

# TABLES OF RANDOM SAMPLES FROM A NORMAL POPULATION

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## INTRODUCTION.

Artificial sampling experiments are being increasingly used in recent years for testing various statistical theories. Prof. Karl Pearson in his Foreword to *Random Sampling, Numbers* arranged by Mr. L. H. C. Tippett (*Tracts for Computers No. XV, Cambridge University Press, 1927*) said:—

“In the case of many problems we may both check theory and prevent the pure algebraist, as he is apt to do, outrunning statistical experience by an appeal to the test of artificial sampling. Even when we are dealing with small samples—since we have as a rule to take a large number of them—the work of testing is very laborious. It is complicated by the fact that drawing balls or tickets from a bag or urn, however pleasing in theory to the mathematician, transcends the powers of the practical statistician. Given a frequency distribution of, say, 20 categories, with proportions varying between .5 and .60 say, this may clearly involve as many as 1000 or 1200 balls in the bag, or a like number of tickets in an urn. Practical experiment has demonstrated that it is impossible to mix the balls or shuffle the tickets between each draw adequately. Even if marbles be replaced by the more manageable beads of commerce their very differences in size and weight are found to tell on the sampling. The dice of commerce are always loaded, however imperceptibly. The records of whist, even those of long experienced players, show how the shuffling is far from perfect, and to get theoretically correct whist returns we must deal the cards without playing them. In short, tickets and cards, balls and beads fail in large scale random sampling tests.”

In order to get over the difficulty of random sampling for experimental purposes, Prof. Pearson suggested to Mr. L. H. C. Tippett “that he should replace the whole system of tickets by a single random system of numbers ranging from 0000 to 9999. In order to form this table of random numbers 40,000 digits were taken at random from census reports and combined by fours to give 10,000 numbers. Actually to complete 26 pages of numbers 41,600 digits are provided” in the above Tract.

The normal frequency law occupies a position of fundamental importance in sampling theory, and in practice in most cases it is assumed that the parent population conforms to this law. It will therefore be extremely convenient if we have at our disposal a long series of random samples from a normal population. Prof. Pearson has explained clearly in *Illustration I*, p. iv of the above tract how a random sample from a normal population may be obtained with the help of Tippett's numbers and a table of the probability integral. Using this procedure Prabhat Ranjan Ray, M.Sc., with the occasional help of Kanai Lal Bhuyia, M.A., and Anil Chandra Nag, M.Sc., of the Statistical Laboratory, Calcutta, converted the whole set of Tippett's random sampling numbers into a set of 10,400 random deviates from a normal population with mean value zero and standard deviation equal to unity.

## USE OF THE TABLE.

Consider any of the 10,400 entries in the Tables, say  $-1.220$  on plate 1, col. 3, line 4. This represents a deviation measured from the mean value of a population with standard deviation = 1. Multiplying  $-1.220$  by  $\sigma$  we shall get  $-1.220.\sigma$  as the deviation measured from the mean value of a population with standard deviation =  $\sigma$ . If we now add  $m$  equal to any assigned mean value of the population, we finally get  $(m - 1.220.\sigma)$  as a deviation from a population with mean value  $m$  and standard deviation  $\sigma$ . We can choose  $m$  and  $\sigma$  in any way we like, and hence we can obtain a random sample from a normal population with any assigned mean value and any assigned standard deviation.

Suppose we wish to draw samples of 5 from a normal population with mean value  $m=10$ , and standard deviation  $\sigma=5$ . We turn over any page of the present Table, say page 6, and write down any five entries, say, the first five in column 2 under the heading  $(x-m)/\sigma$  in one column as shown below. We next multiply each of these entries by 5, and enter the results in the second column. Finally we add 10 to each figure in the second column and obtain the five sample values given in the third column.

TABLE 1. SAMPLE OF 5 FROM NORMAL POPULATION WITH MEAN = 10,  $\sigma = 5$ ,

(1) $(x-m)/\sigma$	Col. (1) $\times 5$ = Col. (2)	Col. (2) + 10 = Col. (3)
-0.159	-0.795	9.205
+0.945	+4.725	14.725
+1.780	+8.900	18.900
-1.860	-9.300	0.700
+1.892	+9.460	19.460

Each entry in the present set of Tables is a random sample. In order to form samples of any given size we may therefore take the entries in any way we like, vertically, horizontally, or in any other way. For example, we may take 2,080 samples of size 5 by going through the table vertically. We can get a second batch of 2,080 samples of size 5 by reading the table horizontally and so on. It will be noticed that the possible number of samples of any given size which may be drawn, is very large.

## THE NORMALITY OF THE SAMPLE.

The value of the present table depends on the deviates being truly random samples from a normal population. We have therefore considered it advisable to test this point directly by calculating the actual frequency constants for the whole sample and its various sub-samples. This entailed heavy computational labour, which was done by Hariyada Ghosh, M.Sc., Sadasiv Sen, M.Sc., and Satya Prasanna De, B.A., under the general supervision of Subhendu Sekhar Bose, M.Sc., and Sudhir Kumar Banerjee.

In preparing frequency tables the grouping unit or class range used was 0.2, i.e. one-fifth of the standard deviation which is, of course, fully adequate. A separate frequency table was prepared for each set of 100 out of 400 entries in a page. The frequency tables for all 400 entries on each page were also obtained by adding the four sets

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of frequency tables for the page. We thus obtained 104 samples of 100 each, and 26 samples of 400 each, one for each page in the latter case.†

The observed values of means and standard deviations were then calculated for each sample of 100 and are shown in columns 2 and 3 respectively of Table 6. The values of  $\beta_1$  and  $\beta_2$  were also calculated for the 26 samples of 400 each and are given in Table 5. Finally, the frequency constants for the whole sample of 10,400 were obtained directly, and also by adding the raw moments for the 26 samples of 400 each. The computations were checked twice throughout.

### WHOLE SAMPLE OF 10,400.

The observed and expected frequency constants for the whole sample of 10,400 are given below.

TABLE 2—FREQUENCY CONSTANTS FOR THE WHOLE  
SAMPLE 10,400.

Statistics	Observed	Expected	Difference with P.E.
Mean	-0.0124	0	-0.0124 ± 0.0066
S.D.	1.0071	1.0	+0.0071 ± 0.0047
$\mu_2$	1.0142	1.0	+0.0142 ± 0.0094
$\mu_3$	-0.0125	0	-0.0125 ± 0.0162
$\mu_4$	3.0357	3.0	+0.0357 ± 0.0648
$\mu_5$	-0.2210	0	-0.2210 ± 0.1775
$\mu_6$	14.8613	15.0	-0.1387 ± 0.6670
$\beta_1$	0.000707	0	
$\sqrt{\beta_1}$	-0.0122	0	-0.0122 ± 0.0162
$\beta_2$	2.9511	3.0	-0.0489 ± 0.0324

It will be noticed that the difference between observed and expected values of the frequency constants are statistically insignificant in every case.\*

The observed and expected frequency distributions are shown in Table 3, together with the calculation for  $\chi^2$ .

The actual observed value of  $\chi^2$  is 36.37 for 31 cells. As we know the values of the population parameters in this case ( $m=0$ ,  $\sigma=1$ ), we must use  $n'=31$  in formula (xxix) given in Biometric Tables, Part I, p. xxxi. We find that  $P=0.1968$  so that agreement between observed and expected frequencies is quite satisfactory.

†Each plate in the present Tables corresponds to a single page of Tippett's Table, but through inadvertence the columnar arrangement was not kept intact. Blocks of 5 entries however correspond in both Tables.

\*The value of  $\mu_2=1.0142$ , is rather high. In samples of size 40,000, the probable error of  $\mu_2$  will be less than .005. In samples of such large size it will be no longer possible to assume that  $\mu_2=1$ . Thus if the present Tables are used over and over again in different ways to form random samples of size 40,000 or more, it will be necessary to take into consideration the difference in value of  $\mu_2$  from unity.

TABLE 3—OBSERVED AND EXPECTED FREQUENCY DISTRIBUTIONS FOR THE WHOLE SAMPLE OF 10,400

Range	Observed ( <i>f</i> )	Expected ( <i>f</i> )	$\frac{(O-f)^2}{f}$
Beyond - 2.9	18	10.76	.0749
- 2.7	17.5	16.64	.0434
- 2.5	84.5	28.08	1.4678
- 2.3	43	46.80	.3085
- 2.1	74	74.88	.0103
- 1.9	185.5	112.32	4.7838
- 1.7	203.5	165.36	8.7069
- 1.5	283.5	230.88	.0297
- 1.3	208	812.00	0.6292
- 1.1	410.5	404.56	0.0872
- .9	454	508.36	4.8402
- .7	615.5	602.16	.2955
- .5	688.5	691.60	.0139
- .3	788	765.44	0.6149
- .1	853.5	812.24	2.0959
+ .1	839	827.84	0.1504
+ .3	806	812.24	0.0479
+ .5	718.5	765.44	2.8786
+ .7	669	691.60	.7385
+ .9	562.5	602.16	2.6121
+ 1.1	516	508.36	0.8174
+ 1.3	406.5	404.56	.0033
+ 1.5	321.5	812.00	.2893
+ 1.7	222	230.88	.3415
+ 1.9	164	165.36	.0112
+ 2.1	123	112.32	1.0155
+ 2.3	72.5	74.88	.0756
+ 2.5	57	46.80	2.2230
+ 2.7	27	28.08	.0104
+ 2.9	15	16.64	.1616
Beyond + 2.9	18	19.76	2.3126
<b>Total ...</b>	<b>10,400</b>	<b>10,400.00</b>	<b><math>\chi^2 = 35.3654</math></b>

No. of cells =  $c = 31$ ,  $n = 31$ ,  $P = 0.1968$

N.B.—The value of  $P$  was calculated with the help of formula (xxix) on p. xxxi of Biometric Tables Part I, and the Auxiliary Tables provided therein.

We conclude therefore that the present sample of 10,400 values may be considered as a whole to be a truly random sample from a normal population at least up to the sixth moment. This result, of course, confirms the random character of Tippett's sampling numbers.

SAMPLES OF 400.

We may now consider the entries on each page, that is the 26 samples of 400 each. The frequency distributions are given in Table 4 and the frequency constants in Table 5

For samples of size 400, we find from Biometric Tables, Part II, Table XXXVII bis p. 224 that the two per cent. limiting value of  $\beta_1 = 0.081$ , and the one per cent. limits of  $\beta_2$  are 2.52 and 3.67. It will be seen that none of the observed values of  $\beta_1$  and  $\beta_2$  exceeds these limits. The observed values of the mean, the standard deviation, and the other frequency constants may therefore be considered to be in satisfactory agreement with the population values.

A more stringent criterion is however given by the ( $\chi^2$ ,  $P$ ) test of the goodness of fit. The expected frequencies for samples of 400 drawn from a population with  $m = 0$  and

TABLE 4—OBSERVED FREQUENCY DISTRIBUTIONS IN SAMPLES OF SIZE 100.

Expected Frequency $n = 400$	RANGE	NUMBER OF THE PLATE IN THE TABLES																									TOTAL	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		26
	-3.7	1								1																		2
	-3.5										1		1															2
	-3.3									1	1																1	4
	-3.1										1																	3
0.76	-2.9	1								1																	1	7
.64	-2.7		1									1																17.5
1.08	-2.5			1																								34.5
1.80	-2.3			2																								43
2.88	-2.1	1	1	2	5																							74
4.32	-1.9	4	6	2	6	3																						135.5
6.36	-1.7	2	11	12	6	8	6																					203.5
8.88	-1.5	6	8	8	7	13	11																					233.5
12.00	-1.3	7	12	11	7	10	10	7																				298
15.56	-1.1	16	17	24	18.5	18	13	17.5	20	18	14	17.5																410.5
19.36	-.9	28	15	21	12	13.5	16	24	18	22	16	9	13	17	19	19.5	17	19.5	16	13	18	21.5	19	16	17.5	17	16.5	454
23.16	-.7	26	25	24	27.5	19.5	25	22.5	22	18	16	26	27	16	22	16.5	28	26.5	32	25	30	23.5	26	25	24	16.5	26	615.5
26.60	-.5	26.5	17.5	27	28	27	26.5	20	35	32	29	25	26	22.5	27	31	18.5	22	28	26	25	32	22	25	33.5	28.5	28	688.5
29.44	-.3	42.5	32.5	30	31	38	25.5	26	23	28	28	27	41	39	31	27	21.5	42	39	29	27	32	25	38	23.5	33	22.5	788
31.24	-.1	31.5	41	23	29	28	32	34	30	23	22.5	38	28	34.5	40	38.5	42	32	34	32	29	32	25	40.5	34	30	37.5	853.5
31.84	+ .1	30.5	32	35	33	37	45	35	21	22	35.5	31	34	31	32	36	38	17	27	35	35	38	33.5	32.5	37	35	26	839
31.24	+ .3	32	22	29	34	35	31	30	33	31	33	36	31	32	27	32.5	31	34	30	30	28	32	35	26.5	26	38	27	806
29.44	+ .5	27	28	22	36	29	23	26	32	36	25	27	27	22	25	25	24	27	28	27	31	22	32.5	35.5	26.5	30	23	718.5
26.60	+ .7	30	27	18	21	24	29	26	25	24	29	21	35	32	25	26	27	18.5	25	33	22	35	25.5	21	24.5	23.5	22	669
23.16	+ .9	20	29	21.5	18	21	17	26	25	20	28	16	20	26	20	16	24	17.5	23	24	36	22	15	18	22	17.5	20	562.5
19.36	+ 1.1	9	13	17.5	23.5	19	22	24.5	23	29	17	29	19	16	20	24	17	21	18	17	15	19.5	22	16	17	22	26	516
15.56	+ 1.3	15	20	11	15.5	13	18	14.5	16	19.5	10	16	13.5	18	17	18	16	17	16	14	19	13.5	15	14	12	21	14	406.5
12.00	+ 1.5	12	11	18	12	14	17	11	12	13.5	17	11	13.5	9	16	7	10	15	5	9.5	10	11	18	17	16	9	7	321.5
8.88	+ 1.7	11	5	9	11	10	6	8	11	7	12	10	7	7	5	9	10	7	11	15.5	7.5	6	6	7	8	7	9	222
6.36	+ 1.9	7	7	8.5	4	2	9	10	5	6	5	9.5	2	8.5	4	7	4	8	9	6	4.5	4	6	5	6	7	10	164
4.32	+ 2.1	8	4	5.5	7	4.5	2	5	2	3	6	6.5	1	2.5	3	7	5	4	2	3	7	9	6	4	9	4	3	123
2.88	+ 2.3	1	6	3	3	3.5	5	3	1	1	3	2	1	1	4	3	4	3	1	3	3	2	4	4	3	1	2	72.5
1.80	+ 2.5		4	2	3			1	4	3	1	5	2	2	2	2	3	4	2	3								57
1.08	+ 2.7	1	3						2	2	2	2	1	2	3	4	2	1	1									27
.64	+ 2.9	1							1																			15
.76	+ 3.1									1																		6
	+ 3.3																											3
	+ 3.5																											3
	+ 3.7																											1
400.00	TOTAL	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	10,400

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TABLE 5—FREQUENCY CONSTANTS FOR SAMPLES OF SIZE 400.

Plate Number	Mean	S.D.	$\beta_1$ ‡	$\beta_2$	$\chi^2$	P
1	-0.0140	0.0573	0.000070	3.3802	17.58	0.1299
2	+0.0212	1.0184	.009319	2.7788	7.07	.8475
3	-0.0660	1.0514	.008951	2.6709	9.47	.6619
4	+0.0168	0.0851	.008086	2.8860	4.88	.9750
5	-0.0323	0.0788	.009999	2.9471	9.87	.6708
6	+0.0392	0.0467	.003472	2.7616	9.93	.6220
7	+0.0832	0.0977	.000202	2.0535	6.21	.9038
8	-0.0187	1.0132	.007030	2.7982	5.92	.9194
9	-0.0052	1.0409	.020767	2.0087	15.80	.2254
10	+0.0057	1.0635	.032140	3.1947	6.29	.8933
11	+0.0540	1.0201	.008238	3.0259	6.84	.8669
12	-0.0338	0.0254	.036102	3.0557	12.85	.8805
13	-0.0420	0.0421	.000707	2.6393	8.78	.7210
14	-0.0319	1.0169	.000237	3.0606	13.11	.3610
15	+0.0278	0.0777	.017009	2.8096	10.34	.5863
16	+0.0014	1.0225	.000002	3.0420	15.68	.2073
17	-0.0038	1.0554	.039426	2.7958	14.85	.2503
18	-0.0735	1.0254	.000040	3.2113	7.98	.7866
19	+0.0112	0.0934	.005005	2.8071	5.08	.9546
20	-0.0292	0.0840	.028083	2.6576	15.11	.2359
21	+0.0210	0.0995	.021452	3.2278	6.70	.8752
22	+0.0295	0.0929	.001268	2.6838	6.13	.9086
23	-0.0525	0.0950	.008868	2.9088	11.89	.4966
24	-0.0292	1.0129	.005801	2.7656	7.82	.7982
25	-0.0170	1.0008	.003987	3.3333	6.11	.9097
26	-0.0843	1.0829	.008283	2.8275	16.79	.1583
Expected Values.	0 ±0.0337	1.0 ±0.0239		3.0 ±.1652		Mean = .6287

$\sigma=1$ , are shown in the first column of Table 4. The actual value of  $\chi^2$  for each sample of 400 is given in the last but one column of Table 5. The number of cells in each case was 13. As the population values of the mean ( $m=0$ ), and the standard deviation ( $\sigma=1$ ) are known, we use Elderton's Table (Biometric Tables Part I, pp. 25) with  $n'=13$ . The corresponding values of  $P$  are given in the last column of Table 5. It will be noticed that the highest value of  $\chi^2$  is 17.58 in Plate No. 1 with  $P=.1299$ , which is not unreasonable. The agreement may therefore be considered entirely satisfactory.

We conclude therefore that each of the 400 values on a page may be considered to be a truly random sample from a normal population.

SAMPLES OF 100.

The values of means and standard deviations for the 104 samples of size 100 are given in Table 6.

The standard error of the mean is now 0.10, and of the standard deviation 0.07. It will be noticed that only one observed value of the mean (No. 14.1,  $m=-0.2400$ ) exceeds twice the standard error of the mean. Also two observed values of the standard deviation (No. 1.2,  $s=0.7852$ , and No. 11.1,  $s=0.6813$ ) differ from unity by more than twice the standard error of the S. D. Remembering that we have no less than 104 independent samples such excesses cannot be considered improbable. The observed values are thus again seen to be in agreement with expected values within the limits of the sampling errors.

TABLE 6--VALUES OF MEANS AND STANDARD DEVIATIONS FOR 104 SAMPLES OF 100 EACH

Plate Number	Mean	S.D.	Plate Number	Mean	S.D.	Plate Number	Mean	S.D.
(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
1'1	+0'0180	0'8795	10'1	-0'1180	0'9440	19'1	+0'1410	0'9549
1'2	+0'0820	0'7852	10'2	+0'0020	1'1102	19'2	-0'0340	0'9773
1'3	-0'1780	1'0062	10'3	-0'0200	1'0577	19'3	+0'0360	1'0281
1'4	+0'0470	1'1079	10'4	+0'1590	1'1144	19'4	-0'0860	0'9972
2'1	-0'0160	0'9874	11'1	+0'1280	0'6813	20'1	-0'1240	1'0321
2'2	-0'0580	1'0187	11'2	+0'0120	1'1872	20'2	+0'0270	0'9640
2'3	+0'0440	1'0731	11'3	+0'0530	0'9629	20'3	-0'0150	0'9372
2'4	+0'1150	0'9837	11'4	+0'0230	1'0341	20'4	-0'0020	0'9937
3'1	-0'0240	1'1012	12'1	-0'0040	0'8735	21'1	+0'0600	0'9429
3'2	-0'0420	0'9981	12'2	-0'0280	0'8634	21'2	+0'0340	1'0598
3'3	-0'0204	1'0651	12'3	-0'1550	1'0245	21'3	-0'1500	0'9162
3'4	+0'0060	1'0256	12'4	-0'1480	0'9210	21'4	+0'1420	1'0511
4'1	+0'0580	1'0697	13'1	-0'0960	1'0144	22'1	-0'0710	0'9331
4'2	+0'0990	0'9397	13'2	-0'1080	1'0751	22'2	-0'0030	1'1101
4'3	0	0'9469	13'3	+0'0640	0'9450	22'3	+0'1420	0'8737
4'4	-0'0900	0'9686	13'4	-0'0280	0'8950	22'4	-0'0920	0'9844
5'1	-0'0350	0'9751	14'1	-0'2400	1'0214	23'1	+0'0070	0'9671
5'2	+0'0890	0'9890	14'2	-0'0640	1'1284	23'2	-0'0860	1'0272
5'3	-0'0860	1'0092	14'3	+0'1000	0'8797	23'3	-0'1720	1'0314
5'4	-0'0980	0'9267	14'4	-0'1460	1'1235	23'4	+0'0410	0'9370
6'1	+0'0660	0'9670	15'1	-0'0150	1'0237	24'1	-0'1280	1'0100
6'2	+0'1050	0'8629	15'2	-0'0880	0'9390	24'2	+0'0360	1'0108
6'3	+0'0760	0'9494	15'3	+0'0210	0'9132	24'3	-0'0870	1'0175
6'4	-0'0900	0'9904	15'4	+0'0170	0'9993	24'4	+0'0620	1'0004
7'1	-0'0230	0'9520	16'1	-0'0760	0'9725	25'1	-0'0320	0'9771
7'2	+0'0530	1'0375	16'2	-0'0950	1'0176	25'2	+0'0010	0'9090
7'3	0	0'9649	16'3	+0'1600	1'0441	25'3	-0'1290	1'1084
7'4	+0'1030	1'0087	16'4	+0'0560	1'0334	25'4	+0'0890	0'9862
8'1	+0'0600	0'8901	17'1	+0'0090	0'9247	26'1	-0'1570	1'0877
8'2	-0'0150	1'0507	17'2	+0'1390	1'0160	26'2	+0'0140	1'0911
8'3	-0'1860	0'9992	17'3	-0'1560	1'0359	26'3	-0'0720	1'1028
8'4	+0'0660	1'0819	17'4	-0'0310	1'1205	26'4	-0'1'30	1'0412
9'1	+0'1960	0'9931	18'1	-0'2060	1'0300	...	...	...
9'2	-0'0400	1'0252	18'2	-0'0620	1'0735	...	...	...
9'3	-0'1490	1'0506	18'3	-0'1040	1'0651	...	...	...
9'4	-0'0280	1'0631	18'4	+0'0780	0'9019	...	...	...

