Math 107
More on Basic notions of Probability – Part 2

SOME PRACTICE FROM YESTERDAY

1. Consider a box with 5 blue balls, 7 red balls and 3 black balls. A single ball is drawn from the box
   a) What is the probability that the ball is NOT red
   b) What are the probability for a blue ball being drawn

2. A roulette wheel has 38 slots around the rim. The first 36 slots are numbered from 1 to 36. Half of these slots are red and the other half are black. The remaining 2 slots are numbered 0 and 00 and are green. A roulette wheel is spun in one direction and a small ivory ball is rolled along the rim in the opposite direction. The ball has an equally likely chance of falling into any of the 38 slots. Find:
   a) The probability of a red
   b) The probability you do not get an odd number

3. You roll a pair of six –sided dice and add up the total shown on the top

   a) What is the probability that you get a sum of 7 or a sum less than 4?
   b) What is the probability you get "doubles" given the sum is greater than 7
   c) What is the probability you get at least one three on the roll of the dice?

4. You roll a six sided die two times. What is the probability that you do not get a three on either roll?

Either/Or Probabilities
Example 1: The experiment is drawing a single card from a standard deck of cards. What is the probability of selecting a face card OR a card numbered from 5 to 9?

Either/Or Probability: Non-Overlapping Events
Two events are non-overlapping if they cannot occur together. If A and B are non-overlapping events (mutually exclusive), the probability that either A or B occurs is
P(A or B) = P(A) + P(B)

Example 2: The experiment is drawing a single card from a standard deck of cards. What is the probability that you get a King or you get a black card?

Either/Or Probability: Overlapping Events
Two events are overlapping if they can occur together. IF A and B are overlapping events, the probability that either A or B occurs is
P(A or B) = P(A) + P(B) – P(A and B)

Example: Suppose that if you take Math 107 class there is 61% chance of passing. Also there is 65% rate of passing Physics. Assume there is a 30% chance of passing both courses. What is the probability of passing Math 107 or Physics?

Example: Contingency Table

Much was said in the 2012 presidential election concerning the turnout by different groups of voters and the outcome of the election. Consider the table given below of voters from a region in the U.S.

	Caucasian	African American	Latino	Asian	TOTALS
Voted for Obama	10,825	4,562	3516	4812	
Voted for Romney	10,516	986	1245	3602	
TOTALS					

a) What is the probability that a voter selected at random from this table supported Obama or is a Latino

b) What is the probability that a voter selected at random from this table is an African American ?

c) What is the probability that a voter selected from this table supported Romney ?

d) What is the probability that a voter selected from this table supported Romney or is African American