Algebra II Pre-AP -- Assignment 56
Probability 2

A Problems (Required)	B Problems (For additional practice)
1. A recent survey found that out of 300 juniors and seniors in physics in a certain high school, 170 were males, 90 were junior females, and 110 were seniors. a) Draw a Venn diagram and label the data, letting J be the set of juniors and F be the set of females. If one person is chosen at random, find the following probabilities. b) P(junior) c) P(senior male) d) P(junior or female)	1. Out of 200 students in a senior class, 113 students are either varsity athletes or on the honor roll. There are 74 seniors who are varsity athletes and 51 seniors who are on the honor roll. a) Draw a Venn Diagram letting H be the set of honor roll students and V be the set of varsity athletes. Find the following probabilities that a randomly selected senior: b) is on the honor roll. c) is a varsity athlete but not on the honor roll d) is both a varsity athlete and on the honor roll e) is neither a varsity athlete nor on the honor roll.
2. Otto goes to the Frisco Café on Burnet Rd every morning for breakfast. From past experience, it is known that the probability that he will order eggs is 0.4 (Event E) and the probability that he will order bacon is 0.25 (Event B). The probability that he will order both is 0.1. a) Are E and B independent? Explain. b) What is the probability of that he will order either bacon or eggs? c) What is the probability that he will order eggs but not bacon? d) What is the probability that he will order neither bacon nor eggs?	2. In a large high school, 55% of the students are girls, 60% of the students play sports, and 40% of the girls play sports. If one student is chosen at random, find the following probabilities: a) The student is male and plays sports. b) The student is female and does NOT play sports c) The student is male and does NOT play sports d) The student is female or plays sports

Mixed Practice -- No B Problems -- All are required

3. A bag contains 5 red marbles and 3 white marbles. If 2 marbles are randomly drawn, one after the other and without replacement, what is the probability that the number of red marbles is a) 0; b) 1; c) 2? (Check to see that the sum of the probabilities is 1.)	
4. From a group consisting of Alvin, Bob, Carol, and Donna, two people are to be randomly selected to serve on a committee. a) Give a sample space for this experiment using only first initials b) Find the probability that Bob and Carol are selected. c) Find the probability that either Alvin or Donna is selected. d) Find the probability that Carol is not selected.	5. Four managers, five engineers, and one lawyer are in a meeting when a message arrives for one of them. Of these people, three managers, two engineers, and the lawyer are women. Find the probability of each event. a) The message is for the engineer. b) The message is for a man. c) The message is not for a male engineer.
6. Of 100 students surveyed, 94 own either a car or a computer. Also, 68 own cars and 89 own computers. A student is chosen at random. Find the probability that the student owns: a) both a car and a computer b) neither a car nor a computer c) a car but not a computer	7. If a six-volume set of books is placed on a shelf at random, what is the probability that the books will be arranged in either correct or reverse order?
8. Three coins are tossed. Make a sample space and find the probability of each event. a) All come up tails. b) All come up heads. c) At least one comes up tails. d) Exactly two come up heads.	9. Five randomly arranged men stood in line for a police line up. Two of them were undercover cops and one of them was guilty. a) What is the probability that the guilty person stood in the far left position? b) What is the probability that the two cops stood on each end? c) What is the probability that the two cops stood next to each other?
10. Frank, Larry, and Ben are shooting free throws. Historically, Frank makes 70% of his FTs, Larry makes 85%, and Ben makes 80%. If each takes exactly one shot, find the probability that a) at least one player misses b) exactly two shots will be made c) Frank and Larry make their shots, but Ben misses	11. A jar contains 12 blue, 6 yellow, and 10 red marbles. Two marbles are drawn at the same time. Find the probability of each event. a) at least one marble is red b) none are blue c) both are yellow d) one is red and one is blue
12. A hand of five cards is dealt from a well-shuffled standard deck of 52 cards. Find the following probabilities that the hand contains: a) 4 of a kind (for example, 4 aces) b) at least two spades c) 5 cards of the same color	13. A 5-person committee is to be selected from 10 teachers and 6 students. In how many different ways can the committee be chosen if: a) all are equally eligible b) there must be 3 teachers and two students c) teachers must outnumber students