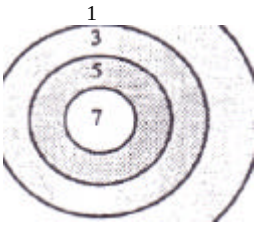
BUILDING A DISCRETE RANDOM DISTRIBUTION

EXAMPLE

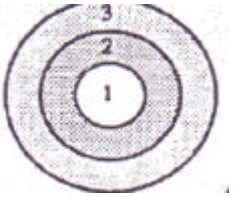
Suppose there are 5 white , 10 black and 3 red balls in a bag. Four of these balls are to be drawn at random, one at a time, with ***replacement***. That is, after each ball is drawn and its colour noted, it is put back into the bag before the next ball is drawn. Write a program to simulate a 1000 of these 4 ball draws and determine the total number of times exactly one white , one red and two black balls occur.

DART BOARD Problem

Darts thrown at a dart board land in different REGIONS of the board and a VALUE or score is assigned. The **total** score is the sum of the values scored for each toss. The two views of the dart board below show the regions on the board and the corresponding values or score.



VALUES



REGIONS

Assume that regions 2, 3, and 4 are each three times more likely to be hit as region 1. Write a program that simulates the tossing of darts until the score first equals or exceeds 1000 -- when the game ends. Use the random number generator below to simulate the tossing of the darts.

SEED VALUES (for the Random Number Generator)

J=2^7+3 : M=2^15 : L=1

SUBROUTINE: R is a Random Region Generator on [0 1]

Begin the generator with the seed L=1.
L.=J *L-M*INT(J *L/M)
R=L/M
RETURN

The regions hit by darts MUST be simulated by using the Random Number Generator shown above. Print out a report as shown in the sample run below:

SAMPLE RUN

REGION	HITS	POINTS
1	32	224
2	75	375
3	103	309
4	93	93

TOTAL = 1001