Name: _____ Group _____

6.1. Four events A, B, C, D could be compared in the following way $A \subset B \subset C \subset D$. The probability of A is 0.03, and the probability of C is 0.27. With the given information, what are the potential probabilities of B and D?

6.2. A customer waits for a bus to appear.

a) List 5 possible outcomes.

b) What is the sample space?

c) Write a partition for the customer's waiting time, using five-minute intervals for the partition. (Assume that the customer can wait as long as needed for the bus.)

d) Explain how the answer to part c) meets the definition of a partition. (Definition 2.14)

6.3. Randomly open a 300 page book and mark a page. What is the probability that the number of the page contains the lucky number 5?

6.4. A student loses her first cell phone. Her new phone number is randomly chosen by the store, but the area code is fixed, so there are exactly 7 randomly selected digits. (Assume all 10^7 possibilities are equally likely.) Give the probabilities of the following events.

a) Her phone number ends in a 2.

b) Her phone number ends in an odd number.

c) Her phone number ends in a 5 or a 7.

6.5. There are 45 egg boxes in a store. Twenty are Brand A. fifteen are Brand B, and ten are Brand C. Brand A and C each have half green boxes and half yellow boxes. Brand B is all yellow.

a) If you have Brand B or C, what is the chance that you have a green box?

b) If you have a yellow box, what is the chance the brand is B?

6.6. Chris has 32 Skittles candies. Nine are red, three are blue, seven are yellow, five are orange, and eight are purple. Exactly four are sour, and all of these sour Skittles are purple. Chris picks one Skittle at random.

a) What is the probability he selected a red or blue one?

b) What is the probability he selected a sour one?

c) Given that he selected one that is not sour, what is the probability it was purple?

6.7. Joe works on homework 25% of the time. He is on the computer 40% of the time. He likes to do homework on the computer, so 30% of the time that he is on the computer is spent dong homework. What is the probability that he is on his computer, given that he is doing his homework?

6.8. According to the National Institute of Mental Health (from www.nimh.nih.gove/statistics/1ANYANX_ADULT.shtml), in any year 18.1% of all U.S. adults suffer from anxiety disorders. Among people who have anxiety disorders, 30.2% are between 18 and 29 years old. According to the 2010 U.S. Census, approximately 10% of the U.S. adults are between 18 and 29 years old.

a) Calculate the chance that a randomly selected 18-29 year old American has an anxiety disorder.

b) Calculate the chance that a randomly selected American is 18-29 years old and has an anxiety disorder.