MATH 110 – QUIZ 8 – 19 OCTOBER 2006

Answer all of the following questions in the space provided.

1. (3 pts.) An urn contains 8 white balls and one red ball. A sample of three balls is chosen at random. What is the probability that the sample contains the red ball?

$n(S) = \binom{9}{3}$ $\quad E =$ "sample contains red ball."

$n(E) = \binom{8}{2}$ $\quad \therefore Pr(E) = \dfrac{\binom{8}{2}}{\binom{9}{3}} = \dfrac{\frac{8 \cdot 7}{2}}{\frac{9 \cdot 8 \cdot 7}{3 \cdot 2}} = \dfrac{1}{3}$ //

2. (3 pts.) A couple decides to have four children. What is the probability that they will have more girls than boys? Assume that all outcomes are equally likely.

$S = \{BBBB, BBBG, BBGB, BBGG, \ldots, GGGG\}$

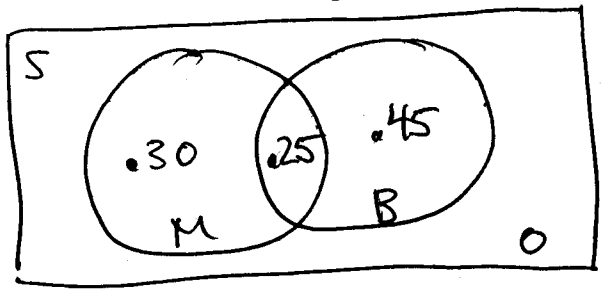
(there are 16 outcomes)

$E =$ "more girls than boys" $= \{GGGB, GGBG, GBGG, BGGG, GGGG\}$

$\therefore Pr(E) = \dfrac{n(E)}{n(S)} = \dfrac{5}{16}$ //

3. (2 pts. each) Of the students at a certain college, 55% are male, 70% are business majors, and 25% are male business majors.

(a) Draw a two–circle Venn diagram illustrating this situation.



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M = student is male

B = student is business maj.

(b) What is the probability that a student picked at random is a female business major? A female non–business major?

$Pr(M' \cap B) = .45$ //