Course MTH110 – Basic Statistics
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Homework 1
(Return date: 16.1.2003)

A sampling experiment.

The following page contains a population of 80 circles. (They might represent fish in a pond or tumors removed in surgery.) Do a sampling experiment as follows:

a) Label the circles 00, 01, . . ., 79 in any order, and use the Table of random numbers to draw an SRS of size 4.

b) Measure the diameter of each circle in your sample. Record your results in decimal form. Then use a calculator to compute the mean diameter of the four circles in your sample. The mean of the diameters d1, d2, d3, d4 is the ordinary average

(dl + d2 + d3 + d4)/4

c) Repeat steps a) and b) three more times (four times in all), using a different part of Table A each time. Was any circle chosen more than once in your four SRSs? How different were the mean diameters for the four samples?

d) Draw an SRS of size 16 from this population using a part of the Table not yet used in this exercise. Measure the diameters of the 16 circles in your sample and find the mean (average) diameter.
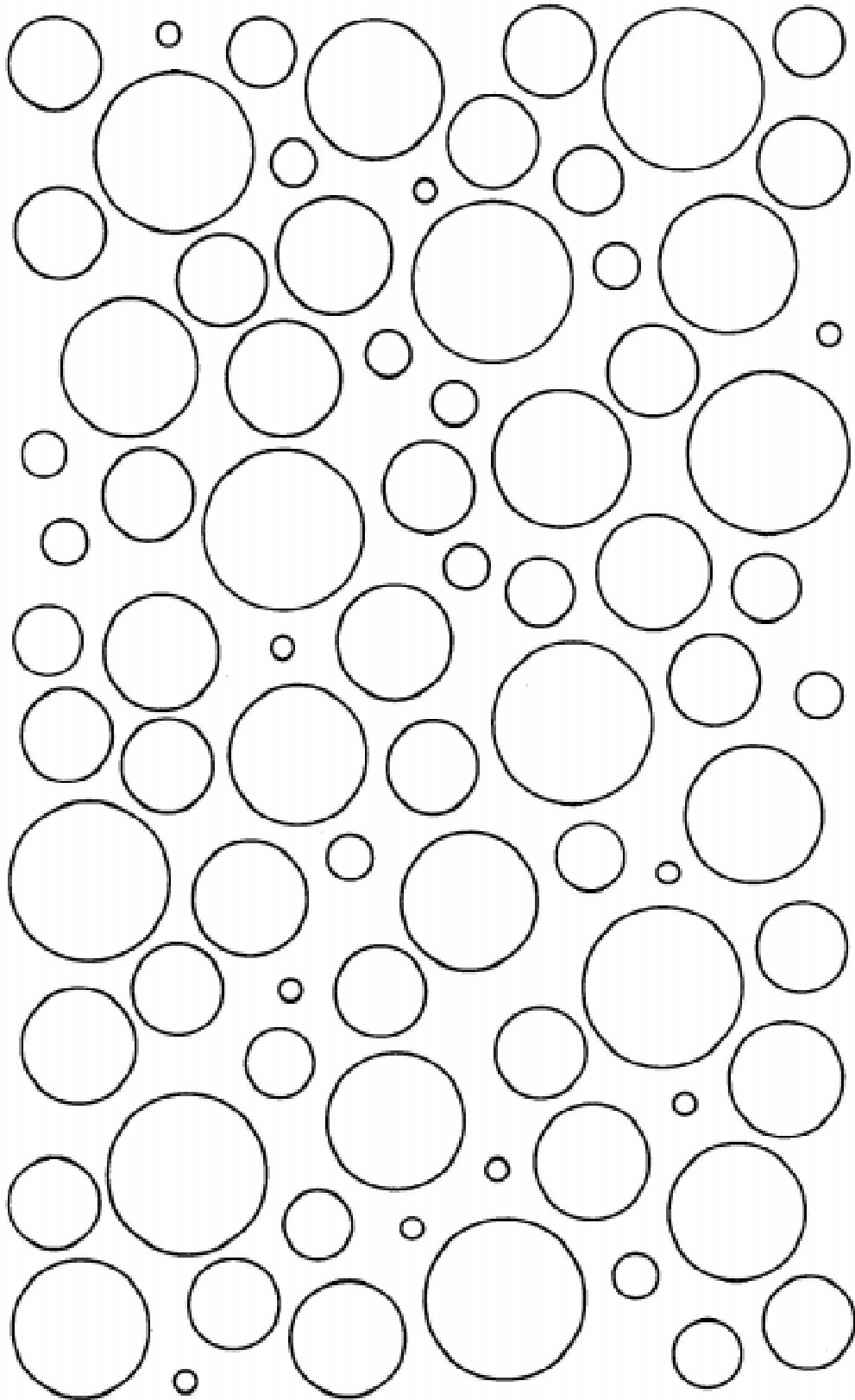
Table A
300 Random numbers from the interval (0,79)

