Name: _____ Date: _____
AP Statistics
Probability Review Worksheet

1) Consider the following table taken from *The Practice of Statistics*, p. 216, about years of education completed by age.

	25 to 34	**35 to 54**	**55 & over**	**Total**
Did not complete high school	5325	9152	16035	30512
Completed high school	14061	24070	18320	56451
1 to 3 years of college	11659	19926	9662	41247
4 or more years of college	10342	19878	8005	38225
Total	41387	73026	52022	166435

If a person is chosen at random from this population:

a) What is the probability that the person is between 25 and 34 years of age?

b) What is the probability that the person is between 25 and 34 years of age **and** 55 & over years of age?

c) What is the probability that a person is between 25 and 34 years of age **or** 55 & over years of age?

d) What is the probability that a person is between 25 and 34 years of age **and** that they have completed 1 to 3 years of college?

e) What is the probability that a person is 35 to 54 years of age **or** has 4 or more years of college?

f) If the person is 55 & over years of age, what is the probability that they completed 1 to 3 years of college?

2) If a person is vaccinated properly, the probability of his/her getting a certain disease is 0.05. Without a vaccination, the probability of getting the disease is 0.35. Assume that 1/3 of the population is properly vaccinated.

a) If a person is selected at random from the population, what is the probability of that person's getting the disease?

b) If a person gets the disease, what is the probability that he/she was vaccinated?

3) Suppose a test for diagnosing a certain serious disease is successful in detecting the disease in 95% of all persons infected, but that it incorrectly diagnoses 4% of all healthy people as having the serious disease. If it is known that 2% of the population has the serious disease, find the probability that a person selected at random has the serious disease if the test indicates that he or she does.

4) The probability that a football player weighs more than 230 pounds is 0.69, that he is at least 75 inches tall is 0.55, and that he weighs more than 230 pounds and is at least 75 inches tall is 0.43. Find the probability that he is at least 75 inches tall if he weighs more than 230 pounds.

5) Suppose a box contains 3 defective light bulbs and 12 good bulbs. Two bulbs are chosen from the box without replacement. What is the probability that one of two bulbs drawn is defective and one is not?

6) Find the probability that a hand of 5 cards dealt from a standard deck of 52 cards contains 3 aces and 2 kings.

7) Of voters in a recent election, 57% were male, 64% were Democrat, and 35% were both male and Democrat.s

a) What is the probability that a voter chosen at random is female?

b) What is the probability that a voter chosen at random is either male or Democrat?

c) Is being male or Democrat independent of each other?

8) A rocket being launched has three engines that are independent of each other. The probability of an engine firing is .97. What is the probability of at least one engine not firing?

9) The probability of rain on Monday is .3 and on Thursday is .4. Assuming these are independent, what is the probability that

a) it rains on both days?

b) it does not rain on Monday?

c) it rains on Monday, but not Thursday?

d) it rains on at least one of these days?

e) it doesn't rain on either day?

10) Student Life at a college did a survey asking students if they were part-time or full-time students. Another question was if the student voted or not in the most recent student elections. The results follow:

	Part-time	Full-time
Voted	15	20
Did not vote	25	30

If a student is selected at random, what is the probability that

a) the student voted in the most recent election?

b) the student voted in the most recent election or is a part-time student?

c) if the student is a part-time student, they voted in the most recent election?

11) Dr. Carey has two bottles of sample pills on his desk for the treatment of arthritic pain. He often grabs a bottle without looking and takes the medicine. Since the first bottle is closer to him, the chances of grabbing it are 0.60. He knows the medicine from this bottle relieves the pain 70%of the time while the medicine in the second bottle relieves the pain 90% of the time. What is the probability that Dr. Carey grabbed the first bottle given his pain was not relieved?

12) If the P(A) = .5, P(B) = .6, and P(A or B) = .85, then what is

a) P(A & B)?

b) P(A|B)?

c) P(B|A)?