Stat 98/198 – Spring 09 – Exam P DeCal – HW #1
Due 2/10

These problems are taken from the Exam P Sample Questions on the SOA exam syllabus found at (http://www.soa.org/files/pdf/edu-2009-spring-p-ques.pdf); this will be the primary source for all future homework assignments since they are actual questions on previous tests. Knowing that the solutions are provided online, I do encourage you guys to check your work and answers with the solutions to solidify your understanding of the questions and material relating to them. Thus, you will receive credit on the homework based on effort and completion rather than correctness.

Note: Disregard the question number next to the questions. I simply retained them in order to keep track of which problems we have covered in the packet.

3. You are given $P[A \cup B] = 0.7$ and $P[A \cup B'] = 0.9$.

Determine $P[A]$.

(A) 0.2

(B) 0.3

(C) 0.4

(D) 0.6

(E) 0.8

6. A public health researcher examines the medical records of a group of 937 men who died in 1999 and discovers that 210 of the men died from causes related to heart disease. Moreover, 312 of the 937 men had at least one parent who suffered from heart disease, and, of these 312 men, 102 died from causes related to heart disease.

Determine the probability that a man randomly selected from this group died of causes related to heart disease, given that neither of his parents suffered from heart disease.

(A) 0.115

(B) 0.173

(C) 0.224

(D) 0.327

(E) 0.514

5. An auto insurance company has 10,000 policyholders. Each policyholder is classified as

(i) young or old;

(ii) male or female; and

(iii) married or single.

Of these policyholders, 3000 are young, 4600 are male, and 7000 are married. The policyholders can also be classified as 1320 young males, 3010 married males, and 1400 young married persons. Finally, 600 of the policyholders are young married males.

How many of the company's policyholders are young, female, and single?

(A) 280

(B) 423

(C) 486

(D) 880

(E) 896

12. A doctor is studying the relationship between blood pressure and heartbeat abnormalities in her patients. She tests a random sample of her patients and notes their blood pressures (high, low, or normal) and their heartbeats (regular or irregular). She finds that:

(i) 14% have high blood pressure.

(ii) 22% have low blood pressure.

(iii) 15% have an irregular heartbeat.

(iv) Of those with an irregular heartbeat, one-third have high blood pressure.

(v) Of those with normal blood pressure, one-eighth have an irregular heartbeat.

What portion of the patients selected have a regular heartbeat and low blood pressure?

(A) 2%

(B) 5%

(C) 8%

(D) 9%

(E) 20%

19. An auto insurance company insures drivers of all ages. An actuary compiled the following statistics on the company's insured drivers:

Age of Driver	Probability of Accident	Portion of Company's Insured Drivers
16-20	0.06	0.08
21-30	0.03	0.15
31-65	0.02	0.49
66-99	0.04	0.28

A randomly selected driver that the company insures has an accident.

Calculate the probability that the driver was age 16-20.

(A) 0.13

(B) 0.16

(C) 0.19

(D) 0.23

(E) 0.40