RANDOM SAMPLES FROM A NORMAL POPULATION

The expected and observed frequency distributions for each of the 104 samples are given in Table 7. The corresponding values of  $\chi^2$  and  $P$  with 11 cells are given in columns 2 and 3 of Table 8. Only one single value of  $P$  is less than 0.01. This occurs in Plate No. 21.2, with  $\chi^2=25.57$ , and  $P=.0044$ . But this is just what may be expected to occur in a set of 104 samples. All the other values of  $P$  are greater than .01, showing satisfactory agreement between observed and expected frequencies.

TABLE 8.

Plate Number	$\chi^2$	P	Plate Number	$\chi^2$	P	Plate Number	$\chi^2$	P	
1.1	11.41	0.1562	10.1	5.87	0.8251	19.1	6.45	0.7738	
1.2	6.12	.8015	10.2	4.90	.8968	19.2	5.10	.8836	
1.3	9.76	.6821	10.3	10.21	.4231	19.3	13.85	.1806	
1.4	15.42	.1185	10.4	14.66	.1450	19.4	8.49	.5814	
2.1	7.72	.6559	11.1	12.58	.1135	20.1	13.48	.2019	
2.2	10.98	.3635	11.2	17.59	.0629	20.2	9.01	.7312	
2.3	10.90	.3659	11.3	3.37	.9688	20.3	5.38	.9623	
2.4	6.48	.7722	11.4	9.89	.4506	20.4	15.17	.1265	
3.1	5.78	.8320	12.1	6.97	.7281	21.1	13.98	.1710	
3.2	8.72	.5592	12.2	12.61	.2476	21.2	25.57	.0044	
3.3	17.08	.0731	12.3	5.46	.8563	21.3	8.47	.5831	
3.4	6.18	.7991	12.4	12.08	.2801	21.4	7.86	.6907	
4.1	8.39	.5718	13.1	9.53	.4836	22.1	4.47	.9209	
4.2	6.81	.7446	13.2	8.28	.6018	22.2	13.27	.2100	
4.3	8.81	.9538	13.3	11.86	.2952	22.3	6.12	.8015	
4.4	11.17	.3452	13.4	7.42	.6849	22.4	6.43	.7766	
5.1	8.43	.5824	14.1	2.81	.9813	23.1	9.86	.1533	
5.2	4.46	.9215	14.2	17.47	.0652	23.2	6.77	.7191	
5.3	7.41	.6858	14.3	13.26	.2105	23.3	11.17	.3152	
5.4	7.34	.6472	14.4	14.46	.1542	23.4	7.73	.6549	
6.1	5.25	.8722	15.1	8.89	.5427	24.1	11.90	.2923	
6.2	8.77	.5544	15.2	8.48	.5821	24.2	6.60	.7614	
6.3	6.90	.7344	15.3	8.42	.5482	24.3	7.56	.6713	
6.4	7.97	.6817	15.4	4.38	.9148	24.4	6.22	.7955	
7.1	11.75	.8032	16.1	12.86	.2323	25.1	6.37	.7800	
7.2	4.95	.8089	16.2	9.56	.4708	25.2	11.37	.1197	
7.3	5.83	.8661	16.3	10.62	.3890	25.3	13.23	.2120	
7.4	11.96	.2879	16.4	8.81	.5505	25.4	5.65	.8118	
8.1	17.98	.0568	17.1	3.91	.9504	26.1	14.18	.0936	
8.2	5.24	.8780	17.2	11.45	.3250	26.2	11.15	.0318	
8.3	10.41	.4065	17.3	21.86	.0159	26.3	9.55	.1817	
8.4	17.87	.0575	17.4	10.36	.4106	26.4	7.38	.6892	
9.1	9.39	.4964	18.1	7.17	.6800	...	...	...	
9.2	6.66	.7560	18.2	17.85	.0579	...	...	...	
9.3	14.88	.1593	18.3	8.04	.6250	...	...	...	
9.4	10.24	.4206	18.4	7.93	.6856	...	...	...	
								Mean =	0.5186

It is interesting to note that the mean value of  $P=0.5186$ , showing the tendency of the values of  $P$  to be distributed round the point 0.5.

TABLE 7. FREQUENCY DISTRIBUTION OF 104 SAMPLES OF 100 EACH.

Range	1'1	1'2	1'3	1'4	2'1	2'2	2'3	2'4	3'1	3'2	3'3	3'4	4'1	4'2	4'3	4'4	5'1	5'2	5'3	5'4	6'1	6'2	6'3	6'4	7'1	7'2
-3'7			1																							
-3'5																										
-3'3																										
-3'1																										1
-2'9			1																							
-2'7					1																					
-2'5									1							2					1	1			1	
-2'3		1		2				1		1	1				1	1							1		1	
-2'1			1		1	1			2	2	1	1			2	2					1			1	1	
-1'9			2	2	1	1	2	2	2	2	3	3			1	1									1	3
-1'7	1		1	2	2	2	4	3	3	3	3	3	3	3	3	2	3	3			2	2	3	3	1	1
-1'5	1	1	2	4	2	2	3	1	1	1	3	3	3	2	2						3	2	2	5	2	2
-1'3		3	3	1	4	4	4	4	5	4	1	1	1	3	1	2	2				3	2	2	3	3	4
-1'1	4	5	2	5	3	7	4	3	5	5	7	7	4	4	5	5	3	3			4	5	3	5	5	6
-'9	6	5	7	10	3	5	3	4	3	5	9	4	3	2	2	5	4	3			4	4	4	5	9	6
-'7	6	5	6	9	8	7	7	3	7	4	9	4	4	4	11	8	5	2			7	5	3	10	9	3
-'5	10	6	3'5	7	4	6	3	4'5	6	2	12	7	6	10	7	5	11	4			6	6	5	5	7	5
-'3	11	9	12'5	10	8	6	9	9'5	4	11	9	6	9	7	6	9	8	8			12	10	6	8	8	5
-'1	4	12'5	6	9	11	10	8	12	5	7	5	11	7	6	7	7	5	6			9	8	5	5	7	9
+'1	9	5'5	5	11	12	9	4	7	10	14	3	8	8	10	7	8	10	6			9	9	13	7	11	8
+'3	14	9	7	2	3	7	4	8	4	10	7	8	8	8	8	8	11	12			6	6	6	7	9	9
+'5	8	9	7	3	5	6	7	10	9	6	3	4	6	11	9	10	8	8			6	6	6	6	7	8
+'7	8	8	8	6	4	4	11	8	6	2	4	6	5	5	9	2	6	5			3	3	10	7	6	6
+'9	4	7	3	6	7	7	11	4	8	5	4	4'5	3	3	6	6	6	6			2	7	4	5	7	7
+1'1	1	2	4	2	5	1	1	6	4	2	5	6'5	7	6'5	3	7	3	3			3	3	3	3	3	4
+1'3	6	2	7		6	6	4	4	3	2	2	4	2	4	3'5	4	4	4			3	6	6	5	3	9
+1'5	3	3	4	2	6	2	2	1	4	8	2	4	1	4	3	4	4	4			3	3	3	3	3	2
+1'7	2	4	4	1	1	1	1	3	3	2	1	3	3	2	4	2	1				2	2	2	1	1	2
+1'9	1	1	2	3	2	1	2	2	1	1	1	3	2	2	2	3	2				2	2	1	1	1	2
+2'1	1	1	2	4		1	2	1	1	2	1	1'5	2	2	1	1		5			1	1	1	1	1	3
+2'3				1	1	4	1	1	2	1		1	2	1			1'5				1	1	1	1	2	1
+2'5											1	1			1											
+2'7		1				1	1	2					2													
+2'9			1						1		1															
+3'1																										
+3'3																										
+3'5																										1

RANDOM SAMPLINGS FROM A NORMAL POPULATION

TABLE 7. FREQUENCY DISTRIBUTION OF 104 SAMPLES OF 100 EACH.—Contd.

Range	7'3	7'4	8'1	8'2	8'3	8'4	9'1	9'2	9'3	9'4	10'1	10'2	10'3	10'4	11'1	11'2	11'3	11'4	12'1	12'2	12'3	12'4	13'1	13'2	13'3	13'4
-3'7												1					1					1				
-3'5												1														
-3'3									1			1														
-3'1												1														
-2'9										1		1														
-2'7				2													1								5	
-2'5		1								1						1						1		5		
-2'3											1												1			
-2'1					1							1														1
-1'9	3			1'5	3	2	1	3	2	3	1			1	1	2				2	1	2	1	2		2
-1'7	3	2	3	5	3	2	1	1	1	2	1			3	1	1				2	2	2	3	4	4	1
-1'5	3	3	3	3	1	1	2	3	3	5	1	3	5	3	2	4	2	2		4	6	2	2	1	2	2
-1'3	2	1	1	2	5	3	2	2	1	3	3	2	2	5	6	1				8	5	5	4	4	2	2
-1'1	5	1	7	5	5	8	2	3	6	7	4	2	2	4	1	5	3	1	6'5	4	2	6	4	7	8	6
-'9	3	5'5	5	4	6	3	3	8	5	6	7	5	4	2	2	2	3	2		4	4	4	3	5	5	4
-'7	2	8'5	4	8	5	5	2	6	6	4	5	5	3	4	1	14	7	4		2	8	7	12	3	4	4
-'5	3	5	7	4	7	17	10	8	11	3	4	9	5	7	5	5	5	10		18	10	5	11	5	8	6'5
-'3	12	4	3	6	7	7	10	6	5	7	8	6	8	6	9	4	7	7		6	9	8	10	4	10	15
-'1	10	7	6	8	6	10	6	4	9	4	8	6	3	6'5	7	5	9	17		11	7	7	6	12	3	5
+ '1	8	14	4	7	5	5	8	4	5	5	7	12	7	5'5	8	4	10	9		7	6	9	7	8	10	6
+ '3	8	8	10	10	8	5	8	10	5	5	11	5	11	10	17	8	8	3		10	6	8	10	7	10	6
+ '5	9	4	11	8	9	4	9	9	9	9	7	7	5	7	8	4	7	3		13	6	6	5	5	3	8
+ '7	5	7	8	7	6	4	5	5	8	6	6	12	5	6	4	4	8	5		6	4	5	6	4	4	14
+ '9	7	5	11	4	5	5	3	8	5	4	6	7	9	6	5	5	3	3		4	8	5	5	5	5	11
+1'1	4	7	8	3	8	4	4	6	6	6	6	3	4	6	11	5	8	5		2	4	4	3	3	5	5
+1'3	4	3	6	6	3	1	5	4	4	7	4	2	3	3	3	5	4	4		3	3'5	3	3	4	5	3
+1'5	2	4	1	4	1	6	3	4	2'5	4	5	3	7	4	2	7	1	1		1	3'5	3	2	3	1	3
+1'7	1	4		2	2	7	3	1	2	1	3	2	2	6	2	3	2			2	3		3	3	3	1
+1'9	4	3	1	1	2	1	3	1		2	2	1	2	2	1	4	3'5				3	2	3	2'5	1	2
+2'1	2					2			1				1	5	1	1	1'5						1	5		
+2'3				1			1					2									2					
+2'5		1		1		2	1	1	1						1	1										1
+2'7				1		1	2				1	1			1	1								1		
+2'9		1										1			1									1		
+3'1									1																	
+3'3																										
+3'5																										

TABLE 7. FREQUENCY DISTRIBUTION OF 104 SAMPLES OF 100 EACH—Contd.

Range	14:1	14:2	14:3	14:4	15:1	15:2	15:3	15:4	16:1	16:2	16:3	16:4	17:1	17:2	17:3	17:4	18:1	18:2	18:3	18:4	19:1	19:2	19:3	19:4	20:1	20:2
-3:7																										
-3:5											1															
-3:3																										
-3:1																										
-2:9																										
-2:7		1			1								1						2							
-2:5					3	1														1						
-2:3	1	1			1															1						
-2:1	1	2			1					4										1						
-1:9	2	1			1	1														1						
-1:7	2	8			3																					
-1:5	1	4			2																					
-1:3	4	1			2	5																				
-1:1	8	4			3	3																				
-:9	6	7			3	3																				
-:7	5	5			6	2																				
-:5	6	8			6	6																				
-:3	10	6			7	4																				
-:1	9	11			8	10																				
+:1	5	11			6	10 <sup>5</sup>																				
+:3	7	7			5	8																				
+:5	5	5			7	7																				
+:7	7	5			8	5																				
+:9	7	8			3	4																				
+1:1	4	1			3	7																				
+1:3	7	1			3	3																				
+1:5	2	7			5	5																				
+1:7	1	4			5	5																				
+1:9	2	3			2	2																				
+2:1		1			1	1																				
+2:3	2				1	1																				
+2:5		2			1																					
+2:7		2			1																					
+2:9	1				1																					
+3:1																										
+3:3																										
+3:5																										

RANDOM SAMPLES FROM A NORMAL POPULATION

TABLE 7. FREQUENCY DISTRIBUTION OF 104 SAMPLES OF 100 EACH—Concl'd.

Range	20'3	20'4	21'1	21'2	21'3	21'4	22'1	22'2	22'3	22'4	23'1	23'2	23'3	23'4	24'1	24'2	24'3	24'4	25'1	25'2	25'3	25'4	26'1	26'2	26'3	26'4		
-3'7																												
-3'5																												
-3'3																						1						
-3'1																												
-2'9											1															1		
-2'7					2							1																
-2'5							1																					
-2'3		2								1																		
-2'1	1				2		1																					
-1'9		1	1		2		1					1									1	1						
-1'7	2	1	1		1		1				1										1	1			1			
-1'5	4	4	4		3	2	2				2										3	3			1			
-1'3	5	2	2	4	3	4	3				1										2	2			2			
-1'1	2	4	4	1	3	4	3				2										3	3			2			
-9	6	6	6	6	6	6	3				4										3	3			2			
-7	6	8	8	4	9	1'5	4				10										5	5			6			
-5	4	5	5	11	8	7	7				6										9	9			5			
-3	6	5	5	12	7	8	8				6										14	5			6'5			
-1	8	8	8	7	10	8	12				6'5										9	5			6			
+1	11	4	4	7	8	3	6				7'5										11	6			5			
+3	7	4	4	11	7	7	8				8										18	9			6			
+5	5	12	4	4	7	7	9				11'5										11	5			6			
+7	9	5	7	11	5	3	5				4'5										7	5			2			
+9	8	14	5	5	3	3	6				6										4	4			3			
+1'1	5	4	4	5	4	4	2				4'5										10	9			5			
+1'3	5	2	2	3	4	4	1				4'5										4	4			4			
+1'5		5			4	4	3				6										4	4			5			
+1'7	3		1	2	1	1	3				1										2	2			1			
+1'9	1		1	1			2				2										1	1			1			
+2'1	1		3	3	4		1				1										2	2			3			
+2'3		1		1	1		1				1										3	1			1			
+2'5				1																					1			
+2'7				1																								
+2'9																1												
+3'1					1																							
+3'3																												
+3'5							1																					

RANDOM SAMPLES FROM A NORMAL POPULATION

DISTRIBUTION OF  $\chi^2$ .

In view of the interest of the question it was thought advisable to test the distribution of  $\chi^2$  itself. The observed and expected frequency distributions of  $\chi^2$  for 104 samples are given in Table 9.

TABLE 9.—EXPECTED AND OBSERVED FREQUENCY DISTRIBUTIONS OF  $\chi^2$  IN 104 SAMPLES OF 100 EACH.

Range	Expected (f)	Observed (f')	(f-f') <sup>2</sup> /f
0--4.863	10.40	7.00	1.11
- 6.179	10.40	18.00	.65
- 7.267	10.40	12.00	.25
- 9.342	20.80	24.00	.49
- 11.781	20.80	18.00	.38
- 13.442	10.40	11.00	.08
- 15.987	10.40	11.00	.08
- 18.307	10.40	8.00	.57
<b>Total</b> ...	<b>104.00</b>	<b>104.00</b>	<b><math>\chi^2 = 3.51</math></b>

It will be seen that  $\chi^2 = 3.51$  for 8 cells, with  $P = 0.8323$ . The observed distribution of  $\chi^2$  is therefore in excellent agreement with expected values.

DISTRIBUTION OF MEAN AND STANDARD DEVIATION.

In the present case we may test the normality of the samples in a different way. The frequency distributions of 104 observed values of the means and of the standard deviations are given in Tables 10 and 11.

TABLE 10.—DISTRIBUTION OF OBSERVED AND EXPECTED MEAN VALUES (SAMPLES OF 100)

Range	Observed (f)	Expected (f')	(f-f') <sup>2</sup> /f
Beyond - 0.18	12	9.72	0.54
.11	5	4.04	.23
.09	6.5	5.18	.43
.07	7.5	6.12	.81
.05	4	6.04	3.52
.08	6	7.72	.88
-  .01	11	8.28	.94
+  .01	10	8.89	.81
.08	6	8.22	.60
.05	8	7.73	.01
.07	9	6.94	.61
.09	5.5	6.13	.06
.11	4.5	5.08	.05
.18	2	4.04	1.08
.15	4	8.13	.25
Beyond + 0.17	3	6.59	1.95
<b>Total</b> ...	<b>104</b>	<b>104.00</b>	<b><math>\chi^2 = 11.23</math></b>

c=16,

n'=16,

P=0.7507

The expected frequency of the mean and the S.D. in samples of size 100 are shown in column 2 of Tables 10 and 11 respectively. It is now possible to apply the ( $\chi^2$ ,  $P$ ) test.

For mean values we find  $\chi^2=11.23$  for 16 cells. As the expected values have been calculated independently of the sample itself we again use  $n'-16$  in Elderton's Tables and find  $P=0.75$ .

TABLE 11. DISTRIBUTION OF OBSERVED AND EXPECTED STANDARD DEVIATIONS (SAMPLES OF 100).

Range	Observed ( $f'$ )	Graduated ( $f$ )	$\frac{(f'-f)^2}{f}$
0.78—0.86	2	2.8	0.23
—0.88	6	2.6	4.45
—0.90	2	3.0	0.93
—0.92	8	5.8	1.35
—0.94	7	7.8	.08
—0.96	8	10.0	.40
—0.98	10	11.6	.22
—1.00	13	12.7	.01
—1.02	12	11.4	.03
—1.04	13	9.7	1.12
—1.06	8	8.1	
—1.08	6	6.2	.01
—1.10	3	4.6	.55
—1.12	7	3.0	5.33
—1.14	4	1.8	2.70
1.14—1.20	0	2.0	2.00
Total ...	104	104	$\chi^2=19.41$

$$c = 16, \quad n' = 16, \quad P = 0.1965$$

For standard deviations  $\chi^2=19.41$  for 16 cells. The value of  $P=0.1965$ . We conclude that for both means and standard deviations there is satisfactory agreement between expected and observed values. The 104 samples of 100 may also therefore be considered random samples from a normal population.

The general conclusion is that the present Tables give truly random samples from a normal population with zero as mean and unity as standard deviation and may be used with safety for purposes of artificial sampling at least up to the sixth moment coefficient.

(March, 1934).

## RANDOM SAMPLES FROM A NORMAL POPULATION

PLATE 1.

1	2	3	4	5	6	7	8
-0.588	+0.424	-0.527	+2.040	+0.685	+0.280	-0.476	+0.157
-0.211	+1.670	-1.018	-1.082	+0.584	+0.089	-1.126	-0.615
-0.604	+0.669	-0.410	-0.504	-0.866	-0.880	+0.499	+0.736
-1.590	+0.062	-1.220	+0.281	+0.255	+0.888	-0.194	+1.168
-0.597	+1.368	-1.078	+1.296	+0.525	+0.282	+1.183	+0.871
+0.220	-0.290	-0.003	-0.971	-0.547	+0.297	+0.261	-0.816
+1.449	-0.395	-0.413	+0.111	+1.145	+0.261	+0.012	-0.836
-0.841	+0.786	-0.954	+0.676	-1.726	+0.107	+1.155	+0.556
+1.714	-0.573	+1.578	-0.340	-0.645	+1.185	-0.858	+0.899
+0.932	-1.003	-0.867	+0.007	-0.406	+0.550	-0.256	+0.568
+0.168	-0.382	+1.454	+0.831	+0.357	+0.615	+0.806	+0.787
-1.271	+0.493	-1.169	+0.402	-0.762	+0.003	-1.454	-0.705
+0.479	+0.028	+0.173	-0.312	+0.629	-0.403	+0.961	+0.867
-0.827	-0.770	-0.030	+0.627	-0.288	-1.015	+0.243	+0.120
+0.142	-0.059	-0.639	+0.071	-0.888	+0.385	+0.188	+1.723
-0.124	-0.912	-0.443	-0.255	+1.681	-0.192	-0.573	+2.616
-0.658	+0.378	+0.174	+1.482	+0.726	-0.967	+0.108	+0.725
+0.501	-0.224	+0.625	+0.483	-1.189	+0.592	-1.137	+0.021
+0.931	-0.221	-0.219	+1.645	-0.168	-0.271	+0.238	-0.435
+0.811	-0.329	+0.239	+1.983	-0.317	-0.199	-0.001	+1.105
+1.548	+0.561	-0.461	-1.449	-0.587	-1.274	+0.850	-0.127
-0.403	+0.330	+0.260	+1.542	-0.428	-1.242	-1.050	-0.050
+1.288	-0.981	+0.018	-1.504	+0.888	-1.330	-0.100	-0.178
+1.423	+1.473	-0.584	+0.553	-0.289	-0.816	+0.331	-0.648
+0.766	-0.316	-0.555	+0.724	-2.360	+0.528	-1.123	-0.861
+1.947	+1.873	+0.625	-2.980	+1.720	-0.897	-2.270	-0.879
+1.573	+1.412	+1.169	+1.535	-0.085	-1.756	+0.445	+0.142
-1.186	-0.366	+0.251	-0.508	+1.290	+0.153	+0.723	+0.894
-1.470	-0.251	-0.239	-1.015	-0.965	-1.091	+0.061	-0.144
+0.345	-0.254	-0.307	-0.780	+0.909	-0.122	+0.345	-0.890
-1.074	+0.569	-0.343	-0.980	-1.254	-0.401	-0.141	-0.500
+0.537	+1.273	+0.528	+0.170	+0.697	+0.436	-0.925	-0.481
-0.456	-0.310	-1.379	+1.312	+1.207	+0.013	+1.008	+1.351
+0.814	-0.017	+0.190	+0.295	+0.403	+1.081	-0.406	+1.325
+1.160	-0.382	+1.268	-1.419	+0.354	+2.760	-0.638	+0.249
-0.383	+0.605	+1.147	-3.90	-0.897	-0.704	-0.353	+0.045
-2.007	-0.411	+2.080	+0.423	+1.930	-0.969	+1.377	-1.079
-0.522	+1.043	+0.596	+1.563	-0.294	-1.463	-2.443	-0.435
+0.671	-2.022	+0.814	-0.722	-0.333	-0.024	-0.680	-0.288
+0.047	-0.906	-0.766	+1.540	-1.615	-0.873	-0.919	-0.813
-1.177	-0.661	-0.681	+1.760	-2.475	-0.320	+2.217	+0.024
-0.277	-0.082	+0.778	+0.390	+1.355	-0.476	-0.223	-0.355
-1.230	-0.762	-0.964	-0.745	-0.329	+0.912	-1.112	-1.057
-0.901	+0.747	+0.147	+0.569	+1.663	-1.994	+0.766	+0.187
+0.308	+1.749	+1.779	-0.802	+0.753	-0.808	+0.007	-1.589
-0.062	-0.121	-0.598	+0.849	-0.090	-1.180	+0.614	+0.974
-1.659	+0.523	-0.492	+0.006	-0.029	-1.007	+2.096	+0.469
-0.015	-0.523	-1.062	-0.580	-1.086	-1.299	+0.614	-0.312
-0.018	+2.024	+0.662	-0.255	-0.564	-1.590	-0.257	+0.875
-0.723	-0.997	+0.569	-1.948	-0.243	-0.226	-0.473	+2.078

## PLATE 2.

9	10	11	12	13	14	15	16
-1'149	-0'566	+0'631	-0'247	-0'336	+1'030	-0'688	+0'123
+1'110	-0'022	-1'327	+0'563	-0'051	-1'121	+1'127	-0'769
-0'451	-0'732	-0'224	+2'250	-0'056	-0'123	-0'936	-0'646
+0'775	-1'880	+1'257	-0'786	+0'765	-1'438	-1'151	+0'577
+0'485	-0'204	-0'860	+0'018	-0'132	-0'493	-1'455	-0'013
+1'391	-0'302	+1'374	-0'797	+0'452	+1'801	+0'880	-0'486
+0'080	-1'290	-1'528	+0'880	-0'042	+1'131	+1'190	+1'068
-2'240	-0'056	+0'854	+1'417	-0'797	-0'762	+0'090	+1'097
-0'716	+0'763	+1'595	+0'576	+0'996	-0'261	-1'342	+0'069
-1'800	+0'069	-0'254	-1'940	+1'443	+0'197	+0'184	2'730
+0'791	+1'891	+1'065	-0'186	+2'250	+0'020	-1'290	+1'352
-0'671	-0'188	-1'018	-1'535	-2'233	+0'392	+1'112	-0'074
+0'423	-0'873	-0'490	+1'372	+0'291	+0'226	-1'457	-0'284
+0'459	-1'065	+1'347	-0'060	+2'333	-0'315	+0'640	-0'604
-0'119	+0'842	+1'102	-0'423	+0'822	-0'033	-0'170	+1'794
+0'176	+2'267	-0'638	-1'315	-0'220	+0'431	-1'426	+0'289
-0'212	-1'060	-0'557	-1'258	-1'180	+1'274	-1'025	-1'051
-0'124	-0'683	+0'361	+0'077	+0'720	+0'561	-1'263	-0'701
-0'089	-1'544	+2'160	-0'136	+0'168	+0'730	-1'133	-0'730
+0'436	-0'374	+2'115	+1'397	-1'640	+0'373	+0'089	+1'243
+0'386	-1'840	+0'806	+0'920	-1'371	+0'866	+0'178	-0'863
-0'971	-0'180	-0'894	+0'080	-0'332	+1'275	+0'664	-0'296
-1'118	-1'173	-0'423	+1'220	-0'267	+0'461	-0'954	-1'340
+0'003	-0'246	-0'814	+2'030	+1'101	-0'443	+0'530	+0'293
+0'795	-0'831	+0'039	-0'841	-0'542	-1'934	+0'729	-0'567
-0'843	+1'277	+1'272	+0'602	+0'733	-0'214	+0'890	+0'604
+2'540	-1'376	+0'664	-0'270	+0'842	-1'367	+0'198	-0'131
-1'840	+2'330	-0'002	+0'763	+0'504	-1'359	-0'346	+2'260
+2'340	+0'811	-0'192	+0'475	-1'996	-1'109	+0'647	+1'195
-0'989	+0'793	+1'645	-0'225	-1'260	-0'531	+0'273	-1'298
-0'803	-1'193	-0'303	+0'320	-1'529	-1'431	-0'751	+0'673
-1'635	-1'093	+0'244	+0'470	-1'076	+0'714	-0'024	-0'077
-1'622	-0'239	+1'366	+0'351	-0'807	+0'950	-0'356	+0'386
+0'633	+0'639	+0'404	-1'003	-0'212	-1'713	-0'339	-0'321
-0'437	-0'323	+0'800	+0'520	+0'797	+0'602	-0'104	+1'740
+0'483	-0'663	+0'670	+1'746	+1'302	-0'612	-0'003	-1'000
+1'274	-0'400	-0'355	-1'734	-1'249	+0'342	+1'266	-0'193
+1'409	-0'720	-1'760	-0'469	-0'990	+0'993	-0'154	-2'032
+1'956	+0'336	+0'546	+2'036	-1'024	+0'883	-0'132	-0'830
-0'773	+0'303	-0'561	+0'135	-1'003	+0'760	-0'016	+2'405
+0'503	-0'500	-0'814	-0'431	-0'143	+1'670	-1'343	+1'300
-0'420	-0'367	-1'735	+0'236	-0'273	+0'593	+1'070	+0'219
+1'993	+0'136	-0'072	+0'133	-0'315	-0'477	-0'337	-0'151
+1'516	+0'145	+0'120	-2'075	+0'605	+0'522	-0'274	+0'604
+0'192	+0'332	-0'370	+0'307	-0'521	+0'305	+1'020	-0'325
+0'432	+0'137	-0'137	-0'542	+2'545	+1'363	-0'362	+0'959
+0'417	+0'457	-0'016	-2'430	-1'761	+1'226	-0'062	+0'644
-0'633	-0'133	+1'162	+1'009	-0'163	+1'277	-1'146	-1'609
+0'477	-0'026	+1'672	-0'373	+0'395	+0'740	+2'520	+1'017
-0'120	+0'763	-0'233	+0'596	-1'112	+0'553	-0'026	+0'413

RANDOM SAMPLES FROM A NORMAL POPULATION

PLATE 3.

17	18	19	20	21	22	23	24
-0.096	-0.505	+0.809	+0.438	+0.075	+0.028	+1.078	+0.456
-0.012	+0.522	+0.061	+0.852	+0.022	-0.814	+0.970	-1.850
+2.220	-1.752	+0.452	-0.650	+0.691	-0.209	-1.097	+1.547
-0.622	+0.831	-0.551	+1.129	-2.080	+2.070	+0.585	+0.879
+0.202	-0.169	+0.434	+2.175	+1.605	-1.364	+1.092	-1.192
+0.954	-1.213	+1.375	+1.662	-1.045	-1.354	-0.721	-0.689
-0.491	-1.980	-1.426	+0.854	+2.850	+1.353	-1.301	-1.832
-0.711	-0.849	-1.216	-0.493	-1.191	-2.167	-0.287	-0.423
-2.660	-0.136	+1.114	+0.074	+0.882	+0.189	+0.659	-0.792
-0.706	-0.007	-1.681	-0.897	+0.540	-0.498	+0.485	+0.764
+0.231	+0.454	+1.192	-0.595	+0.055	-0.428	+0.178	+0.348
-1.283	-1.372	+1.824	+0.556	-2.257	+0.056	-1.163	-0.030
+0.193	-0.008	-0.231	-0.055	+1.873	+1.139	-0.231	-0.247
+0.786	+0.235	+0.892	-2.298	+1.185	+0.172	+0.058	+0.145
-0.028	+0.312	+1.441	+1.446	-0.781	-1.876	-1.374	+0.367
-1.262	+1.362	+0.102	-0.941	+0.029	-0.269	-1.253	+0.308
+1.366	+0.805	-1.353	+0.543	+0.218	-0.685	+1.986	+0.811
-1.136	+1.086	-0.404	-2.313	-1.485	-0.321	-0.053	+2.280
+1.578	-0.301	+0.192	+0.840	-0.319	+1.417	-1.151	-0.895
+1.876	-0.034	+1.454	+0.292	-0.133	+0.844	+0.039	-0.801
+0.710	-0.333	+1.393	-0.939	+0.195	+0.007	+1.441	-1.333
+0.012	-0.379	+0.935	-0.240	-0.168	-0.462	+1.409	-0.057
+0.076	-0.625	-0.987	-0.997	-1.820	+0.467	-0.284	-1.580
-0.335	+0.007	+0.332	-0.371	+1.658	+0.219	+0.018	-1.072
-2.180	+0.691	+0.123	-0.357	+0.107	-1.867	+1.985	-0.887
-0.556	+0.784	-1.182	-0.952	-0.754	-0.167	-0.033	-1.505
+0.815	+0.127	-1.716	-0.496	-1.285	-0.601	-1.007	-0.704
-0.849	+1.003	+0.590	+0.951	-0.657	+0.949	+2.810	-0.023
-1.289	-0.685	-0.908	-0.334	+0.723	-0.533	-0.849	-0.492
+0.693	+0.142	-0.696	-2.188	+2.330	+1.727	+1.478	+1.233
+1.371	-1.237	-1.721	-0.202	-0.848	-1.243	-0.498	-0.792
+0.476	+0.486	-2.730	+2.010	-0.995	+1.172	+0.227	-0.266
-0.335	-0.092	-1.201	-1.600	-1.027	-0.325	+0.975	+0.827
+0.335	-2.445	-0.611	-1.592	-0.904	-0.327	+0.164	-0.724
-0.126	-0.980	+1.815	-0.510	-0.523	-1.200	+1.886	+0.226
-0.632	-0.702	-1.720	-1.087	+0.535	+1.309	-1.722	+0.133
+0.222	-1.228	+0.924	-0.666	-0.027	+0.283	+0.247	+1.010
-0.169	-0.523	+0.530	-1.099	+2.074	-0.067	-0.154	+0.870
-0.877	-1.585	+1.632	-0.484	-1.774	-1.239	-0.174	+0.845
+0.259	-1.412	-0.311	+1.166	-0.147	-1.238	-0.347	+0.197
+0.508	+0.590	+0.537	-1.274	+1.018	-0.745	-0.145	-0.600
+0.810	-1.534	+0.813	-1.079	+1.529	-1.095	-0.376	+1.537
-0.499	+0.419	+0.948	-1.195	+0.177	-0.402	-0.542	-1.082
-0.297	+0.038	-1.803	+0.601	+1.796	-1.660	+0.900	-0.593
+2.307	-0.085	-0.711	-1.202	+0.132	-0.549	+1.075	+0.389
+1.074	+0.007	-0.172	-1.548	-1.208	+0.047	+1.318	-0.044
-0.850	+0.814	-0.278	+1.180	-0.797	-2.297	-0.136	-0.552
+0.166	-0.451	-0.303	+0.962	-0.660	+1.900	-1.188	+1.368
+0.192	-1.422	-0.686	-0.921	-0.293	+1.545	-0.173	+0.000
+1.799	-2.670	+0.552	+1.168	+1.306	+1.780	-0.118	+0.470

## PLATE 4.

25	26	27	28	29	30	31	32
-0.841	-0.262	+2.120	+0.0165	-2.303	-0.274	+0.960	+2.475
+0.140	-1.082	-0.988	-0.407	-0.474	-2.370	+1.070	-0.304
-1.437	-0.496	+1.256	+0.004	-0.674	-0.336	-0.679	+0.379
-1.015	-1.722	-0.612	+0.254	+1.160	-1.612	-0.580	+0.172
+2.280	-0.880	+0.743	-1.109	+2.303	-0.129	-0.733	+0.055
-0.225	+0.204	-0.818	-0.140	-1.596	-1.125	+0.097	-0.568
+1.878	+0.160	+0.586	+0.344	-1.129	-0.057	-0.188	-0.396
+0.502	+0.705	+0.654	-1.232	+0.512	+0.354	+0.421	+0.295
-0.533	-0.481	-1.548	+0.118	-0.009	-0.050	+1.133	+1.522
+1.720	+1.552	+1.643	+0.947	+0.917	-0.101	+0.352	+1.363
+0.189	-0.449	+0.247	+2.042	+0.440	+0.404	-0.078	+0.092
-1.730	+1.063	+1.200	+0.991	+2.030	+0.625	+1.567	+1.223
+1.043	-0.075	-0.726	+0.416	+0.912	-0.452	+0.183	+0.813
+0.772	-0.165	+0.678	+1.932	-0.401	+0.907	-0.283	-0.639
-0.197	-2.330	-0.013	-1.809	-0.202	+0.883	+1.275	+1.454
-1.102	-0.535	+2.125	+0.905	+0.176	+0.632	-0.670	-0.807
-1.886	+1.152	+0.675	+0.464	+0.440	-0.391	-0.016	-0.085
-1.147	+0.143	-0.218	-0.526	+0.274	-0.072	+0.316	-0.342
-0.248	+2.052	-1.048	-1.811	+0.226	-0.072	+1.339	+0.024
+0.984	-0.258	-0.709	-1.102	+1.781	+1.379	-0.479	-0.034
+1.068	+1.309	+0.325	+0.093	-0.938	+1.100	-0.069	+0.357
+0.230	+0.455	-0.534	-1.652	+0.514	-1.321	-1.616	+0.312
-0.781	-1.322	-1.118	+1.037	-1.760	+0.628	+0.238	+1.851
-0.634	-1.323	+1.060	+1.672	-0.661	-0.570	-0.605	-0.191
-0.468	+0.886	-0.721	+0.236	-0.490	-0.542	+0.404	+0.739
-0.802	+1.554	-0.758	-0.792	+1.138	-1.169	+1.631	-0.257
+0.607	-2.227	+0.769	+0.324	-1.060	+1.069	+0.495	+0.030
-0.510	+0.210	-0.569	-0.600	-1.259	-1.973	+1.116	-0.175
-0.635	+0.752	+0.438	+0.252	+0.680	-1.108	+0.471	-0.217
+0.507	+0.873	+0.290	-0.837	+1.187	-1.104	-0.814	-2.435
-1.293	+0.602	+0.268	-1.604	-0.121	-1.044	+0.394	+0.681
+2.326	-0.288	+1.512	-1.623	+0.439	+1.920	-0.229	-0.882
+0.411	-0.865	+0.903	+0.523	-0.624	-0.444	+0.140	-0.695
-0.794	-0.275	+0.442	-0.625	+0.695	-0.817	+1.363	+0.886
+0.606	-0.374	-0.890	+0.299	+0.152	-0.446	-0.026	-1.342
+1.574	+1.480	-0.092	+0.715	+0.190	+0.325	-0.900	-0.276
-0.025	+0.229	-0.466	-0.080	+1.266	-0.781	+0.456	-1.077
+0.450	-0.481	+0.913	-0.412	+0.179	-0.334	+2.072	-0.467
-0.831	-2.153	+1.249	+1.356	+1.370	-0.728	+0.210	-1.242
+0.033	+0.842	-0.507	+0.096	-0.698	+0.180	+0.902	+0.499
+0.304	+0.759	-0.240	-0.727	+1.506	-0.111	+0.194	-2.550
+0.797	-2.165	-2.505	+0.954	-0.429	+0.901	-1.399	+0.458
+0.981	+0.582	-0.810	-0.186	-0.669	-0.887	+0.041	-0.778
-0.133	+0.156	+0.439	-0.984	+1.194	+0.067	+0.048	-0.431
-0.378	+0.376	+0.489	-2.024	+1.328	-0.058	+1.220	+0.157
+0.946	-1.192	-0.475	+1.850	+0.288	-0.964	-0.503	-0.339
+0.834	-0.112	+0.058	+0.889	+1.019	-2.200	-1.305	+0.748
+0.532	-0.005	-1.100	-1.128	+0.832	+0.364	-0.809	-0.463
-0.307	-2.485	+0.368	+0.075	+0.068	-0.177	-0.745	+1.244
+1.010	+1.819	-1.276	-0.565	+1.569	-1.276	-0.522	-0.954

