MATH 110 – QUIZ 8 – 23 OCTOBER 2009

Answer all of the following questions in the space provided.

1. (2 pts. each) Suppose that E and F are events with $Pr(E) = .3$, $Pr(F) = .7$ and $Pr(E \cup F) = .9$.

(a) Find $Pr(E \cap F)$.

$Pr(E \cup F) = Pr(E) + Pr(F) - Pr(E \cap F)$

$.9 = .3 + .7 - Pr(E \cap F) \quad \therefore Pr(E \cap F) = .1$ //

(a) Find $Pr(E|F)$.

$Pr(E|F) = \frac{Pr(E \cap F)}{Pr(F)} = \frac{.1}{.7} = \frac{1}{7}$ //

(a) Find $Pr(F|E)$.

$Pr(F|E) = \frac{Pr(F \cap E)}{Pr(E)} = \frac{.1}{.3} = \frac{1}{3}$ //

2. (2 pts. each) Of the students at a certain college, 55% are male, 70% are business majors, and 25% are male business majors.

(a) Suppose that a student is chosen at random and it is learned that the student is a business major. What is the probability that the student is also male?

M = student is male

B = student is business major

$Pr(M) = .55 \quad Pr(M \cap B) = .25$

$Pr(B) = .70 \quad Pr(M|B) = \frac{Pr(M \cap B)}{Pr(B)} = \frac{.25}{.70} = \frac{5}{14}$ //

(b) Suppose that a student is chosen at random and it is learned that the student is male. What is the probability that he is also a business major?

$Pr(B|M) = \frac{Pr(B \cap M)}{Pr(M)} = \frac{.25}{.55} = \frac{5}{11}$ //

Note: