BIOMETRY, CLASS EXERCISE 4

(**1**) Toss two dice. What is the probability that
a) The sum is 7 or more?
b) The sum is less than 7?
c) Both die show odd numbers and the sum is at least 7?
d) Both die show odd numbers or the sum is at least 7?

(**2**) Consider the following contingency table that shows incidence of myocardial infraction (MI) for women smokers and women who had never smoked.

	MI Yes	MI No	Totals
Smoker	55	65	
Never smoked	25	125	
Totals			

Let A = {woman smoker} and let B = {woman had an MI episode}.
a) Determine $p(A), p(B), p(A^c)$ and $p(B^c)$.
b) Determine and interpret with a sentence $p(A \cap B)$.
c) Determine and interpret with a sentence $p(A \cup B)$.

(**3**) In the backyard you have a few tall, beautiful irises frequented by hummingbirds, bees and other creatures (your knowledge of insects is too shallow to identify them precisely). Let us name some events when observing the iris patch:
 - H - at least one humming bird present
 - B - at least one bee present
 - O - at least one other creature present

In 250 observations of the iris patch you have observed H 100 times; B 120 times; O 75 times; $H \cap B$ 10 times; $H \cap O$ 24 times; $B \cap O$ 44 times. You have never observed three types of visitors at the iris patch at the same time.
a) $p(H), p(B), p(O)$.
b) $p(H \cap B), p(H \cap O), p(B \cap O)$.
c) $p(H \cup B), p(H \cup O), p(B \cup O)$.
d) $p(H \cap B \cap O)$
e) $p(H \cup B \cup O)$
f) $p(H^c \cap B^c \cap O^c)$. Write a sentence interpreting this result.