## RANDOM SAMPLES FROM A NORMAL POPULATION

## PLATE 5

88	84	85	86	87	88	89	40
+0.0894	-0.491	+0.282	-2.066	-0.408	-1.826	+0.481	-0.097
+0.293	+0.211	+0.975	+0.402	-0.104	-0.086	+1.476	-0.017
-1.551	-1.354	-0.635	-0.516	-0.148	-0.212	-0.135	-0.411
-0.308	+0.434	-0.343	-0.507	-0.590	+0.795	-0.098	-0.963
+0.265	+0.181	-0.618	+0.201	+0.859	+0.298	+0.216	+0.869
-0.760	+2.100	+0.356	+0.264	+1.890	+0.390	+0.570	+0.523
-0.616	-0.599	-2.122	+1.265	+0.375	-0.430	-0.396	-0.725
-2.077	+0.566	+0.016	-1.263	+1.243	-0.010	+1.237	-1.229
+0.748	+0.863	-0.242	-0.481	+0.962	-0.645	-1.543	+1.183
-0.666	+1.533	-1.005	+0.252	+2.912	-1.453	+0.994	+0.078
-2.020	-1.875	+0.294	+0.040	-0.961	-0.814	+0.289	+1.193
-1.294	+0.453	-0.688	+1.304	-1.672	-1.680	-0.468	+1.006
-0.674	+0.606	-1.644	+0.000	-0.627	+0.426	+0.885	+0.194
+2.113	+0.503	+0.634	-1.142	+0.955	+1.397	-0.757	-0.314
+0.087	+0.331	+1.427	-0.979	+0.849	+0.781	-0.809	-0.273
+0.161	+0.204	-1.009	-0.155	-0.841	+0.274	+0.380	+0.501
+1.621	-0.159	+1.690	+0.469	+1.631	+1.014	+1.815	+1.421
+1.581	+0.279	-0.900	+0.796	-0.072	-1.172	+2.236	+0.537
-1.344	+0.594	+0.094	+0.401	+1.284	+1.932	-0.006	+2.428
+1.077	+0.185	+0.087	+0.143	-0.228	-1.644	+0.556	+0.433
-1.853	-2.247	+0.458	+0.388	-0.630	-0.474	-0.810	+0.206
+0.988	-1.263	+0.056	-0.712	-1.312	-1.167	+0.758	+1.584
-1.776	-0.447	-0.566	-0.409	+0.359	+0.645	+0.737	-1.899
+0.268	-1.367	-0.145	+0.250	-1.083	-0.194	+1.299	-1.037
+0.009	+0.942	-0.312	+0.102	+1.359	-0.489	-0.504	+1.631
-0.610	-0.910	-1.597	-1.745	-1.458	-1.193	+0.379	-0.616
+1.030	+0.166	-0.430	-0.297	+0.503	-1.084	-0.139	+1.364
-0.821	+0.404	+0.087	+1.079	-0.195	-0.337	+1.833	-0.363
-0.534	+0.631	-2.056	+0.901	+0.907	+0.057	-0.287	-0.078
-0.200	-0.558	-0.043	-0.764	-1.138	-1.625	+0.687	-0.250
-1.885	+0.454	+0.049	-0.732	+1.604	-1.165	+0.464	-0.406
+0.152	+1.751	-0.474	-0.951	-0.275	+1.396	+2.022	-1.570
-0.483	+1.023	+0.450	+2.092	+0.925	-0.431	-0.746	+0.447
-0.487	+0.154	+0.087	-0.707	-0.852	-1.630	-1.032	+0.864
-0.148	+0.299	-0.052	-2.780	-0.028	-0.856	-0.404	-0.469
+1.005	+0.488	+2.127	+0.451	-1.193	+0.006	-1.131	-0.443
+0.717	-1.738	-0.351	-0.542	+0.362	-0.853	+0.044	-0.597
-0.776	-1.270	+0.109	-1.563	-0.623	+1.254	-1.063	-0.445
+0.374	-0.132	+0.203	+1.534	-0.951	-0.667	-0.010	+1.217
-0.544	+1.499	+0.019	+2.727	-1.306	-1.330	+0.412	-1.266
-2.173	-0.459	+0.544	-0.196	-1.274	-2.092	-0.411	-0.035
+0.923	+1.251	-1.639	-0.131	+0.166	+1.075	-0.051	+0.270
-0.220	+0.279	+0.881	+0.613	+0.584	-0.180	-1.103	+1.903
-0.331	+0.033	-0.852	+0.385	-0.460	+1.689	+1.004	-0.868
-0.892	+1.449	-2.748	+0.811	+1.194	+0.012	-0.677	-0.407
-1.289	+0.577	+0.578	+1.261	+0.821	+0.564	+0.063	+0.870
+1.226	-0.110	-0.893	-1.121	+0.078	+0.603	+0.871	+0.274
+0.196	-0.491	+0.655	-0.307	-1.582	+1.345	-0.562	+0.065
+0.547	-0.577	+0.840	+1.370	+0.800	-1.307	-0.069	-1.718
+0.125	-0.078	+0.137	-0.120	+0.632	-1.920	-0.301	-0.127

PLATE 6.

41	42	43	44	45	46	47	48
-1'094	-0'159	-0'284	+1'147	-1'165	-0'224	+0'788	+1'048
-0'618	+0'945	+2'845	-0'789	+0'058	+0'875	-0'292	-1'881
+0'599	+1'730	-1'407	-1'048	+0'065	+0'616	-0'230	+1'311
-0'770	-1'360	-0'828	-0'842	-0'889	-0'859	-0'188	-0'711
-0'784	+1'892	+1'068	+1'124	+1'185	+0'008	-0'489	-0'762
-0'225	+0'204	-0'818	-0'140	-1'596	-1'125	+0'007	-0'568
+1'873	+0'160	+0'586	+0'844	-1'129	-0'057	-0'188	-0'396
-0'502	+0'705	+0'654	-1'232	+0'512	+0'854	+0'421	+0'295
-0'583	-0'481	-1'548	+0'118	-0'009	-0'050	+1'133	+1'522
-1'720	+1'552	+1'643	+0'947	+0'917	-0'101	+0'352	+1'868
+0'189	-0'535	+2'125	+0'905	+0'176	+0'632	-0'670	-0'807
-1'780	+1'152	+0'676	+0'164	+0'440	-0'391	-0'016	-0'088
+1'043	+0'143	-0'218	+0'526	+0'274	-0'072	+0'315	-0'345
+0'772	+2'052	-1'048	-1'811	+0'226	-0'072	+1'389	+0'024
-0'197	-0'258	-0'709	-1'102	+1'781	+1'879	-0'479	-0'084
+0'602	+0'445	-0'689	+0'477	-0'681	-1'084	+0'633	-0'200
-0'094	-1'007	-0'554	+0'084	-1'764	+0'984	-0'740	-1'522
-0'806	-1'381	-0'482	-1'636	+2'202	-1'074	+0'183	-1'213
+1'029	+0'085	+1'415	-1'416	-1'750	+0'417	-0'056	+0'277
+0'696	-0'230	-0'255	-0'098	+1'616	-0'277	-0'473	-0'500
-0'182	-0'530	+0'624	+1'413	+0'905	+0'022	+1'376	-0'041
+0'346	-1'291	+0'428	+1'414	+1'902	+1'110	+0'982	-1'232
+0'108	+0'523	+1'078	+0'832	+0'755	+0'200	-0'572	+0'080
-0'177	+0'015	+0'011	-0'291	+1'061	+1'010	+1'122	+0'330
+0'058	-0'057	-0'627	-0'913	+0'704	+1'653	-0'679	+1'104
+1'088	+2'202	-0'135	+0'445	-2'024	+0'819	+1'295	+0'260
-0'408	-1'272	-0'159	-0'073	+0'414	+1'876	-0'879	-1'953
-0'712	-0'668	-0'489	-1'321	+0'190	+1'178	+1'730	+0'175
+0'370	-1'412	-0'858	-0'599	-0'743	-0'205	-0'055	+0'673
-0'553	+0'063	-0'678	+0'484	+0'544	+0'617	-0'659	+0'531
+0'621	-0'018	+0'581	+0'106	+1'099	+0'076	-0'438	+0'836
+0'495	+0'920	+0'542	+0'177	-0'626	+0'585	+1'166	-0'063
-0'018	-0'519	+1'436	+1'846	-1'621	-1'228	+0'060	+1'040
+0'912	+1'180	-0'931	+0'725	+1'796	+1'812	-0'369	+1'329
+0'525	+1'828	+0'108	+0'679	-0'293	+1'389	-1'063	-2'650
+0'726	-0'871	-0'056	-0'006	+0'252	-1'080	+2'227	+0'426
-0'467	-0'238	-1'578	-0'986	+0'120	+0'280	+2'122	-1'372
-0'582	-0'441	-0'461	-0'062	-0'790	-0'119	-0'917	-1'010
+1'187	-0'890	-2'044	+0'388	+0'442	+0'325	-0'436	+0'435
-0'978	+0'221	+0'723	-0'818	-0'754	+0'205	+0'156	+0'056
-2'280	-0'504	-1'833	-0'522	-0'534	+0'202	+0'411	-2'770
-1'680	-0'023	+0'871	+0'082	+0'747	+0'694	-0'871	+1'186
+0'351	-0'725	+1'404	+0'102	+1'183	+0'114	-1'217	-1'127
-1'571	+0'899	-1'652	+1'400	+1'580	+0'010	-1'093	-1'051
-0'885	+0'659	+0'098	+0'098	+1'125	+0'140	+0'202	+0'689
-0'751	-0'098	-0'770	-0'306	+0'765	+0'982	-0'475	+1'314
+0'062	-0'401	+0'507	+0'737	-0'788	+1'296	+1'799	+0'019
+0'224	-1'528	+0'519	-0'890	+0'393	+1'328	+0'535	+0'968
+1'129	-1'688	-2'420	-1'321	-0'181	-0'175	-0'101	-0'805
+1'079	+0'292	-0'642	-0'169	-1'189	+0'627	-1'386	-0'218

## RANDOM SAMPLES FROM A NORMAL POPULATION

## PLATE 7.

40	50	51	52	58	54	55	56
+0.886	+0.687	-0.157	+0.871	+0.599	-0.481	+1.100	-1.202
-0.206	-1.117	+0.428	-0.765	+1.487	-1.225	-1.041	-0.815
+0.650	+0.123	+1.000	-0.963	-2.077	+0.972	-0.723	+0.797
+1.374	+1.125	-0.182	+0.969	-0.469	+1.170	+1.023	-0.581
-0.988	-0.458	-3.105	-0.658	+0.834	+0.762	+0.719	+0.968
+0.882	-1.025	-0.177	+0.454	-0.298	-1.183	+2.220	+0.092
+0.992	-0.029	+0.008	+0.200	+0.382	+0.143	+0.585	-0.587
+1.045	+1.085	-0.751	-1.524	-0.964	+0.561	+0.519	+0.620
-0.343	+1.335	-0.709	-0.876	-0.982	-0.645	+0.894	-0.514
-1.060	-1.522	-0.531	+0.028	-0.025	-0.617	-0.107	+0.010
+0.457	+0.587	+0.174	-1.854	+0.418	+0.514	-0.604	+0.817
-1.029	+1.779	+1.653	-0.265	-1.028	-0.860	+2.111	-1.106
-0.979	+0.221	-0.533	-0.010	-1.115	+1.329	+1.527	-0.138
-0.968	-0.189	-0.411	-0.076	+1.213	+0.025	-0.263	+0.683
-0.852	+2.230	-0.859	+1.118	+1.748	+1.000	-1.940	-0.280
-0.002	+0.168	-0.344	+0.187	-1.100	+0.978	+0.431	-0.966
+0.145	-1.364	+0.131	-1.005	+0.763	+0.386	-0.182	+1.518
+2.088	+1.053	+0.454	-1.996	-0.062	+0.413	+0.236	-0.398
-0.747	+0.544	+0.777	+1.947	+0.898	-1.250	-0.193	+1.195
-1.370	+0.256	+0.294	+0.650	-1.092	-0.334	+0.055	-0.342
-0.631	-0.927	-0.255	-1.575	-1.128	+0.412	+0.649	+1.203
-0.819	-1.159	-1.011	-0.169	+0.702	+0.270	+0.855	+0.091
-0.509	-1.450	-1.307	-0.619	-0.224	+3.353	+0.584	+1.438
+0.993	+1.771	-2.034	+1.265	+0.724	-0.311	-1.802	-1.651
+0.456	+0.338	-0.560	-0.191	-2.028	-1.191	+0.195	+1.185
-0.872	+0.018	-0.094	+1.448	-0.221	+0.436	+0.272	+1.935
+0.290	-0.204	+1.217	-0.515	+0.693	-1.802	+0.223	-0.324
+0.018	-0.368	+0.444	-0.107	-1.331	+0.271	-0.304	-1.589
-0.944	-0.364	+0.870	-0.354	-1.213	+0.583	+1.924	+0.728
-0.029	-0.007	+1.513	+0.433	+0.929	-0.419	+1.935	+1.021
-1.171	-0.339	+0.880	+0.614	-2.048	-1.237	-0.101	+1.778
+0.187	+0.117	+1.226	+0.497	-1.129	-0.104	+0.664	-0.372
-0.156	-0.316	+1.821	-0.267	-0.428	-0.220	+0.984	+0.808
-1.439	-1.011	+0.132	+0.859	-1.145	+0.468	-0.136	+1.799
+0.577	+1.478	-1.799	-1.974	+0.085	-0.384	+0.460	-0.250
-0.692	+1.000	-2.028	+1.718	-0.936	-0.976	+0.594	+1.449
-0.856	-1.882	+0.398	+0.046	+0.030	+1.046	+1.587	+0.413
+0.888	+0.174	+0.885	+1.704	-0.215	+0.875	-1.191	+0.698
-0.417	+0.410	+0.477	-0.921	+0.744	+0.080	+1.763	-0.603
-1.576	-0.077	-1.585	-0.277	-0.504	+0.071	+0.947	+0.059
-0.246	-0.111	+1.794	+1.018	+0.279	+0.948	+1.527	+1.672
-0.723	-0.288	+0.080	+0.002	+0.108	-2.536	+0.794	+1.420
+0.799	+0.088	+0.605	+1.328	-1.795	-0.612	+0.265	-0.005
+1.840	+0.542	-1.557	+0.376	-0.219	-2.391	-0.824	-1.467
-0.701	+1.413	-1.653	-0.948	+1.255	+0.066	+0.237	-0.667
+0.508	-0.874	-0.346	+0.388	-0.381	-1.776	+0.163	+0.088
-0.923	-0.796	+1.036	+2.834	+1.810	+0.603	+2.428	+0.719
-1.679	+0.381	-0.392	-0.900	+0.219	-0.359	-0.050	+1.154
+0.981	+0.142	+0.593	+0.088	+0.209	-0.225	-1.018	-0.840
-0.046	-0.039	-0.791	-0.878	-0.214	+1.611	+0.956	-0.654

## PLATE 8.

57	58	59	60	61	62	63	64
-0.707	+0.703	+0.488	+0.750	+0.158	-0.517	+0.993	-1.200
-0.690	+0.843	+0.227	+0.242	+0.719	+1.082	-1.190	-1.466
+0.858	+0.014	+0.335	+0.442	+0.819	+0.055	+1.030	+0.219
+0.452	-0.119	-1.530	-1.082	-0.069	+0.108	-0.419	+0.820
-0.715	+0.817	-1.524	+0.974	+0.422	-1.558	-0.115	-1.896
-1.283	-0.562	+0.395	+0.673	+1.133	+0.834	-0.601	+1.177
+0.771	+0.643	-1.730	-0.184	+0.832	+0.437	+0.608	-1.106
+0.890	+0.209	-1.212	+1.256	-0.547	-0.775	-1.030	+0.992
+1.309	+0.990	-1.855	-1.064	-0.577	+0.586	+2.172	-0.368
+0.228	-1.299	+1.107	+0.095	+0.648	-1.039	+0.568	+1.171
+0.175	+0.261	+0.849	-0.376	-1.418	+0.801	+0.568	+0.183
+0.514	+1.053	+0.319	+0.914	-2.752	-0.175	-0.857	-0.259
-0.576	+0.120	-1.252	+0.740	+1.162	-0.938	+1.751	+0.845
-0.285	-0.212	-0.880	+0.575	+0.564	-1.231	+1.405	+0.624
+1.218	-0.267	+1.888	-0.917	+1.180	-0.298	-0.770	-0.623
-1.649	+0.958	-0.723	-2.727	-0.723	-1.310	+0.968	-1.900
-1.049	-0.219	+0.510	+1.476	+0.586	+0.314	+2.206	-0.083
+1.556	-0.086	+0.214	+2.562	-2.001	-0.287	+1.650	-0.910
+0.152	-0.371	-0.329	-0.020	+0.740	+2.351	+0.388	+0.311
-1.624	-0.575	-0.861	-0.762	+0.195	-0.064	+0.743	-2.290
+0.243	-0.425	+0.249	+1.131	+0.008	+0.421	-0.584	-1.187
+0.436	+0.180	+1.188	-1.507	+0.444	-0.102	+0.018	+1.288
-0.401	-0.118	+0.365	-0.973	-1.115	+1.181	-1.116	+0.124
+1.054	-0.708	+0.069	+0.426	-0.789	+1.477	+0.283	-0.513
+1.410	-1.256	-0.812	+0.127	-0.509	-0.198	+0.557	-0.467
-0.149	+0.910	-1.090	-1.436	-0.970	-0.612	-0.157	+1.547
-1.887	+1.049	-2.118	-0.651	-0.990	+1.863	-2.184	-1.891
+0.185	-0.581	-1.917	+0.464	+0.377	-1.887	-1.311	+0.788
+1.062	+0.722	-0.064	+0.383	-0.471	+0.213	+0.739	-1.986
+1.496	-0.056	+0.861	-0.074	+0.527	+0.179	+0.436	-1.227
-0.720	+0.253	-0.597	+1.189	-2.298	-1.111	+1.043	+0.968
+1.002	+1.739	+0.984	-0.108	-0.403	+1.185	+0.083	-0.153
+0.830	-1.189	-1.669	-0.478	+0.949	-1.155	+0.395	-1.094
+0.626	+1.662	-2.370	+0.467	-0.980	-0.364	-1.478	-0.293
-0.402	+0.695	-0.810	-0.773	-1.276	-1.084	+0.296	-0.474
+0.465	-0.516	+0.561	+0.277	+0.116	+0.574	+1.331	+2.028
+0.226	-0.735	+0.562	+0.070	-0.783	+0.237	-0.731	-0.182
+0.366	-0.208	-0.530	-0.725	-0.559	-2.644	-1.255	+0.095
-0.847	+0.780	+0.164	-0.600	-0.542	+0.839	+2.357	-2.878
-1.897	-1.885	+1.116	+0.684	-0.240	+0.146	-0.581	-0.945
+1.369	-0.726	+1.442	-0.170	-0.649	-0.589	-0.643	+1.618
-0.697	-0.444	-0.434	-1.420	+0.944	-0.649	-1.211	+1.077
+0.882	+0.178	-0.178	+1.336	+0.633	-1.044	+0.767	-0.536
-0.096	+1.571	-0.714	+1.847	+0.082	+2.349	+1.406	-0.378
-1.650	-0.825	+1.699	-1.138	-0.687	+1.616	-0.656	+1.050
+0.890	-1.726	-0.429	+0.492	-0.627	-0.409	+1.654	+0.588
-0.679	+1.358	+0.230	-0.286	-0.199	-0.013	-0.726	-0.005
-0.658	-0.621	-0.133	+2.697	+1.138	+0.795	+0.085	-0.219
-0.647	-0.102	-0.216	-0.951	+1.662	+0.693	+0.768	+0.402
-1.408	+1.688	+1.967	+0.824	-0.861	-1.417	+0.545	-1.809

RANDOM SAMPLES FROM A NORMAL POPULATION

PLATE 9.