50,30,40,57,44,7,73,29,57,53,34,28,1,11,33,27,40,63,2,34,60,27,11,18,
10,76,51,40,46,69,57,11,68,16,23,62,67,4,69,35,27,21,67,1,46,73,55,62
,35,76,4,21,68,6,26,10,79,69,3,27,12,65,13,71,65,44,26,70,19,50,50,8,
63,54,45,66,74,48,19,56,74,58,15,29,62,73,1,37,77,29,55,47,58,58,5,39
,74,3,39,52,79,35,20,75,4,56,4,45,22,63,2,7,24,34,27,40,46,56,22,1,52
,52,62,28,52,17,42,33,48,40,37,67,26,56,35,59,1,22,7,19,34,46,65,17,6
2,73,3,69,9,56,40,35,41,16,2,48,15,39,47,68,13,17,39,49,58,51,53,32,7
6,57,50,42,66,0,10,7,24,64,7,38,9,25,40,49,76,7,0,79,17,36,26,47,21,5
9,55,4,35,58,45,77,10,73,37,38,0,48,77,69,4,40,77,69,67,3,50,21,45,24
,74,16,10,46,29,18,0,52,71,59,79,4,73,70,75,44,76,1,8,40,25,59,42,15,
30,43,32,49,1,24,31,77,10,45,31,72,16,54,36,28,19,53,27,68,73,73,64,5
2,42,30,32,2,41,5,1,5,31,39,49,12,14,64,12,64,75,11,65,75,1,17,0,23,3
8,67,47,21,77,61,46,15,46,21

Table B
1000 Random digits

7,8,6,6,6,9,4,8,6,3,7,9,9,9,6,8,0,8,3,2,8,7,7,7,1,8,1,1,4,8,7,2,8,5,9,2,8,6,
2,4,8,7,9,1,9,0,1,4,7,1,0,3,3,2,2,0,4,6,3,8,6,0,0,4,7,3,1,2,8,3,9,8,0,2,9,5,
7,9,6,4,2,2,2,6,6,1,2,1,8,8,0,9,9,4,1,0,8,2,1,4,1,2,5,9,9,9,2,3,3,7,0,1,4,9,
9,2,5,4,8,2,6,2,6,7,4,0,1,7,5,0,8,4,2,3,8,3,7,4,8,1,2,9,0,8,5,6,3,1,1,6,2,3,
5,5,4,8,3,1,6,5,6,7,7,4,3,8,6,5,7,2,2,4,6,6,0,0,0,1,5,2,7,9,9,6,1,1,2,2,7,2,
5,6,9,0,2,2,2,4,2,1,1,3,6,9,4,3,6,3,3,2,3,1,6,0,8,4,7,9,5,1,4,5,2,9,2,2,6,0,
8,8,9,6,5,5,5,5,8,5,7,1,1,6,2,9,7,0,9,9,4,7,3,9,6,9,3,2,0,3,8,7,2,7,0,5,0,1,
8,6,2,0,9,6,8,3,6,6,2,3,2,3,1,0,4,6,9,2,3,0,9,1,4,4,6,0,5,8,8,7,9,1,5,3,7,7,
4,3,2,0,5,0,9,0,6,9,4,5,9,8,8,7,1,1,9,6,5,7,2,8,0,4,9,7,5,3,0,7,9,4,5,1,9,5,
7,4,8,4,7,7,3,7,5,8,2,3,5,1,6,9,5,3,7,5,9,1,7,9,2,7,8,4,5,0,5,7,9,1,3,4,3,9,
6,4,8,6,9,9,8,4,2,0,5,6,3,5,0,6,8,8,0,5,5,4,6,5,8,9,8,9,8,0,9,4,6,9,4,7,2,4,
4,1,3,5,3,6,8,1,7,0,0,1,8,1,1,1,9,7,5,1,4,9,3,7,0,7,9,1,7,1,0,0,9,0,0,8,0,9,
8,7,1,2,3,5,6,2,0,8,6,5,0,6,9,3,0,6,9,2,9,8,8,3,0,0,6,1,7,5,9,8,6,6,3,3,5,9,
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9,0,1,2,8,8,6,0,2,5,4,7,2,6,8,2,9,2,7,2,1,3,6,4,1,2,4,2,2,4,8,2,0,8,4,4,7,1,
6,2,7,8,8,9,6,5,1,5,5,2,6,2,2,8,8,9,2,9,3,4,4,7,7,2,7,8,9,2,0,3,7,7,4,0,0,5,
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0,3,8,1,6,4,4,8,2,1,4,8,1,3,3,2,8,5,8,1,6,7,2,6,5,4,4,5,8,9,9,7,6,8,5,8,4,5,
2,5,5,9,3,4,9,1,0,7,3,7,5,1,4,8,5,4,8,0,9,6,4,5,7,0,8,6,4,6,9,4,4,8,5,6,8,7,
0,7,2,2,2,7,2,6,7,2,4,5,9,6,0,9,0,2,6,0,4,5,7,3,4,8,5,0,1,0,2,4,4,8,7,8,5,1,
6,9,4,9,0,8,0,3,3,5,6,5,8,5,4,5,5,1,9,7,8,2,4,5,1,3,0,5,0,9,1,7,9,3,5,9,4,
9,0,3,3,9,3,4,0,4,8,3,7,4,2,2,1,4,1,5,2,1,5,5,7,1,5,2,4,2,1,7,3,7,3,3,6,3,0,
1,4,8,9,5,2,7,3,0,4,5,8,7,9,3,6,0,6,5,3,6,9,2,2,5,4,3,2,9,2,6,9,9,7,0,0,1,7,
6,3,1,1,1,0,4,2,8,7,8,7,4,4,9,5,8,5,9,7,8,5,8,9,1,1,7,7,0,1,2,5,2,4,4,7,7,9,
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4,6,8,5,0,5,5,1,2,3,7,8,2,6,4,0,2,6,8,7,0,4,3,0,5,7,4,5,5,2,8,4,3,8,0,5,0,2,
6,4,7,5,7,7,6,0,4,6,1,2