MATH 110 – QUIZ 6 – 9 OCTOBER 2009

Answer all of the following questions in the space provided.

1. (3 pts. each) Suppose that two pennies and two nickels are tossed and the numbers of heads from each group are recorded.

(a) Enumerate explicitly the sample space for this experiment. (Hint: There are a total of 9 outcomes in the sample space.)

$S = \{(0,0), (1,0), (2,0), (0,1), (1,1), (2,1), (0,2), (1,2), (2,2)\}$ //

Notation means: (# heads from pennies, # heads from nickels)

(b) Enumerate the event E = "more heads on the pennies than on the nickels" as a subset of the sample space you found in part (a).

$E = \{(1,0), (2,0), (2,1)\}$ //

2. (2 pts. each) Suppose that in the sample space $S = \{s_1, s_2, s_3, s_4\}$ we assign probabilities as follows: $Pr(s_1) = .05$, $Pr(s_2) = .25$, $Pr(s_3) = .05$, $Pr(s_4) = .65$. Let $E = \{s_2, s_4\}$ and $F = \{s_2, s_3\}$.

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

$Pr(E) = Pr(s_2) + Pr(s_4) = .25 + .65 = .90$ //

$Pr(F) = Pr(s_2) + Pr(s_3) = .25 + .05 = .30$ //

(b) Find $Pr(E \cup F)$ and $Pr(E \cap F)$.

$Pr(E \cup F) = Pr(\{s_2, s_3, s_4\}) = .25 + .05 + .65 = .95$ //

$Pr(E \cap F) = Pr(\{s_2\}) = .25$ //