65	66	67	68	69	70	71	72
-2'180	+0'308	-0'298	+1'088	+0'244	-0'648	-0'854	-1'854
-0'359	-1'113	+0'289	+1'056	-1'088	+0'358	+0'562	-0'068
-0'826	+0'667	+1'481	-1'069	+1'215	+1'866	+1'282	+0'996
-0'157	+2'689	-0'069	+1'270	-0'002	+1'644	+0'255	+0'888
-0'815	+0'598	-0'506	+0'432	-0'801	-0'588	+0'344	-0'598
+1'081	-0'211	-1'764	+0'198	-0'411	+0'568	-0'005	+1'577
+1'739	+1'198	-0'603	-0'161	+0'056	+0'078	+1'006	+0'885
-0'841	+0'060	+0'944	+0'241	+0'716	+1'062	+1'001	+0'808
-1'678	+1'804	-0'661	+0'505	-0'884	-0'612	+2'270	-1'847
+1'266	-1'228	-0'584	+0'888	-0'388	+2'620	-1'587	+0'488
-0'165	-2'078	-0'042	-0'719	+0'855	-1'080	-0'595	-2'148
+0'449	+1'651	+2'442	+0'111	+0'288	+0'119	+0'856	-0'418
+1'402	+1'875	+0'281	-0'419	+0'514	-1'000	+0'918	-2'000
+0'281	-0'428	-0'558	+0'763	+1'004	-0'810	-1'061	-1'006
-0'511	+0'985	-1'020	-0'290	+1'171	-1'592	-0'317	+0'221
-1'414	+1'568	+0'584	+0'826	-0'827	+0'072	-0'564	+0'548
+0'973	-1'876	-1'407	-2'122	-0'344	-1'908	+1'470	-1'279
+0'286	-0'388	+0'316	-0'154	+0'590	+0'814	+0'964	-1'270
+1'309	+0'077	+0'373	-1'919	+1'355	-0'203	-1'510	-0'969
+1'080	-0'834	-0'663	+0'482	+0'022	-0'806	-0'680	-0'636
+0'160	+1'060	+0'728	-1'187	-0'829	-0'797	+0'281	+0'265
+1'168	-0'978	-0'869	-0'118	+0'318	-0'087	-0'544	+0'776
-1'756	+0'188	+1'745	-0'580	+0'221	+0'894	-1'025	+0'781
+2'409	+0'462	+0'293	-0'928	+1'0820	+1'171	+1'239	-0'188
+0'818	+2'929	-1'664	-0'864	+0'316	+0'868	+0'645	-0'574
+0'464	-1'266	-1'341	-0'160	+0'866	+1'068	+2'342	-0'749
+0'860	+0'997	-0'499	+0'497	+0'795	+0'628	-1'000	+0'087
-0'680	+1'606	+1'945	-0'189	-2'150	+0'687	-2'489	+0'657
+0'125	-0'612	+0'718	+0'491	-0'621	+0'497	-0'242	-0'506
+0'451	+0'692	+0'750	+0'806	+1'155	-2'030	+1'251	-0'688
+1'868	+0'280	-2'188	-0'088	-0'658	-0'456	-0'180	-0'817
-0'518	-2'273	-0'207	+0'474	-0'707	-1'190	+1'237	-1'101
-0'306	-0'342	-0'649	-3'432	-0'389	-1'196	+1'222	+0'501
-0'525	+0'292	+1'058	+0'195	-0'657	-0'960	+1'300	+0'894
-0'752	-0'012	-1'418	+1'014	+0'828	+0'557	+1'606	+0'658
-0'987	-0'064	-1'185	-0'280	+1'766	+1'127	-1'192	+1'096
+1'026	+0'525	-0'187	-0'788	+0'378	-0'184	+1'341	-1'328
-0'187	-1'819	-2'598	+0'501	-0'202	-1'800	-1'119	+0'066
+0'954	-0'287	+1'447	-0'944	+0'489	+0'608	-1'847	+1'850
+0'282	-0'782	-0'988	-0'655	-0'088	-0'895	-1'671	+1'167
+1'060	-1'104	+1'152	+0'420	+0'587	-1'102	+2'088	+1'478
-0'980	-1'069	+1'886	-0'449	+0'308	+0'217	+0'888	+1'208
+0'986	-1'490	-0'739	+0'345	-0'498	+0'101	-1'169	+0'952
-0'996	+0'907	+1'015	-1'651	-0'766	+0'728	-0'389	-1'041
+1'691	-0'162	+2'040	+1'120	+0'037	+0'918	+0'858	-0'297
+0'710	+0'068	-0'648	+0'486	+0'510	+1'052	+0'116	-1'206
+0'005	+0'329	+0'326	-0'528	+1'299	-0'445	+0'256	+1'228
-1'590	+0'114	-1'929	+0'618	-1'617	-2'118	-1'651	+0'267
+0'166	+0'584	-2'948	+0'508	-1'184	-0'846	+0'788	-0'402
-0'417	-0'986	-0'545	+0'175	-1'028	-0'714	-1'464	+1'890

## PLATE 10.

78	74	75	76	77	78	79	80
-1'238	+1'186	+1'687	-0'753	-0'724	-1'770	-0'095	+1'465
+1'542	+0'807	+2'334	-0'944	-1'224	+0'970	+0'882	-0'091
+0'520	+1'108	-0'281	+0'460	-0'120	+0'177	+0'773	-2'319
-2'563	-1'278	-0'963	-0'660	+0'019	+1'462	+0'892	-0'346
+0'186	+1'440	+0'470	+0'051	-0'331	-0'252	-1'238	-0'895
-1'036	+0'250	+0'650	-0'543	-1'147	+0'849	-0'966	-1'406
+0'093	+0'309	-0'649	-0'496	+0'565	+0'161	-0'166	-0'813
-0'081	-0'146	-1'455	+0'883	+0'608	+0'365	-0'314	+0'253
+0'791	-0'655	+1'018	+1'268	-1'924	-0'136	+0'078	-0'575
+0'016	-0'618	-0'684	-0'189	+1'101	+0'150	-0'567	-1'165
+0'618	-1'691	+1'279	-1'552	-0'019	-1'653	-0'256	+0'313
+0'025	+1'018	+0'275	+0'431	+0'253	+0'072	-0'891	-1'240
-1'446	+0'008	-1'377	-0'172	-0'873	-0'677	-0'603	+0'568
+0'630	+0'949	-0'449	-0'091	+2'652	-0'095	+0'082	+0'650
-1'122	-0'433	-0'308	-2'289	+0'899	+0'018	-0'716	-1'364
+1'189	-0'627	-1'025	-1'253	-0'880	+0'049	+0'518	+1'032
-1'556	+1'611	-0'129	-2'312	-0'941	+0'148	-3'123	-0'309
+0'401	-0'208	+0'400	-0'371	-0'420	+0'639	-0'341	+0'866
-1'410	-0'551	-0'091	+0'273	-0'729	-1'034	+0'077	+0'273
+0'856	-0'506	-1'014	+0'671	+0'856	+0'479	+0'895	+0'566
+0'606	+0'728	-1'069	+0'685	-0'687	-0'592	-0'071	+0'455
-0'086	+2'218	-3'353	-0'275	+1'480	+1'394	+0'085	+2'738
-0'026	+1'149	+1'552	+1'034	-1'572	+0'549	+0'613	-0'757
+0'511	+0'453	+1'829	+2'178	+0'800	+0'639	-0'624	-0'361
+0'231	-0'464	-0'576	-0'296	-0'198	+1'378	+1'076	-3'719
-0'448	-1'392	+1'460	-1'025	+0'991	-1'456	-1'902	-1'619
+0'129	+1'271	+1'306	-1'266	+0'094	+0'880	+0'251	-0'005
+0'681	+0'176	-0'054	-0'596	+0'791	-0'617	+1'337	-0'526
+0'736	+0'725	-0'050	+0'038	+1'398	-0'490	+0'248	+1'779
+0'915	-0'336	+0'245	-0'392	-0'501	-0'350	-0'430	+2'197
-0'779	-0'822	+0'816	-1'051	+1'057	+1'524	+1'395	-1'836
-0'168	+0'799	-1'620	+1'497	+0'477	+0'124	+0'033	+1'082
-0'526	-0'462	+0'502	-1'608	+0'291	-0'473	-1'416	+1'296
+0'640	-1'080	+1'372	+0'810	-1'023	+1'161	+1'734	-1'187
-0'483	+0'346	-0'150	+2'053	+0'614	-0'102	-0'885	+0'424
-1'204	+0'250	-2'490	+4'474	-0'498	+0'622	+0'534	+0'007
+0'487	+1'644	-1'400	+9'876	-1'316	+1'613	-0'537	+1'096
-1'725	-1'869	+0'220	+0'174	+0'725	+1'055	-0'625	-1'565
-1'165	-1'482	-1'660	-1'915	+1'569	-0'378	+0'236	+1'520
-1'553	-0'020	+0'184	-0'885	+1'043	+1'395	+0'905	+0'237
+0'973	-1'418	-0'288	-1'964	+0'137	-1'517	+2'020	-0'138
-1'510	+0'243	-1'798	+2'689	+0'635	-0'137	+0'268	-2'024
+1'822	+0'175	-1'081	+0'472	+0'347	-0'813	-0'011	+0'104
-0'287	+1'307	+0'491	-1'016	+0'607	+1'624	+1'575	+0'205
-0'158	+1'957	-0'311	+0'702	+0'585	+0'547	-0'347	+1'998
-0'181	+1'936	+1'040	-0'020	-0'722	-0'884	+0'814	-0'100
+0'881	-1'262	-0'682	+0'053	+1'677	-0'412	+0'163	-1'341
+0'453	+0'465	-0'588	+0'812	-2'155	-0'495	-0'568	-0'484
-0'667	+0'217	-1'355	+1'711	-1'497	+0'345	+1'480	-0'507
-0'880	+0'846	+2'748	-1'980	-1'472	+1'756	+0'050	+2'007

## RANDOM SAMPLES FROM A NORMAL POPULATION

## PLATE 11

81	82	88	84	85	86	87	88
-0.471	+0.081	-1.509	-1.088	+0.199	-0.828	+1.612	+1.092
+1.424	-0.268	+0.919	-0.157	-0.406	+0.209	+0.708	+0.817
-1.160	+0.497	+1.096	+1.874	-0.118	+0.141	-0.904	+0.900
+0.725	-0.389	+0.888	-0.581	-0.407	+0.081	+0.268	+0.792
-2.590	+0.188	+0.283	+0.930	+0.044	-1.281	-0.297	+1.179
+0.260	+0.986	+0.301	+0.888	-0.110	+1.018	-0.009	-0.465
+0.599	+0.079	+2.478	+2.052	+0.201	-0.707	+0.994	+0.506
-1.140	+0.333	+1.158	-1.143	-0.241	+1.718	-0.693	-1.174
+0.124	-0.210	+1.152	+0.255	-2.062	+0.908	+0.156	+0.196
+0.828	+0.088	-0.338	-0.698	+0.926	-1.712	+0.906	+0.594
+0.096	+2.588	-0.437	+0.294	-0.299	-0.805	-0.862	-1.771
-0.409	-1.899	+0.335	+0.114	-2.032	-1.146	+0.099	+1.877
-1.507	+0.117	+0.148	+1.562	-1.560	+1.811	+1.090	+0.807
+0.909	+0.656	-1.841	-0.548	-0.389	+0.881	-0.143	+0.821
+0.298	+0.825	-0.086	-0.556	+0.338	-1.503	+1.864	+1.188
-0.522	-0.868	+0.452	+0.515	-0.176	-0.180	+2.815	-1.264
-0.610	+1.086	+0.440	+2.195	+0.738	-0.750	+1.334	+1.297
+1.876	-0.797	+0.321	-1.988	-0.975	+1.809	-1.360	-0.738
-1.111	+0.608	+1.569	+1.621	+1.662	-0.878	+1.066	+0.636
-0.473	+1.437	+0.146	+0.247	-1.671	+1.236	-0.449	+0.249
-0.868	+1.440	-1.217	-0.524	-0.801	-2.097	+0.064	-0.825
+0.265	+0.934	-0.858	+0.125	-1.384	-0.528	-1.952	+0.689
-0.822	-1.577	-1.210	+1.432	-0.738	-0.751	+0.095	+1.127
+1.857	+1.278	+1.986	+0.159	+0.052	-0.587	+1.468	+0.707
-1.854	-0.796	+0.257	-2.848	+1.063	+0.211	-1.922	-0.249
-0.242	-0.454	-0.569	+0.108	-0.402	-0.833	+1.182	-0.649
+0.910	+0.506	-0.019	-0.956	+0.423	+0.483	-1.536	+0.567
+1.281	+0.254	+0.962	+0.555	+0.422	+0.767	-0.460	+0.591
+0.219	+0.646	-1.980	-0.664	-0.086	-0.521	+1.851	-0.929
+1.166	-0.042	+1.559	-0.167	+0.830	+1.092	+2.862	-0.019
-1.972	-1.595	+1.900	-0.433	-0.858	+0.181	-0.787	-1.774
+0.652	-1.454	0.139	-2.878	+0.291	+0.460	+1.091	-0.951
0.099	+1.060	+1.708	-0.701	+1.170	-0.314	-1.152	+0.060
+1.649	+0.695	-0.724	+0.295	+1.074	+0.482	-0.161	-0.197
+0.143	+0.350	+0.126	-0.264	-0.404	+0.079	+0.314	+1.030
-0.582	-0.840	-1.328	+0.503	-0.015	-0.229	-0.349	-1.205
+0.060	+1.813	-0.162	-1.352	-0.911	+1.981	+1.544	+0.113
-0.066	+0.961	-3.540	+1.992	-0.753	+2.181	+0.935	+0.390
-0.108	-0.261	-0.778	+0.778	+1.600	+1.611	-0.517	-0.177
-0.867	-1.868	-0.029	+0.758	-0.221	-0.235	+0.034	+1.164
+0.067	+0.428	-0.428	-0.144	+1.035	-0.115	-1.301	-1.258
+0.287	-1.193	-0.184	+0.993	-0.005	-0.803	-1.536	-0.145
+1.997	-0.844	-0.771	+0.568	-0.947	-1.950	-0.060	+1.192
-0.528	+0.648	+0.440	-0.165	+0.098	-0.571	-0.344	-2.198
+0.675	+0.932	+0.089	+0.535	+0.303	+0.497	-1.203	-1.125
+0.825	-0.840	+0.882	-0.610	-0.227	+0.511	-0.625	+0.070
-0.284	-0.635	+1.133	+0.284	-0.073	-1.300	+1.063	-0.464
-0.212	+2.054	-0.532	-1.261	-0.276	-0.589	-0.562	+0.448
-0.128	+0.882	+1.898	+0.717	-1.609	-0.549	+1.475	+1.203
-0.347	-0.192	+0.798	+2.826	+2.346	-0.215	-0.788	+0.066

## PLATE 12.

89	90	91	92	98	94	95	96
+0'577	+0'964	+0'986	+0'632	- 0'106	- 0'084	- 1'531	+0'025
+0'009	+0'238	- 0'311	- 0'786	+0'440	+0'598	- 0'989	- 0'607
- 0'435	- 2'014	- 0'356	+ 2'280	- 0'098	+ 1'110	- 0'777	+0'610
+ 1'315	- 0'940	+0'654	+0'474	+0'418	+0'948	+ 1'227	+0'134
+0'802	- 0'046	+0'705	- 1'874	+0'024	- 0'488	+0'874	- 0'280
- 0'425	+ 1'017	+0'639	- 1'111	+0'087	+0'403	- 0'479	- 0'256
- 0'408	+0'729	- 1'375	+0'553	- 0'919	+ 1'597	+0'328	- 0'667
- 0'275	+0'220	+0'806	+0'286	- 0'749	- 0'879	- 1'436	+0'262
+0'289	+ 1'308	+0'510	+ 1'197	+0'394	- 1'330	+0'432	+0'182
- 0'299	- 0'953	+0'573	- 0'081	- 0'091	+0'622	- 0'480	- 0'442
- 1'104	- 1'731	+ 1'434	+ 2'023	- 1'134	- 1'426	+ 1'004	- 1'239
- 0'193	- 1'964	+0'759	+0'386	- 0'597	- 0'242	- 1'377	+ 1'329
+0'490	- 0'467	+0'537	- 0'343	+0'066	- 1'782	+0'694	+0'412
- 1'466	+0'002	+0'019	- 1'209	+0'086	- 0'991	- 0'045	- 1'301
- 0'399	+0'364	- 0'439	- 1'569	- 1'146	- 1'505	+0'600	- 1'428
+0'179	+0'626	+0'687	- 0'386	+ 1'552	+0'084	- 0'245	- 1'042
- 0'647	- 0'440	- 0'698	- 0'698	- 0'359	- 0'650	+0'529	+ 1'389
+ 1'072	- 0'188	+0'645	+0'066	+0'103	- 0'404	- 0'498	+ 1'068
+0'026	+0'338	- 0'267	+ 1'845	+0'394	- 1'209	+ 1'164	- 0'767
- 1'924	+0'157	+ 1'058	+0'139	+0'665	- 0'583	- 0'577	+ 1'774
+0'638	+0'770	+0'820	- 0'627	- 0'137	+0'522	- 0'539	+ 1'068
+0'032	- 0'810	+0'748	- 1'314	- 0'279	- 0'140	+0'558	+0'910
- 0'819	- 0'343	- 1'304	+0'619	+0'238	- 0'404	- 0'331	- 0'062
+ 1'487	+0'910	+0'773	+0'330	+0'545	+0'383	- 0'250	- 1'273
+0'472	+ 1'151	- 0'396	+0'254	- 0'439	- 0'281	+0'634	- 0'404
- 0'087	- 0'301	+ 1'007	- 0'789	- 0'722	- 0'683	- 2'628	- 0'389
+ 1'300	+0'712	- 1'165	- 0'220	+0'567	- 0'862	- 0'028	- 0'935
- 0'831	- 0'730	+0'629	+0'255	+ 1'563	+ 1'391	- 0'607	+ 1'013
- 1'521	- 1'041	- 1'387	- 1'768	+ 1'031	- 1'726	+0'586	- 0'013
+ 1'028	+0'269	+0'149	+0'338	+ 1'589	- 0'001	- 1'116	+0'021
+ 2'395	- 0'388	+0'134	- 0'650	- 0'164	- 1'298	- 0'650	- 0'862
+0'352	+ 2'323	+ 1'446	+0'029	- 1'110	- 2'180	- 1'491	- 0'240
+0'609	- 1'292	- 0'458	- 0'453	- 1'916	+0'842	+0'268	- 0'125
- 1'562	- 0'022	- 0'397	+ 1'162	+0'037	- 0'669	- 0'271	+0'466
+0'885	+ 1'352	- 0'329	+ 1'194	- 1'488	- 1'069	+0'762	+ 1'689
- 1'427	- 1'222	+0'810	- 0'119	+ 1'161	- 0'887	- 0'802	- 0'055
+ 1'116	- 0'032	- 0'820	- 0'902	- 1'308	+0'007	- 0'534	+0'402
- 2'102	+0'770	+0'382	+0'632	- 0'229	- 0'976	- 0'744	+0'757
- 0'415	- 1'303	+0'349	+0'192	- 1'850	- 0'646	- 0'398	+ 1'233
- 1'937	+0'256	- 0'121	+0'221	+0'234	+ 1'079	+ 1'311	+ 1'279
- 0'231	+0'750	+0'901	- 0'533	- 0'847	- 1'130	- 2'644	- 0'675
+ 1'535	+0'633	+0'337	- 0'864	- 0'755	- 0'409	+0'450	- 1'790
- 0'513	- 0'311	- 0'794	+0'720	- 0'246	- 0'993	- 0'669	+ 1'413
+ 1'266	+ 1'105	- 0'895	+0'072	+0'159	- 0'628	+0'439	+0'119
- 1'784	- 0'214	+0'050	+0'193	- 0'818	+0'420	- 0'496	+0'181
+ 1'336	+0'057	- 3'540	+0'525	+0'773	- 0'741	- 0'544	+0'286
- 0'686	- 1'260	- 0'478	- 0'367	+0'570	- 0'331	- 0'663	+0'543
- 0'517	+0'309	- 0'439	+0'217	+ 1'658	- 0'343	- 1'952	+0'136
+0'190	+ 1'437	- 1'193	- 0'445	- 0'891	+0'069	+0'116	- 1'105
- 0'162	- 0'328	+0'510	+ 1'037	- 1'006	- 0'193	+0'012	+0'564

RANDOM SAMPLES FROM A NORMAL POPULATION

PLATE 13.

