Math 164
Fall, 2009
Quiz 12 - §12.1

Name: **Solutions**

For each of the following problems circle T if the given statement is always true and F if the statement is sometimes false. There is no partial credit on this part of the quiz.

1. T F Roll two dice. The probability of rolling a sum of 9 is $\frac{6}{36}$.

   There are 36 ways to roll two dice. Of those the following ordered pairs represent the ways to get a sum of 9:

   $$(3,6)$$
   $$(6,3)$$
   $$(5,4)$$
   $$(4,5)$$

   So the probability is $\frac{4}{36}$, making this FALSE.

2. T F Flip two coins. The probability of getting two heads is $\frac{1}{2}$.

   The sample space is $\{HH, HT, TH, TT\}$ so there are 4 elements of the sample space. One of them is the possibility of getting two heads, so the probability is $\frac{1}{4}$ making this FALSE.

   Complete the following problems. Show all work and explain your reasoning.

3. Three fair coins are tossed.

   (a) Write out the sample space.
   $S = \{HHH, HHT, HTH, THH, HTT, THT, TTH, TTT\}$

   (b) Find the probability of getting exactly two heads.
   There are 8 elements of the sample space, with three ways of getting exactly two heads, so the probability is $\frac{3}{8}$.

   (c) Find the probability of getting no heads.
   There is one way to get no heads, so the probability is $\frac{1}{8}$

   (d) Find the probability of getting at least two heads.
   At least two heads means two heads or three heads, so the probability is $\frac{4}{8} = \frac{1}{2}$.