a 2 L tub of ice cream has between 30 and 50 gumdrops (inclusive) in it.
    c. If the probability of getting one or more gum drops in a scoop is 0.135 what is the volume of a scoop?
3. A pizza company has just purchased a new machine which puts the toppings on its pizza. It is programmed to put on average 20 pieces of pepperoni on each pizza.
    a. Choose a distribution to model this situation and justify your choice.
    b. Calculate the probability:
        i. There are less than 20 slices of peperoni on a pizza.
        ii. 25 or more slices on a pizza.
        iii. Between 18 and 20 slices (inclusive) on a pizza.
    c. In a batch of 30 pizzas how many would you expect to be on the pizza with the most pieces?
4. The average number of customers that complain about the service in a store is 5 per day.
    a. Choose a distribution to model this situation and justify your choice.
    b. What is the probability that less than 20 customers complain in a week (7 days)?
    c. The manager wants to make it so that on 10% of days there are no customer complaints. How many complaints would there be on average per day if this is the case?