97	98	99	100	101	102	103	104
-0.148	-1.064	+1.955	-1.788	-0.281	-0.674	-0.582	-0.214
+1.411	+0.617	-1.036	-0.075	+0.533	+1.752	-1.617	-0.824
-0.190	-1.481	+0.264	-1.322	-0.537	-0.018	+0.980	+0.748
+0.516	-1.253	+1.263	+0.040	-0.788	+1.704	+0.711	+0.512
+0.170	-0.994	+1.146	-1.688	+1.133	+0.282	+0.622	+0.738
+0.635	+0.619	-0.226	+0.260	-0.200	+0.010	-0.125	+0.780
+0.506	-2.132	-0.445	+0.311	-0.220	+0.392	-0.173	+1.574
-0.994	+0.511	+0.795	+0.221	-1.392	-1.206	+1.571	-2.072
-0.070	+0.598	-0.842	-1.707	+0.964	-0.253	-0.752	+1.197
-0.200	-0.141	-0.942	+0.462	+0.998	+0.512	+0.073	+0.010
+0.224	-0.486	-1.182	-1.167	-0.275	-1.228	+0.589	-2.700
-0.648	-0.196	+1.588	+1.815	-1.828	+1.900	+1.134	-1.737
-1.140	+0.247	-1.833	-0.026	+0.189	-0.492	+0.021	+0.266
+0.468	-0.951	-2.670	-1.160	+0.056	-0.683	+1.232	+2.750
+0.183	+1.464	-1.177	-1.816	-0.476	+0.228	-0.711	+0.817
-0.465	-0.165	-0.140	-1.998	-1.786	+0.942	-0.139	-0.427
-0.961	+0.187	-0.879	-0.674	-0.972	+0.177	-0.097	-0.225
-0.710	-0.710	-0.411	-0.039	+1.154	+0.846	-1.968	-0.342
-0.661	+0.651	-1.068	+0.353	-0.421	+1.305	+0.249	-1.711
+0.466	+0.250	+0.888	-1.427	-0.427	-0.250	+0.527	+1.330
+0.895	-0.089	+1.836	-0.411	+1.215	-0.376	+0.138	+0.504
-0.007	-0.608	+2.555	-1.208	+1.650	-1.628	+0.060	-1.287
-0.126	-1.222	+0.930	+1.387	+0.317	+0.592	-1.287	-1.053
+1.295	+0.013	+0.096	+1.731	-1.162	-0.670	+0.148	-0.240
-0.046	-1.278	-1.244	-0.564	+0.812	-0.621	+0.145	-0.964
+1.225	-0.038	-0.462	-0.449	-0.368	-0.422	-0.339	-0.774
-0.193	+0.672	+0.913	+0.018	+0.400	-1.406	-0.863	-1.160
+0.505	+0.198	+0.433	+0.790	+0.964	+1.562	-0.453	+0.467
-1.644	-0.350	+0.770	-1.024	-0.286	+0.115	+1.099	-0.455
+0.369	+1.599	+1.225	-1.062	+0.742	-0.038	-0.470	+0.283
-1.152	-1.746	-0.108	+0.488	-0.822	+1.704	-1.268	+1.179
-0.498	-1.192	+0.265	+0.212	+0.916	+0.451	-0.719	+0.742
+1.194	-0.358	+0.787	-0.812	+0.814	+0.834	-1.516	+1.283
+1.117	-1.175	-0.663	-1.870	+1.144	+1.915	-0.112	-0.079
+0.082	-1.150	+1.647	-1.826	+2.306	-1.709	-0.620	+1.406
-0.306	-1.402	+0.855	+0.667	-1.733	+1.138	+0.990	+0.139
-0.619	+0.706	-0.411	+0.102	-0.670	-0.113	+1.377	-0.989
+1.059	+0.973	+0.818	-1.024	-0.378	+0.491	-0.168	+0.624
+1.133	+0.161	+0.713	-0.182	-0.098	-0.489	-0.247	-0.111
-0.771	-0.071	+0.679	-0.106	+0.880	+0.697	+1.330	-0.698
+0.388	+1.032	-0.493	-0.769	-0.411	+0.336	+0.501	+0.860
-2.290	-1.468	+1.703	+1.006	-0.168	+1.860	+0.383	+0.666
-0.300	-0.411	+0.152	+0.101	-2.396	+0.546	+0.504	+0.548
-0.775	+1.395	-0.047	-1.585	-1.168	+0.987	-0.745	-1.331
+0.098	-1.080	+0.557	-0.106	+0.023	+0.823	-0.125	-0.593
-0.092	+0.297	-0.500	-0.177	+1.089	-1.840	+0.501	+0.091
-1.650	-0.823	-0.267	-0.945	-0.945	-2.280	-0.088	+2.333
-0.441	-0.505	-0.510	-1.371	-0.542	-0.249	+0.504	+0.742
-1.104	+0.144	+0.604	+0.479	+0.539	+0.236	+0.378	-0.818
-0.486	+0.642	+0.143	-1.025	+0.880	+0.131	+0.604	-0.827

105	106	107	108	109	110	111	112
-1'221	+1'631	+0'894	-0'275	-0'862	-1'080	-0'961	-0'411
+1'813	-1'055	+0'154	-1'803	-0'191	-0'429	+1'757	-0'367
+0'974	+0'184	-0'167	-1'889	+0'806	-1'123	+0'205	+1'121
+0'519	+0'032	+0'751	-0'417	+0'809	-0'401	+1'071	-0'747
+0'883	+0'721	+0'789	+0'979	+0'167	-0'217	+2'248	-0'819
+1'067	-0'789	+0'893	-0'163	+0'081	-0'660	-1'911	+0'688
+1'885	-1'742	-0'163	+0'285	+1'234	+2'748	-0'210	+0'262
-0'797	-2'139	+0'299	-0'008	+0'910	+1'485	+1'150	+1'070
+0'875	+2'233	-0'853	-1'938	-1'490	-0'625	+0'477	-0'491
-0'586	+1'288	-1'059	-0'165	+0'530	+0'896	-1'012	+0'995
-1'553	-0'843	-0'484	+0'511	-1'109	+0'677	-0'415	+1'389
-1'426	-2'489	-0'010	+0'393	-0'116	+1'555	+0'018	-2'022
+0'594	-1'174	-0'522	-0'169	+0'076	+1'449	-0'558	-0'075
-0'966	-0'549	+0'507	-1'480	+2'512	+0'693	-0'058	-1'702
-0'899	-0'878	+0'632	-0'067	+0'235	-1'177	+0'087	+0'963
-0'719	+2'378	+1'172	+0'636	+1'595	-2'495	+2'058	-0'973
-0'968	+1'504	-0'775	-0'895	+0'438	-0'230	+0'062	+0'480
-1'207	+0'256	-0'321	-1'074	-0'121	+0'863	-2'157	-0'178
+0'125	-0'629	+0'145	-0'025	-1'807	-0'335	-2'834	-0'105
-1'014	-1'203	+0'445	-0'015	+1'115	-0'161	+0'114	-1'080
+1'142	-0'869	-1'729	+0'148	+2'697	+1'231	+0'387	-0'824
+1'298	+2'418	+1'152	+0'773	-2'287	-0'160	+0'634	-0'322
-0'189	-0'027	-0'916	+1'173	-0'211	-1'663	-1'549	-0'123
-0'902	+0'023	+0'601	-0'043	+0'437	+1'455	-1'326	-0'371
-0'715	-1'571	-0'129	+0'708	-1'645	+0'163	-0'691	+1'363
+0'778	+0'405	-1'404	+0'336	-1'475	-0'159	+1'924	-2'056
-0'467	+1'435	-0'017	+0'915	-0'352	-0'058	+0'507	+0'669
-0'531	-0'409	-0'571	-0'191	-0'699	-0'844	+1'486	-0'732
+0'955	+2'102	+0'224	-0'703	-1'196	-0'604	+0'370	-0'541
+0'140	+1'048	+0'297	+0'927	-0'694	+1'017	-0'096	-0'140
-0'633	+0'806	-0'421	+1'379	-0'986	-0'284	+0'758	-0'013
-0'465	-0'021	+0'615	-0'021	+0'731	+1'142	+2'791	+0'419
-0'599	+0'305	+0'572	-0'215	+0'549	-0'557	+1'045	-0'987
+0'668	-2'287	-0'982	-0'705	-0'531	+0'829	+1'856	+0'031
+0'095	+0'547	-0'615	-0'546	-0'151	+0'131	+0'880	+1'037
+1'450	-0'099	-0'837	-0'271	+0'761	-0'301	-0'452	-0'979
+0'217	+0'761	-0'476	-1'645	-0'646	-1'603	+0'093	+0'777
-0'557	+0'420	+0'456	+0'927	-0'999	-2'506	-2'597	-0'302
+0'033	+0'910	-0'329	-0'121	+0'430	+0'082	+0'096	-0'612
+1'814	+0'582	-0'782	-0'449	-1'220	-1'088	-0'161	-0'129
+0'806	+0'220	-0'644	+1'182	+0'128	-0'171	-2'748	-0'063
-0'334	+1'413	-1'592	+0'634	+0'572	+1'715	-1'121	+1'588
-1'774	-0'429	-2'203	-0'111	-0'201	+0'384	-0'304	-1'816
-1'967	-0'134	+1'909	+0'961	-1'134	-1'803	-0'710	-0'710
+0'603	-2'404	+0'495	-0'563	-0'084	-1'538	-0'101	+0'413
+1'485	-0'055	+0'186	+1'236	-0'113	-0'255	+0'144	+1'426
+0'282	+0'229	-1'302	+0'629	+0'481	-0'515	+2'834	-0'314
-0'786	-0'131	+1'871	-1'492	-0'624	-0'820	-1'624	+1'429
+2'111	+1'204	+1'115	+0'424	+0'119	+1'185	-0'174	-0'805
+0'441	+0'984	+0'270	+0'514	-2'556	+0'911	+0'384	-0'123

## RANDOM SAMPLES FROM A NORMAL POPULATION

## PLATE 15.

118	114	115	116	117	118	119	120
+0.711	+0.864	+1.361	-0.217	+0.537	-1.101	+2.088	+0.001
-1.705	-0.076	-0.127	+0.013	-0.190	-0.545	-0.530	+1.021
-0.414	+1.093	-0.137	-0.158	+0.928	+0.197	-0.627	-0.526
+1.258	-0.221	-1.449	-0.328	-1.221	+0.101	+2.612	+1.896
+0.742	-1.001	+1.070	+2.071	-0.295	+0.579	-1.251	-1.765
1.042	-0.138	+0.766	-0.115	+0.461	-0.048	-0.828	-0.928
1.561	+0.066	+0.707	+0.863	-0.383	-0.290	+0.348	-1.141
+0.430	-0.591	+1.367	-0.587	-0.335	-0.203	-1.886	+0.570
-2.001	+1.010	-0.013	-1.299	-0.215	-0.404	+0.902	-1.801
+1.851	-0.100	+0.334	+0.209	-0.771	+0.227	+1.232	-0.888
-0.358	+1.937	-0.322	+0.160	+1.515	+1.217	-1.074	+0.978
-1.626	-0.903	+0.193	+0.860	-0.301	+1.941	-0.103	-1.457
-0.173	+1.595	-0.761	-0.443	+2.891	-0.554	+1.865	-1.600
-0.053	+0.727	+0.154	+1.653	+0.204	+0.391	+0.465	-0.851
-0.957	+1.296	+0.044	-0.902	-0.618	+0.885	+0.031	-0.422
+0.792	+1.740	-0.886	+0.494	-0.869	+1.270	-0.196	-0.071
+0.865	+0.852	+0.805	-0.900	-0.361	+0.095	-1.228	-0.151
+1.999	-0.223	+0.175	+0.294	-1.055	-0.174	+0.663	-0.033
-1.085	-0.272	+1.784	+0.714	+0.758	+1.208	+0.214	+0.494
+1.031	-1.604	+0.986	+0.032	+0.088	+1.795	+0.297	-0.824
-0.949	+1.649	+0.258	+0.025	-0.894	-0.454	-0.506	+1.790
-0.062	-0.192	+0.518	-1.233	-0.625	-1.957	-0.561	+2.111
-0.156	-1.256	-1.085	-0.602	+0.134	+0.166	-0.571	-0.580
-1.282	+1.190	-1.176	+0.386	+1.016	-1.355	-1.857	+1.196
+0.256	-0.210	-1.008	-1.499	-2.095	-1.039	-0.378	+1.171
+1.689	-0.298	+0.747	+0.218	+0.401	+0.156	-0.679	-2.127
-0.917	+0.350	+1.059	+0.121	+0.090	+1.582	+2.400	+0.969
-0.336	-1.581	-1.158	+1.036	+1.252	-0.821	+0.314	+0.063
-0.033	-1.238	+0.590	-0.014	+0.566	-1.045	-0.406	+0.510
-1.584	+0.579	+1.523	+1.130	+2.010	+1.110	+0.100	-0.141
-0.184	-0.667	+1.254	+2.127	+1.087	-0.505	-1.052	-1.186
-1.460	-2.597	-0.336	+0.626	-0.684	-0.056	+0.088	-0.467
-2.147	-1.451	+0.655	-2.257	+0.630	+0.053	+1.378	+0.860
-0.230	-1.883	+0.266	-0.846	-0.178	-1.906	-0.547	+0.148
-2.215	+0.791	+0.235	-0.167	-0.143	-1.454	+0.659	-0.601
+1.081	+0.427	-0.778	+1.351	-0.909	-1.854	-0.219	+0.631
+0.099	-0.148	+1.109	-0.011	-0.402	-1.387	-1.251	-0.655
+0.278	-0.058	-0.234	+0.106	+1.081	+0.231	-0.506	+0.514
+0.858	-0.775	+0.709	+1.060	+0.616	-1.820	+0.151	+0.087
-0.127	-1.208	+0.181	+0.919	-0.555	-2.068	-0.822	-0.057
-0.517	+0.098	-0.821	+0.026	+0.983	+0.553	+0.546	+0.554
+0.482	+0.628	+1.181	-1.217	+0.624	+2.506	-0.908	-0.398
+0.788	+1.699	-0.570	-0.360	-1.179	-1.188	+0.571	-1.055
+0.812	+0.415	+0.466	-0.689	+1.927	-0.860	+0.546	+0.288
-0.634	-0.416	+0.125	+0.218	-0.871	-0.212	+0.528	+1.750
-0.148	+0.292	-0.722	+2.580	-0.115	-1.801	+0.002	-0.768
+1.072	+1.687	-0.371	-0.205	-0.458	-1.044	+1.197	-0.296
+0.088	-0.509	+2.162	-0.688	+0.298	+0.942	+1.037	+1.154
-1.491	-0.895	+1.227	-0.218	+1.784	+0.580	-0.585	+0.914
-0.007	+0.944	+1.886	-0.468	+0.404	-0.508	+0.561	+0.038

121	122	123	124	125	126	127	128
+1'215	-0'465	-1'419	+0'129	-1'916	-1'283	-1'715	+1'249
+1'251	+2'022	+0'438	-0'677	+0'260	+0'568	+0'537	-1'360
+0'428	+0'081	-0'704	-0'010	-1'843	+0'132	-0'284	+0'031
+0'180	+0'411	-0'404	+0'668	-0'770	-0'270	+0'793	-0'895
-1'161	+0'750	-0'444	+1'031	+1'336	+1'331	+0'614	-1'427
-0'746	-0'055	+0'012	-0'007	-0'321	-1'273	-0'008	-0'854
-0'504	-1'198	+0'333	+0'132	+0'273	+0'401	-0'096	+1'086
-1'232	+2'301	-0'455	-0'092	+2'102	-0'900	-0'101	-0'571
+0'323	-0'533	-0'769	-0'713	-0'174	-0'191	+0'775	+0'861
-1'014	+0'029	-2'619	+2'264	+0'383	+0'948	-1'305	-0'554
-0'900	-0'209	-0'990	+0'032	-0'281	+0'293	+0'036	-1'255
-0'015	+0'191	+0'081	+0'089	+0'433	+2'001	+0'862	+1'360
-1'616	-1'295	+0'020	+2'569	+0'006	-0'217	+0'512	+1'549
-0'893	-0'715	-1'400	-0'110	+0'059	-0'021	+1'081	-0'723
-0'910	-0'129	+1'256	+0'033	+0'201	+0'168	+0'982	-2'346
+0'871	+0'743	+0'363	-0'165	+0'499	+0'755	-1'312	+0'324
-0'519	-0'083	-0'095	-0'726	-2'323	+0'886	-0'277	-0'167
-0'877	+0'820	-0'231	-0'144	-1'134	-1'639	+0'218	-0'408
+0'178	-1'625	+0'543	-0'202	-2'357	-1'818	+0'846	+0'348
-0'291	-1'849	-0'798	-0'444	-0'121	-0'123	+1'427	-1'248
+0'263	+0'666	+0'206	-1'953	+0'139	+0'287	-0'199	-0'206
-1'019	+1'281	+0'925	+2'697	+0'588	-0'528	-0'432	-0'429
+1'101	+0'129	-0'476	-0'073	-2'468	-0'481	-1'865	-1'302
+0'502	-0'772	+2'644	-1'122	+0'085	+1'034	-0'509	-1'350
-0'500	+0'705	-0'908	-0'865	+0'189	+0'575	-0'814	+1'607
+0'875	+1'719	+2'462	-0'299	+1'320	-3'431	-0'778	-0'253
+0'114	+0'474	-0'831	+0'193	-1'734	+0'656	-0'370	+0'694
-0'384	+2'200	-0'230	-0'704	+0'497	-0'002	-0'201	-0'273
+0'166	+0'000	+0'592	+1'010	+0'023	-0'057	+2'290	+0'311
-0'902	+1'642	-0'156	-0'678	+1'664	+1'521	+0'974	-0'084
+0'617	-0'041	+0'756	+0'975	-0'257	-0'447	-0'318	-0'965
+0'222	-0'367	+1'164	+0'814	+1'953	-0'309	-0'197	+0'840
+1'165	-0'974	+0'501	+1'269	-0'115	-0'728	-1'568	+1'232
+0'942	-0'172	-1'562	-0'281	-0'898	+1'792	-1'363	+0'623
+1'872	-0'804	+1'601	+0'289	-1'461	-0'558	+0'595	-0'553
+0'021	-1'390	+0'104	-2'245	-0'151	+0'944	+0'576	+1'042
+2'391	+0'831	+1'301	+0'664	+1'184	+0'811	+0'233	+2'086
-1'001	-0'954	-0'050	+0'888	-1'170	+1'252	+1'662	-0'647
-0'266	+0'589	+0'818	-0'774	+0'426	-0'544	-1'863	-1'503
-0'975	+0'037	+1'090	+0'083	-2'342	+0'028	-0'717	-1'351
+1'144	+0'750	-1'776	-0'816	-0'337	+0'938	+0'325	+0'568
+0'484	-0'106	+0'236	+1'730	+2'028	+1'510	+0'284	+0'501
-0'124	+0'890	+0'185	-1'606	+0'467	-0'586	-0'170	-0'170
-0'804	-1'164	+0'439	-0'931	-1'587	+0'879	+0'014	-0'233
-0'669	-0'982	+0'217	-1'112	-0'619	+1'468	+0'988	+0'066
-0'432	-0'527	-1'081	+0'659	+0'299	+1'138	-0'124	-1'460
-0'368	-0'742	-1'719	-0'827	+0'440	+1'376	+0'599	+1'204
+1'483	+0'163	-1'490	+1'243	+0'663	-0'264	-0'095	+0'114
+0'603	+0'788	-0'149	+1'472	-1'594	+1'587	+1'569	+0'482
+2'506	+0'677	-0'428	-1'004	-1'616	+0'940	-0'253	-0'346

## RANDOM SAMPLES FROM A NORMAL POPULATION

PLATE 17.

