**AP Statistics – Chapter 6.3 Binomial/Geometric Distributions Practice**

The American Red Cross says that about 11% of the U.S. population has Type B blood. A blood drive is being held at your school.

1. How many blood donors should the American Red Cross expect to collect from until it gets a donor with Type B blood?
2. What is the probability that the tenth blood donor is the first donor with Type B blood?
3. What is the probability that exactly 2 of the first 20 blood donors have Type B blood?
4. What is the probability that at least 2 of the first 10 blood donors have Type B blood?
5. The blood drive has a total of 150 donors. Assuming this is a typical number of donors for a school blood drive, what would be the mean and standard deviation of the number of donors who have Type B blood?

The owner of a pet store is trying to decide whether to discontinue selling specialty clothes for pets. She suspects that only 4% of the customers buying specialty clothes for their pets and thinks that she might be able to replace the clothes with more interesting and profitable items on the shelves. Before making a final decision she decided to keep track of the total number of customers for a day, and whether they purchase specialty clothes for their pet.

1. Assuming the pet store owner is correct in thinking that only 4% of her customers purchase specialty clothes for their pets, how many customers should she expect before someone buys a garment for their pet?
2. What is the probability that she does not sell a garment until the 7th customer?
3. What is the probability that exactly 3 of the first 10 customers buy specialty clothes for their pet?
4. What is the probability that at least 3 of the first 40 customers buy specialty clothes for their pet?
5. The owner had 275 customers that day. Assuming this was a typical day for her store, what would be the mean and standard deviation of the number of customers who buy specialty clothes for their pet each day?

The owner of a small convenience store is trying to decide whether to discontinue selling magazines. He suspects that only 5% of the customers buy a magazine and thinks that he might be able to use the display space to sell something more profitable. Before making a final decision he decided that for one day he’ll keep track of the number of customrs and whether or not they buy a magazine.

1. Assuming the owner is correct in thinking that only 5% of the customers purchase magazines, how many customers should he expect before someone buys a magazine?
2. What is the probability that he does not sell a magazine until the 8th customer?
3. What is the probability that exactly 2 of the first 10 customers buy magazines?
4. What is the probability that at least 5 of his the first 50 customers buy magazines?
5. The owner had 280 customers that day. Assuming this was a typical day for his store, what would be the mean and standard deviation of the number of customers who buy magazines each day?