RANDOM SELECTION WITHOUT DUPLICATION

Sometimes it is necessary to generate random numbers in a certain range where every number is accounted for, and there are no duplications.

EXAMPLE:
Suppose we want to randomly award 10 prizes among 10 people. Each person has been assigned a number between 21 and 30. We choose a number between 21 and 30 and the person with that number wins the first prize. No person can win twice. We continue the draw until all the prizes have been awarded.

NFL HELMETS PROBLEM

There are 28 football teams in the NFL. Many supermarkets and discount stores have vending machines that dispense miniature team helmets for one quarter (25 cents) each. Assume that all helmets are equally likely to be dispensed by the machines. You are to write a program to simulate putting quarters in vending machines until all 28 helmets have been obtained. Your output should have the form : TOTAL SPENT TO GET ALL 28 HELMETS =
Run your simulation 10 times and also determine the average total spent.

CASINO PROBLEM

At a casino, the following game is played between a player and the banker. The player pays the banker $7.50. The banker has a roulette wheel with 36 numbers (1-36), which he spins. Assume the resulting number is 17. The banker then pays the player $1, and spins the wheel again. Suppose the number this time is 24. The banker pays another $1, and the process continues until a number is produced which has already occured. Suppose the sequence of numbers is 17,24,18,31. The banker has paid the player $4.00 . At the next turn of the wheel the number is 18 (a number already produced). At this point the game ends, and the player has lost $3.50. Simulate 200 such games, and display the numbers produced by the roulette wheel, the amount the player wins or loses each game, and the players total loss or gain.