129	180	181	182	188	184	185	186
-0.773	+2.075	-0.669	+0.796	+1.302	-0.181	-1.871	+0.680
-0.726	-1.180	+1.011	+0.399	-1.172	-0.557	+2.086	-0.829
+0.294	+1.771	-0.840	-0.678	-1.693	+0.427	+0.208	+1.050
+1.233	-1.104	+0.952	+1.487	+0.226	+0.519	-0.217	-0.992
-1.076	-0.469	+1.579	-0.440	-3.062	+1.202	-0.321	-0.765
-0.746	+0.495	-0.664	-0.443	-0.218	+1.702	-0.424	+0.886
-0.807	-0.914	-2.495	+0.784	-1.135	-0.692	+0.351	+0.043
-0.718	+0.505	+0.774	+1.106	-1.771	+1.215	+2.066	+0.327
-1.171	-1.943	-0.429	-0.053	+0.998	+1.861	-0.947	+0.832
-0.718	+0.172	-0.199	-0.191	-0.841	+0.849	-1.148	+0.946
-0.071	+0.194	-0.070	+0.700	-1.216	-1.004	+1.140	-1.008
+0.051	-0.254	+1.360	-0.346	-0.124	+1.443	+0.650	+1.847
-0.349	+0.150	+1.350	+1.007	+0.869	-0.941	-0.827	+0.866
+1.859	+0.186	+0.161	+1.317	+0.416	+1.143	+0.346	-0.894
-0.908	-0.432	+0.363	-1.146	-0.469	-0.582	-0.399	-0.317
-0.269	-0.093	+1.086	-1.500	+0.336	+2.184	-0.426	+0.471
+0.639	-1.970	-0.821	-1.022	-1.462	+1.072	+0.261	-1.495
-0.816	-0.778	+1.093	-0.093	+0.249	+0.601	+2.462	+0.289
+1.402	+0.280	+0.280	-1.004	-0.319	+1.429	-2.052	-0.226
+0.184	+1.036	+0.189	-0.789	+0.258	+1.466	-0.702	-0.325
+0.070	+1.105	+0.245	-0.259	+1.562	+1.574	-0.107	+0.989
-0.432	+2.378	-2.097	-0.872	+1.836	-0.907	+0.466	-0.803
+1.084	+0.758	-0.197	+0.586	+0.296	+1.423	+0.840	-0.595
-0.898	-0.158	+1.610	+1.524	-0.602	+2.727	+0.587	-1.297
+1.077	-0.902	+0.883	-1.040	-0.365	-0.187	-0.137	-0.165
-0.255	-0.411	+0.185	-0.928	-1.653	-1.702	+1.158	+0.753
+2.948	+2.576	-1.123	-0.079	+1.129	+1.113	+1.717	+0.139
+0.294	-0.359	+0.147	-2.014	-1.269	-1.460	+0.922	+0.191
-1.393	-0.537	-0.326	-1.342	-0.568	+0.510	+0.431	-0.147
-0.177	-0.953	-0.443	-1.554	-0.615	-0.477	+0.006	+0.654
-0.163	+0.406	+1.027	+0.876	+0.522	-0.701	-1.896	+0.195
-1.125	-0.438	+1.188	+0.237	+0.501	+0.887	-0.299	+0.649
-0.438	-0.851	-1.498	-0.261	-1.330	+1.003	-0.147	-0.639
+0.777	-1.116	-0.040	-0.315	-0.390	-0.727	-1.566	+2.274
+1.066	-0.478	-0.517	+0.551	+0.134	-0.553	-1.769	+2.414
+1.052	+0.265	-1.489	+0.386	+1.171	-0.330	-1.583	+0.818
-1.748	-0.652	-0.262	-1.740	-0.392	+0.755	+0.362	-0.105
-0.528	-0.116	-1.440	-0.161	-0.683	-0.404	-0.468	-0.202
+1.318	+0.314	+0.781	-1.817	-1.483	-0.998	+0.413	-1.280
-0.268	+1.267	-0.660	-0.410	-1.397	+0.528	+1.432	+0.660
-0.819	+0.823	-2.028	+0.261	-0.424	-0.890	+0.329	-0.915
+0.020	+0.272	-1.766	-0.768	+0.453	-0.333	+0.901	+0.995
-2.206	-2.178	-0.900	+0.443	-1.055	-0.395	-1.935	-1.972
-0.415	-0.054	-0.603	-0.775	-1.074	-0.311	-0.694	+1.466
-0.475	+0.089	-0.186	-0.542	-1.478	+1.564	-0.522	-1.471
+1.596	+1.114	-0.059	+0.760	-1.387	+0.020	+0.089	-0.888
+2.543	+0.395	+0.341	-0.114	+0.979	+1.198	+1.224	-1.090
+2.301	+2.348	-0.346	+0.212	+0.468	+1.742	-2.111	+1.177
-1.605	-0.127	+2.147	+0.286	+0.294	-1.430	+0.618	+1.752
-1.185	-0.313	+0.183	+0.506	+0.410	+2.028	+1.244	+1.322

## PLATE 18.

187	188	189	140	141	142	143	144
+0'342	-0'007	+1'387	-2'257	+0'680	+0'777	+0'113	-0'065
-0'248	-0'492	+2'495	-0'647	+1'782	+0'981	+0'618	-1'407
-0'601	-0'879	+0'271	+1'769	-0'379	-0'123	-0'809	-0'783
+0'408	+0'468	+1'261	+0'137	-2'148	+0'187	-0'887	-1'219
+0'198	-1'767	-1'752	+0'669	-1'889	-0'129	-1'890	-0'746
-2'301	+0'994	-2'084	+0'293	-1'903	-0'381	+0'629	+0'085
-0'224	+1'589	-0'026	+0'573	+0'494	-0'736	+0'299	-1'455
+0'815	+0'860	+2'669	+1'141	-0'956	-0'701	+0'301	-0'614
-0'281	+0'023	-0'603	-1'845	-0'613	-1'021	+1'284	-1'373
-1'511	-0'062	+0'247	-0'648	-1'769	-1'110	+0'735	+0'767
+0'027	-0'218	-0'552	+0'061	+0'837	-0'389	-0'186	-0'811
-0'440	+0'119	-1'065	-1'193	+0'044	-0'690	+0'747	+0'747
+0'346	-1'537	-0'383	-1'103	-0'683	+0'972	-0'837	+1'091
-0'428	-1'654	-0'092	+0'531	+0'167	-1'102	-0'475	+0'800
-1'078	+1'164	+0'407	-0'264	+1'868	-0'016	-0'356	-0'434
-0'719	-1'317	-0'861	+0'843	-0'256	+0'516	-0'552	+1'201
+0'768	-0'977	+0'956	-0'209	-0'891	+0'839	-0'945	-1'319
-0'689	+0'414	-0'328	-0'518	+1'110	-2'968	-0'558	-0'268
+1'025	-0'105	-1'194	+2'782	+1'822	-2'026	-0'720	+0'391
-0'926	-1'184	+0'014	-0'792	+0'985	-0'631	-0'826	-0'890
-0'883	-0'265	+0'026	-0'111	-0'416	+0'895	-0'608	+1'241
-0'607	+1'619	-0'235	+1'913	+0'676	-1'414	+0'111	+2'039
+0'878	-1'457	-2'911	-1'505	-0'925	-0'101	+0'915	-0'681
-0'238	+1'116	+0'935	+0'547	+0'489	+1'788	-0'322	-1'459
-0'894	-0'475	-0'467	-1'064	+0'265	+0'795	+3'353	-0'569
+0'508	+0'479	-0'245	-0'247	+2'127	-1'031	-0'537	-0'929
+0'152	+0'511	+1'582	+1'245	-0'553	+0'161	-0'833	-2'848
+2'315	-0'871	+0'622	-0'154	-1'189	+1'532	-1'825	-0'376
+0'881	-3'291	+1'793	-1'905	-0'080	+0'211	-0'798	-0'747
-1'470	+1'186	+0'965	-0'378	+0'118	-1'920	+1'859	+1'687
-1'418	+0'167	-0'678	-0'116	+0'747	-0'586	+0'565	+0'751
-0'518	+0'920	-1'533	-0'301	-0'210	-1'847	-1'483	-0'481
+0'290	-0'058	+0'673	-0'686	+0'167	-0'278	-0'219	-0'992
+0'978	-1'562	+1'061	+0'385	+0'886	-0'460	-0'777	-0'210
-2'678	+0'589	-0'890	-0'010	+0'278	-0'485	+0'019	-1'793
-1'069	+1'261	+1'518	+0'401	+0'827	+0'475	+1'320	+0'253
+1'584	-0'785	+0'078	-0'296	+0'635	+1'542	+0'207	+0'102
+0'466	+0'351	-0'209	+0'483	+1'416	+0'545	-1'231	-0'935
+0'167	-1'128	+1'009	-0'367	-0'612	+0'645	-0'345	+0'011
-0'821	+0'819	+0'415	-0'881	+0'521	-0'886	+0'831	+0'172
-1'516	+0'418	-0'295	+0'023	-0'856	+0'970	+0'510	+0'475
-1'787	+1'840	+0'171	+1'557	-0'400	-0'072	-0'657	-1'285
-0'287	-1'974	-0'858	+0'431	-0'432	+0'323	-0'689	-1'132
+0'661	+1'460	+0'174	-1'296	+1'067	+0'185	+0'753	+0'027
-0'888	-1'445	-0'727	+0'942	-0'714	+1'495	-0'129	-0'592
-1'011	+0'680	+0'278	-0'433	+1'543	-1'211	+0'211	+1'276
-0'469	+1'186	+0'382	+0'321	+0'326	+1'112	-2'008	-1'725
-0'285	+0'588	+0'969	+0'042	+1'776	+0'854	-0'275	-0'091
-0'768	-0'071	-0'231	-0'085	+0'667	-0'694	+0'828	-0'880
-0'789	-1'225	+1'255	+0'313	-0'990	+1'674	+0'055	+1'175

## RANDOM SAMPLES FROM A NORMAL POPULATION

## PLATE 19.

145	146	147	148	149	150	151	152
+1'596	+1'281	-0'002	-0'295	-0'747	-0'346	-0'528	-0'775
+0'512	+1'288	+0'051	-0'429	+0'886	+2'248	+0'292	+0'815
+1'289	+0'462	+0'192	-0'738	+0'231	+1'692	-0'764	+1'110
+0'648	-0'800	-1'075	+0'409	-0'436	-0'140	+0'086	+1'807
-1'546	+0'244	-1'199	-0'875	-0'424	-0'664	-0'869	-0'061
-1'847	-0'061	+0'374	-0'195	+1'704	-1'016	+0'200	+0'857
-1'415	+0'462	+0'013	+2'374	+0'904	-0'877	+0'682	+0'759
+0'595	-2'066	+1'569	-0'664	+1'517	+0'575	+1'990	+0'409
+0'820	+0'159	+0'944	+0'011	+0'766	+0'548	-0'956	-0'742
-0'424	+0'709	+0'892	+0'186	+0'091	+1'474	+1'500	-1'372
-1'411	+0'771	-0'672	+1'402	-0'955	-0'403	+1'072	+0'286
-0'188	-0'803	+0'051	-0'526	-1'559	+1'480	+0'585	+0'568
+0'204	+0'479	-1'885	+1'017	-0'066	+1'958	-0'249	-0'118
+0'162	+0'163	-0'389	-0'245	-0'686	-0'631	+0'621	-0'057
-1'068	+2'118	+0'651	+0'064	-0'282	+1'183	-1'010	+1'860
-0'810	+0'195	-1'367	+0'099	-0'322	+0'784	-0'929	-0'251
+2'462	-0'423	-0'696	-0'746	+0'005	+0'960	+1'118	-0'359
-0'706	-0'769	-0'128	+0'474	-1'214	+0'162	+0'560	+1'603
-1'211	+1'194	-0'631	+1'594	+0'661	+0'489	-1'680	-1'467
-0'651	+0'154	-1'058	+0'604	-1'639	-0'781	+0'864	-0'397
+0'294	-0'082	+0'683	-1'390	+0'302	-0'439	-1'655	+1'632
-0'555	-1'391	+0'253	-0'333	-0'031	+1'571	-0'463	+1'669
-0'895	+0'092	-0'203	-2'294	+1'790	+0'740	-0'316	-2'318
-0'112	+1'188	-0'019	-0'081	+1'057	+0'065	+0'605	-0'684
-0'111	+0'408	+0'923	+0'645	+0'757	-1'108	-1'547	-0'727
+0'621	-0'296	-1'881	+1'579	-0'313	+1'744	+0'740	+0'338
+1'502	-1'629	-0'183	-0'030	-0'462	+0'799	-0'296	+2'084
+0'085	+1'160	-1'073	+0'027	-0'256	-0'864	+1'192	+0'773
+0'522	+0'069	+0'964	-2'064	+0'628	-2'115	+1'338	-0'925
+0'385	-0'062	-1'468	+0'614	-0'634	-1'003	-0'613	+0'071
-0'264	-0'431	+0'476	-0'025	+1'405	+0'208	+0'087	+0'469
+0'845	+0'939	+1'152	+0'504	+0'622	-0'234	-2'079	+0'399
-0'186	+0'661	-0'191	+1'022	-1'237	-2'707	-1'291	-0'451
+0'846	-0'756	+0'398	+0'301	+0'252	+1'882	-0'528	-0'104
-2'214	+1'362	+0'668	+0'000	-0'708	+0'823	+0'603	+0'550
+1'247	+1'561	+0'007	-2'387	-1'649	+0'617	+0'706	-0'166
+1'591	-0'282	+0'577	+0'161	+2'549	+0'879	-1'366	+1'114
-1'048	+0'375	-1'840	-0'555	+0'209	-0'285	-0'813	+0'335
+1'078	+0'634	+0'652	-0'725	+0'766	-0'521	-0'494	+0'444
+0'094	-1'224	-1'743	+1'067	-0'231	-0'551	+0'395	+0'925
+0'355	-1'271	+2'315	+0'575	-0'760	-0'260	-1'478	+0'879
-0'353	-0'594	-0'309	+1'563	-2'277	+0'890	-0'489	-0'610
-0'434	+0'824	+0'491	+0'385	+2'144	-1'131	+0'162	-1'126
-0'067	-1'463	-0'319	+0'289	+0'929	-0'487	-0'152	+0'254
+1'351	-1'566	+1'312	-1'545	+1'444	-1'992	+0'087	+1'559
-0'795	+0'489	-1'025	+0'554	+0'315	-0'682	+0'134	-1'307
-1'442	-0'782	-0'025	+0'216	+0'938	+0'212	-0'876	-0'514
+0'572	-2'245	-1'734	+1'070	+0'806	+0'275	-0'513	+1'118
-1'267	-0'247	-2'495	0'242	-0'089	-0'416	+0'967	-0'459
-0'239	-1'456	+0'217	-0'661	-0'133	+0'239	+0'299	-0'546

## PLATE 20.

158	154	155	156	157	158	159	160
+1'289	-0'106	+0'211	+0'618	+1'216	+0'218	-0'112	-2'576
-1'076	+0'339	-0'402	-0'320	-0'203	+1'516	+0'724	-2'226
+0'729	-1'972	-1'075	+0'522	+0'830	+0'658	-0'831	+0'297
-0'075	-0'112	+0'396	-0'645	-0'252	+0'669	+0'046	-0'147
+1'990	-0'432	-0'159	-0'753	+1'730	-1'878	-2'257	-0'410
+0'392	+0'353	-0'036	+0'781	-0'439	-0'408	+1'210	-0'826
-0'745	-2'468	-0'804	-0'942	+0'760	-0'519	-0'830	-0'760
-0'876	+0'890	+0'023	-1'807	+1'137	-0'677	+0'466	-0'982
+0'090	-0'886	-0'412	+0'367	+1'075	+1'800	+1'126	+1'172
-1'811	-0'588	-0'165	+0'816	-0'869	+1'536	+0'523	+1'241
-1'896	-1'206	-0'698	+0'571	-0'533	-0'088	-0'643	-1'016
+1'967	+1'869	+0'262	-0'656	-0'175	+0'405	+1'940	-1'384
+0'148	-0'596	-0'336	-0'308	-2'442	-2'155	+1'063	+0'158
+0'807	+0'243	-1'835	-0'898	-0'566	+0'874	+1'430	+0'837
-0'604	-1'817	+0'005	-1'847	-1'513	+0'606	+1'147	+1'205
-0'131	+1'578	-0'792	-0'516	+0'930	-0'522	-0'394	-0'889
-0'360	+0'843	+0'345	-1'905	-0'743	-0'489	+1'308	+0'959
+0'076	+0'824	+0'598	+1'413	-0'038	-1'458	+0'451	+0'292
+0'105	+0'254	-0'077	-0'455	-0'545	+0'242	+0'091	-0'433
+0'325	+0'177	-0'096	-0'071	+0'984	-0'354	+1'320	-1'726
-0'255	+0'132	+1'700	+0'702	-0'545	-1'673	+0'071	-1'323
+0'399	+0'797	-0'121	-2'073	-1'452	+0'127	+1'236	-0'842
-0'107	-0'004	+0'409	+1'369	+0'021	0'848	-0'007	+1'658
-0'543	+1'026	-2'073	+0'057	+1'264	+0'073	+0'114	-0'919
+1'266	+0'284	+0'165	+0'373	+0'458	+2'192	-0'302	-0'084
-0'758	+0'651	-0'569	-1'354	-1'302	+0'270	-0'718	+1'241
-0'316	-0'216	+1'003	+0'314	+0'855	-1'627	-1'367	-0'037
+0'517	-0'838	-0'638	-0'013	+1'572	-0'230	-0'301	+1'282
+2'130	+1'283	-1'433	-0'297	+0'727	-0'489	+1'560	-1'394
-0'453	-1'098	-1'586	-0'270	-0'076	+0'270	+0'049	+0'268
+0'204	-0'226	-0'972	+0'645	-0'424	+1'927	+0'049	-0'172
+0'050	+0'210	+0'567	+1'523	+0'509	+0'089	-1'099	+0'765
-2'257	+0'966	-1'025	-0'075	-1'696	+0'844	-0'173	+0'171
-1'161	+0'832	-0'909	+0'728	-0'613	+0'683	+0'438	-1'887
+0'857	+0'996	+0'055	-0'093	+0'373	+1'192	+0'658	-1'872
+0'962	-0'031	-0'264	-1'061	-1'302	+0'194	-0'186	+0'125
+0'634	+0'410	+0'821	+1'793	+0'122	-0'265	-1'064	+0'421
+1'162	-0'891	-1'639	-1'233	+0'327	-0'349	+0'676	-0'213
-0'121	-0'866	+0'905	+0'225	-0'363	-0'861	+0'025	+0'461
+0'543	-0'658	-0'721	+0'884	+0'803	+2'016	-0'232	+0'791
+2'294	+0'505	-1'209	-1'529	+0'817	+1'707	-1'206	-1'516
+0'876	+0'831	-0'804	+1'170	-1'014	-1'009	+0'188	-0'018
+1'435	+1'435	-0'405	+0'512	-0'711	+0'306	+0'020	-0'686
-0'725	+1'533	+0'729	-1'788	-1'097	+0'784	+0'608	0'776
-0'626	+0'459	+1'042	+2'054	+0'376	+0'373	+0'919	+0'026
+0'488	-2'346	+0'723	-0'334	-0'144	+0'365	+0'490	-1'221
-1'666	-0'188	+1'468	+0'374	-0'158	+1'320	-0'999	-0'796
+0'882	-0'948	+0'866	-1'239	-1'071	+0'328	-0'443	+1'132
-0'890	-1'941	+0'677	+0'885	+0'824	-0'754	-0'165	+1'434
-2'457	+2'073	-0'541	+0'535	-0'694	+1'394	+1'076	+0'730

## RANDOM SAMPLES FROM A NORMAL POPULATION

PLATE 21.

