PROBABILISTIC SIMULATIONS TEST

1. A man runs a shooting gallery. He charges 75 cents for 4 shots at some clay plates which break when hit. If a person breaks 4 plates with his 4 shots he wins a prize which cost the man $1.25. Each broken plate costs the man 6 cents to replace. The probability that a person hits a plate on a single shot is 4/9. Write a program to simulate 10000 people playing the game and determine the average amount of money the man makes/loses per player.

2. On what day of the week were you born? I asked this question of a group of 14 people and I received six different answers. I expected to get seven different answers, at least one for each day of the week. Assume that every day of the week is equally likely to be a birthday of the week. You are to write a program which simulates this process for n number of people (input a value of n). After all the people have been asked, tally the results and display something similar to this:
   NUMBER OF PEOPLE ASKED: 14
   NUMBER OF UNIQUE BIRTHDAYS: 6

3. Suppose there are 6 white, 10 black and 4 red balls in a bag. Four of these balls are to be drawn at random, one at a time with replacement. Write a program to simulate a 1000 of these 4 ball draws and determine the total number of times exactly two white, 1 red and 1 black ball occurs.

BONUS QUESTION
The story is that a newspaper costs 5 cents. A customer has 5 pennies and a dime in his pocket and offers to pay for the paper by letting you, the vendor, select at random, 2 of the 6 coins. Write a program to simulate this event 1000 times and determine the average total value of the two coins selected.