161	162	163	164	165	166	167	168
+0.199	+1.815	-1.626	+1.677	+0.125	-0.421	+1.868	--0.454
+1.945	--0.957	-0.516	+0.847	-0.406	-0.264	-0.588	-0.458
+1.188	-0.847	+1.591	-0.848	-0.691	-1.809	+0.678	-0.161
-0.763	+0.152	+0.143	+2.022	+0.997	-0.011	+2.556	+0.268
-0.615	+0.819	+0.099	+0.408	-0.563	+1.186	-0.568	-1.029
+2.257	-1.078	-0.790	-1.016	-1.343	+0.607	-0.849	-0.293
+0.367	-0.875	+0.283	-0.658	-0.110	-0.193	-0.575	+0.654
+0.188	+1.041	+1.001	+0.306	-1.706	-1.195	+0.628	-0.961
+0.268	+0.801	+0.931	-0.685	-0.669	+0.187	+2.032	+2.462
-0.010	+0.562	-0.456	-0.802	+0.740	-0.680	+0.011	-0.411
+0.267	-0.091	+0.554	-0.818	+0.535	+1.979	+1.410	-0.445
-1.914	-0.264	-0.987	+0.165	+1.203	-0.771	-0.280	-1.977
-0.127	+0.044	+0.503	-1.815	+0.690	-0.866	-0.521	+0.814
-0.164	+0.067	-0.821	+0.948	-0.809	+0.177	-0.110	+0.558
+1.250	+0.407	-1.469	-0.463	+0.802	-0.296	+0.015	-0.794
+0.067	+0.214	-0.289	+0.392	+0.546	+0.344	-0.772	-0.258
+0.592	-0.874	+0.484	+1.048	+2.001	-1.018	+0.521	+0.865
-0.445	-0.246	-0.231	-0.676	+0.119	+0.102	-0.825	+0.199
+0.001	-0.290	+0.090	-1.013	-0.277	+0.404	-1.261	+2.853
-0.861	+0.045	-0.224	-0.018	+0.947	-1.061	+0.917	-0.694
-2.229	-0.916	+0.559	+1.460	+0.664	+1.231	-2.071	+1.191
+1.562	+0.262	+2.968	-1.812	+0.866	-0.839	-2.175	+2.095
+0.847	+0.515	+1.295	-1.059	-0.630	+0.539	+0.249	-0.844
+1.379	-0.823	+0.321	+1.469	+2.001	-0.119	-0.072	+0.625
-0.611	-0.438	+1.016	-2.707	-0.056	-0.818	-1.070	--2.770
+0.003	-0.551	-0.926	-0.553	+0.907	+0.623	+0.747	-0.851
+0.684	-1.178	-0.090	+1.012	-0.589	+1.558	-0.633	-0.290
-0.979	+1.071	+0.990	-0.789	-1.887	-0.249	+0.677	+0.087
-1.073	+0.793	+0.498	+0.658	-0.430	-0.297	-2.007	-0.940
-0.009	-0.702	+1.594	-1.745	-0.889	-1.424	-1.890	-0.393
-0.119	+1.332	-0.723	-0.085	-1.323	+1.532	-0.030	-0.929
-0.151	-1.184	+0.681	+0.107	+0.508	+1.235	-0.048	+0.702
-0.622	-0.977	+0.043	+1.091	-0.586	+0.468	-1.861	+1.019
+0.078	+0.230	-1.301	+0.508	-0.085	-0.319	-0.257	+0.873
+0.439	-0.527	+0.558	-0.401	-0.274	-0.348	+1.958	+0.240
-0.620	-0.797	+1.230	-0.389	+0.961	+0.717	-0.265	-0.687
+0.833	+0.085	+0.699	-1.550	+0.023	+0.169	-1.689	-0.170
+0.326	+0.076	+1.803	-1.304	-0.900	-0.192	-1.346	-1.766
-1.386	-1.539	-0.425	-0.419	+0.894	+0.920	-1.714	+0.280
-0.669	-1.154	+0.334	-1.589	+1.332	+0.242	-1.662	+0.674
-2.543	-0.254	+0.669	-0.972	+1.716	+0.707	+2.137	+0.799
-0.496	+0.346	-0.523	+0.421	-1.003	-0.344	+1.320	-0.479
-0.513	-0.519	+0.223	+0.584	-0.582	+0.181	-1.862	+0.509
+0.309	+0.457	-1.071	-0.418	+3.299	-0.075	+1.176	-0.507
-0.662	+0.245	+0.567	+0.225	+0.227	-0.120	+0.920	-0.092
-1.469	+0.872	-0.272	+1.736	+0.657	+0.136	-1.867	+3.482
+1.960	+1.100	-0.444	+0.782	+1.120	+0.077	-2.137	+0.432
-0.191	-0.048	+0.894	+1.233	-0.871	-0.381	+1.489	+1.293
-1.120	+0.271	+0.188	-0.305	+1.421	+0.833	+1.056	+0.645
-0.155	+1.466	-0.852	+0.007	+0.856	+0.611	-1.307	+0.828

## PLATE 22.

169	170	171	172	173	174	175	176
+0'800	+1'039	+0'424	-0'121	+0'923	-1'108	-1'886	+1'406
+0'771	+0'336	+1'313	+0'622	-0'303	+1'057	+0'886	-0'107
+0'879	+1'534	+0'773	+0'121	-0'377	+0'820	+0'686	-0'430
+1'405	-0'027	+0'253	-0'302	-1'138	+0'500	-1'089	+0'035
+0'191	+0'219	-1'567	+0'495	-1'661	-0'992	-1'120	-1'067
+0'391	+0'342	-2'084	-1'191	+0'207	+0'844	+1'486	-0'723
-0'189	+0'093	+0'285	+2'083	-1'001	-0'457	-0'466	+1'414
+1'785	+2'184	+1'779	-0'805	+0'443	-1'820	+0'045	+1'037
-0'238	-0'975	+0'650	-0'238	-0'220	-0'160	-0'193	-0'814
+0'289	-0'277	+2'280	-0'347	-0'609	+1'443	+0'437	+0'353
-1'077	-1'366	-1'334	-0'671	+1'955	+1'370	-2'055	-1'475
-0'239	-0'131	+1'259	+1'186	-0'998	-0'964	+2'346	+1'418
-1'287	-0'180	+0'353	-0'821	+1'136	-0'212	-0'518	+1'039
+0'589	-0'474	+1'211	+0'238	-0'892	-0'584	-2'044	+0'822
+0'806	+0'069	+0'016	-0'903	+0'282	-1'383	+0'597	-0'271
-0'440	+1'042	+1'476	+1'351	+2'396	-0'881	-0'630	+2'054
+0'872	+0'492	-1'683	+0'109	+0'037	+0'559	-0'445	+0'495
+2'071	-0'229	+1'416	-1'349	-1'180	-2'241	+0'684	-0'051
-0'635	-0'287	-0'732	+1'070	-0'326	-0'983	+1'679	-1'501
+0'628	-1'890	-0'005	+1'011	-0'369	+1'295	-1'557	-1'688
+0'610	-0'057	-1'000	-0'134	-0'082	-0'716	-0'733	-1'618
+2'346	+2'111	-0'735	+0'242	-0'877	-1'189	+0'978	+0'658
-1'917	-0'463	+0'191	+0'306	+0'591	-1'141	-0'541	+1'488
+0'492	+0'262	-0'334	+0'227	+0'083	-1'122	+0'422	+0'912
-0'247	+0'393	-0'100	+0'053	-0'609	-1'505	+1'333	+0'604
+0'219	-1'023	+1'002	+0'103	+1'436	-1'368	-0'508	+0'437
+0'392	+0'989	+0'433	+0'548	-0'127	-0'853	-0'655	+0'624
+0'774	+1'311	-0'511	-1'672	-0'960	+0'012	+0'274	+0'665
-0'606	+0'333	+0'110	-1'285	-0'307	+1'013	-1'257	-0'093
+0'247	-0'429	-0'307	+0'269	-0'597	+0'036	-0'055	-0'846
-0'591	+0'810	+0'487	+1'324	-1'818	-0'083	+0'458	+0'867
+0'256	-2'597	+0'038	-0'060	-0'648	+0'443	+0'411	-0'227
-0'379	+0'475	+0'269	+0'057	-1'266	+0'010	-0'114	+1'226
-0'179	+0'584	-0'122	+0'213	+0'488	+1'058	+0'479	+0'929
-0'139	-0'489	-1'263	+0'828	+1'731	+1'170	+0'651	-0'275
-0'724	-0'183	+1'986	+1'812	+1'004	+0'407	+0'055	-1'206
+1'596	+1'198	+1'308	+1'482	+1'654	-0'667	-2'387	-1'059
+2'414	-0'625	+0'532	-0'933	+0'637	+0'530	-0'275	-0'857
+0'128	+0'898	-0'239	+0'917	-0'385	+1'779	-0'717	-0'928
+0'958	+0'561	+0'980	+0'703	+0'052	+0'049	+0'364	+0'552
+1'544	+0'971	+0'951	+0'179	-0'222	+0'133	+1'208	-1'634
+0'149	-0'981	-0'053	-1'281	-0'636	+0'114	+0'835	+1'529
+0'218	-0'013	-0'318	+0'505	-0'750	+0'580	-1'114	+0'380
-0'222	+0'087	-0'831	-1'906	-0'434	-0'997	+0'825	-0'615
-1'752	+2'040	+0'283	-0'810	+0'016	+1'020	+1'141	+0'215
-0'881	-0'365	-1'158	-0'859	-0'451	+0'253	-2'404	-1'431
-0'268	-1'172	-0'062	-0'777	-1'891	+1'138	-0'975	-1'158
+0'822	+0'128	+1'158	-0'348	-1'928	+1'104	-0'520	+0'184
-0'825	-0'030	+0'652	+1'279	+1'281	-0'586	+0'024	-0'716
-1'871	+2'144	+0'140	-0'005	-0'176	+1'821	-0'518	-0'706

## RANDOM SAMPLES FROM A NORMAL POPULATION

## PLATE 23.

177	178	179	180	181	182	188	184
+0'688	-0'280	-0'289	-1'840	+1'080	-1'864	+0'990	+0'486
-0'534	+2'284	-0'129	-0'110	+0'213	+0'204	+0'013	-0'621
-0'119	+1'421	+0'945	-0'821	+0'035	+1'076	+1'150	-0'408
+1'411	+0'112	+0'326	+0'444	-0'845	+0'938	+0'893	-0'082
+0'054	-1'782	-0'773	+0'429	+1'161	+1'314	-0'205	-0'772
+0'310	+0'508	-0'871	-1'353	+1'114	-0'038	-0'946	-0'429
-2'989	+0'220	-1'587	-0'277	-0'490	+0'150	+0'043	-1'211
+0'300	+1'424	-0'738	-1'398	+1'383	-1'379	+0'630	-0'140
-0'418	-0'839	-0'454	+1'789	-0'384	+0'878	+1'189	-1'154
-0'218	+2'214	+0'247	+2'082	-1'288	-1'255	-0'819	+0'784
-0'472	+2'189	+0'075	+0'791	+0'480	+1'577	-1'238	+0'402
-0'114	+0'585	-1'073	-0'632	-0'669	+0'001	+0'916	+1'368
+1'460	-0'881	-0'442	-0'529	-0'441	-0'334	+0'178	-0'175
-0'673	+0'005	-0'452	-0'454	+0'607	-1'894	+0'340	+0'051
-0'197	+1'434	-0'769	-0'506	+0'240	-0'510	-1'763	-1'604
+0'122	+0'347	-0'658	+1'407	-0'142	+0'843	+0'079	+0'548
-0'803	-2'878	+2'184	-1'385	+1'335	-0'732	-0'422	-0'139
-0'320	-0'207	-0'604	+0'077	-0'153	-2'217	+0'908	-0'808
-1'584	-1'821	-0'746	+2'178	-1'960	-0'973	+1'428	+0'144
+0'937	+1'411	+0'823	+1'214	-0'929	+1'137	+0'319	+1'027
+0'347	-0'188	-0'243	-0'255	-1'879	-0'087	-0'956	+1'465
-0'475	+1'970	0'563	1'052	+0'864	-1'678	+0'064	+1'101
-0'145	+0'783	-0'156	0'397	-1'304	-0'030	-1'409	-0'712
-0'342	+0'207	+0'429	+0'229	-1'004	-1'031	-1'007	+0'302
+0'296	-1'040	+0'431	-1'962	+0'248	-1'266	+1'694	-0'498
-0'863	-0'614	+0'061	-0'084	-0'298	-1'849	+0'103	+0'514
-0'636	-1'614	-1'504	-0'256	-0'566	-0'871	+1'614	-0'514
+0'308	-1'202	+0'757	-0'807	+0'064	+0'493	-0'005	+1'281
+0'756	+1'941	+1'352	-0'850	-1'725	+1'204	-1'861	+0'508
-1'096	-0'258	-2'209	-0'655	+1'824	-0'254	+1'719	-0'084
-0'282	-0'476	-1'376	-0'803	-0'177	+0'383	+0'748	-0'510
+0'784	+0'534	-0'359	-2'457	-1'073	-0'036	-1'706	+0'396
+1'034	+0'244	+0'310	-1'263	-0'127	+0'206	-2'506	-1'875
-0'455	+1'204	+1'816	-0'448	+0'419	+0'209	+0'189	+2'075
+0'684	-1'126	+0'252	-0'611	+0'795	-1'501	-0'600	+0'961
-0'494	-1'143	+0'154	+1'213	-0'098	-0'238	+0'360	-1'594
-0'278	-0'865	+0'048	+0'281	-0'047	+0'447	+0'394	+0'256
+0'367	-1'566	-0'206	-0'434	-2'399	+0'006	+0'716	+0'609
-2'106	-1'195	-1'291	+0'055	+0'965	-0'340	+0'002	+1'454
+1'276	-0'475	+1'631	-0'881	+0'273	+0'531	+0'496	+0'910
+0'737	+1'079	-0'185	+0'494	-0'276	-0'882	-0'953	+0'448
+0'889	-0'698	+0'996	+0'410	-0'304	-1'178	+2'162	+1'059
+0'462	-0'513	+1'652	-0'143	+0'008	-0'922	-1'105	+0'628
-1'024	-0'297	-0'305	-0'809	+0'055	+2'206	+1'544	+1'784
-0'597	+0'868	+0'752	-1'424	-1'223	+0'566	-1'378	-0'713
-1'082	-0'070	+0'429	+0'524	+0'385	+0'185	+1'346	+1'305
-0'283	-1'477	-0'885	-2'226	+0'338	+0'640	-0'670	-0'582
-0'010	+1'119	+0'202	+1'530	-0'384	+1'283	-0'938	-0'307
-0'100	+0'525	+0'445	-0'644	-0'328	-0'142	-0'407	+0'685
-0'276	-2'669	+0'063	-0'022	-0'216	+0'646	+0'864	-0'229

185	186	187	188	189	190	191	192
-1'956	+0'382	-0'868	+0'149	-0'410	-0'244	+2'200	+0'113
+0'125	-0'344	-0'818	-0'564	-1'488	+2'088	-0'571	+0'963
+0'048	-0'865	+1'785	+0'824	-0'500	+0'316	+0'476	+1'350
-1'840	-0'249	+0'888	+1'306	-0'874	+0'009	+0'487	-0'306
-0'806	-0'888	-0'532	+0'071	+1'848	-1'644	-2'085	-0'752
+0'361	-0'773	-1'772	+0'901	+0'836	-0'954	+0'624	-1'653
-0'058	-0'781	+1'997	-1'745	-1'181	-0'476	-0'159	+0'711
-0'474	+1'157	+1'169	+0'564	+0'692	-1'237	+0'653	+1'044
-0'206	-1'417	-2'576	+0'018	-1'028	-1'770	-1'680	+1'282
-0'590	-1'022	-0'651	+0'557	-0'316	-0'687	-0'827	-1'257
+0'081	+1'902	+0'743	+1'023	-0'586	-1'475	-0'875	+0'477
-0'088	-0'104	+0'112	-0'304	+0'055	+0'088	+0'105	+0'565
+0'448	-0'554	+0'757	+0'456	-0'196	+1'413	+1'696	+0'115
+0'289	+0'750	-0'998	+1'788	+1'040	+0'607	+0'608	-0'575
-1'026	+0'881	+0'726	+0'185	-0'021	+0'284	-0'912	+1'480
+2'251	-0'730	+0'444	+0'081	+0'497	-0'757	-0'601	-0'330
-0'201	-0'850	+0'985	+0'699	-0'601	-0'919	-0'798	-2'515
+0'320	+0'545	+0'636	+0'566	+0'002	+1'845	-0'071	-0'589
-0'281	+1'356	+1'335	+0'715	+0'425	-0'275	+0'149	+1'927
-0'952	+0'191	-0'191	+1'977	+1'203	+0'184	+0'970	-0'795
+1'848	-0'088	-0'184	+0'863	-0'516	+0'031	+0'408	+0'437
+0'607	+0'562	-1'184	-0'208	+0'938	-0'338	+0'308	-1'010
+1'681	-2'034	-1'349	-0'402	-0'204	+1'633	-1'732	-1'930
-0'924	+0'795	+0'477	+1'362	-0'039	-1'946	-0'008	+1'125
-1'177	-1'787	+0'380	-1'760	+1'210	+1'619	-0'064	-0'649
-1'061	-0'071	-0'150	+0'176	-1'259	+0'130	+2'048	-0'017
-1'789	+0'236	+8'121	+0'087	+0'933	+0'588	+0'585	-0'156
+1'592	+0'039	-1'986	+1'745	-0'087	+0'792	-0'183	+0'269
-0'555	-1'187	+1'211	-1'913	+0'036	-0'947	-2'209	-1'193
+0'007	-1'684	+0'108	+0'759	+2'084	-0'146	+1'131	-0'730
-0'822	+0'008	-0'428	-0'191	+0'827	-0'080	+0'500	+0'991
+1'181	-1'412	-0'918	+2'290	-1'185	+0'301	-0'234	-1'120
-0'543	+0'125	+0'408	+0'198	-1'680	-1'100	-0'248	+0'174
-0'684	-0'095	-1'056	-0'542	+0'062	+1'008	-0'712	+1'656
-0'257	-1'571	-0'191	+0'000	-0'642	-1'967	+1'741	+0'801
-1'817	+0'544	-1'098	-0'647	+0'456	+1'075	+0'692	-0'202
-0'856	-0'254	-0'092	-1'696	-0'453	+0'834	-0'870	-0'134
+0'602	-0'577	-0'578	+0'011	+0'736	+1'102	+0'487	+0'733
+0'480	+0'639	-0'228	-1'204	+1'229	-1'525	-0'125	+1'509
-0'594	-0'989	-0'185	-1'019	-0'054	+0'937	+2'052	+0'249
-0'148	-0'594	-0'556	+0'927	+0'782	-0'080	-0'435	-1'314
+1'496	+1'830	-1'970	-1'866	-0'584	+0'486	+2'620	+1'460
+0'745	-0'789	-1'372	+0'644	-0'778	-0'735	+1'385	+0'831
+0'528	+1'584	-0'774	+0'017	-0'198	+0'685	+0'489	+2'030
-0'268	-0'527	+0'147	+1'896	-0'502	-2'661	-0'820	-0'468
+0'371	+1'009	-0'390	+1'390	+0'609	+1'085	-1'144	-1'322
-0'078	-0'404	-0'014	+1'153	+0'203	+0'828	-0'303	-1'403
-0'627	-1'407	-1'427	+1'354	-1'211	-0'717	-0'148	-0'382
+0'248	-0'609	-0'401	-0'104	+0'223	+0'538	+0'649	-0'542
+1'486	-1'576	-0'226	-1'627	+1'156	-0'848	+1'080	-1'492

## RANDOM SAMPLES FROM A NORMAL POPULATION

PLATE 25.

198	194	195	196	197	198	199	200
-0'055	-0'849	+1'566	-1'000	+0'065	-0'768	+0'600	+0'694
+1'128	+0'184	+0'192	+1'858	-0'292	+0'118	+0'757	-1'188
-0'414	+0'533	+0'139	-0'525	+0'610	-0'781	-1'826	-0'108
-0'467	-1'167	+0'877	-1'784	+0'786	-1'907	-0'122	+1'895
-1'018	-0'476	+0'606	+0'199	-0'409	-1'404	+1'876	+0'188
+0'674	-1'376	-0'188	-1'048	+0'178	+0'904	-0'488	+1'859
+1'177	-1'900	-0'210	+0'732	-1'144	-0'071	-1'722	+1'722
+0'465	+0'365	+0'035	-1'655	-0'801	+0'953	+0'251	-1'870
+1'676	-0'752	+1'147	+0'456	+0'623	-0'925	-0'149	+1'856
-1'668	+0'129	+1'068	-1'288	+2'450	+0'529	-1'089	+1'182
-0'223	+0'402	+0'306	-1'121	+1'254	-0'107	-1'881	-0'487
+0'805	+1'690	-0'861	+1'554	-0'374	+0'653	+1'246	-0'159
-0'655	-0'878	+0'085	-0'886	-1'201	-0'894	+1'122	+0'911
-1'138	-1'224	+0'325	-0'174	-1'721	+0'668	+0'824	+1'106
-0'114	-0'308	+0'784	+0'121	-0'496	-0'048	-0'480	-0'517
+1'478	+0'214	+1'186	+0'137	-0'880	-1'431	-0'187	-1'185
-0'927	-0'274	-0'439	+1'839	+0'449	+1'064	+0'768	+0'431
-0'506	+0'174	-0'550	-0'870	-0'155	-0'479	-0'057	+0'868
-0'486	-1'894	-0'621	+1'198	+1'231	-0'499	+0'952	+1'792
+0'618	-2'260	+1'018	+0'202	-0'074	+0'297	-1'002	-0'661
+0'080	+0'486	-2'550	+0'148	+0'208	-1'184	-0'714	+0'586
-0'855	-1'059	-1'826	-0'444	-0'225	-0'220	-0'208	+0'856
-0'549	+1'217	+0'275	+0'729	+0'174	+0'354	-0'405	-0'014
-0'591	-0'668	+0'496	+1'250	+8'011	+0'671	-0'285	+0'839
+0'852	+0'211	+0'170	-1'753	+0'274	+0'360	+0'874	-1'056
-0'185	-0'612	-0'798	+8'720	-0'780	-0'946	-0'688	-1'546
-0'266	-0'803	+1'627	-0'189	-0'175	-0'375	+1'520	+0'749
+1'155	+0'025	+0'203	+1'089	+1'076	+0'352	+0'264	+0'525
-0'698	+1'184	-0'408	-0'471	+0'069	-2'036	+1'170	+0'055
-1'911	+0'268	-1'110	-0'149	-2'096	+1'919	+0'210	-1'083
+0'224	-0'585	-0'600	-0'050	+1'286	+0'027	-0'093	+0'668
+0'948	-1'081	-0'252	+0'047	-0'028	-0'144	-1'719	-1'290
+0'990	-8'860	-0'700	+1'499	+1'815	-0'869	+0'208	+1'960
+1'240	-0'587	-1'182	-0'081	-0'010	+0'091	+0'018	+2'040
+0'566	-1'649	+0'865	+0'847	-1'890	+0'279	-0'169	-0'967
+0'199	-2'650	+0'250	+0'814	+1'071	+0'419	-0'076	+0'700
-0'085	+0'646	-0'674	-0'065	+1'149	+0'283	+0'291	+0'996
-1'247	-0'817	-1'168	-1'607	+0'648	-0'802	+0'534	-0'584
-1'886	-2'105	+0'927	+0'496	-0'741	+0'160	-0'228	+0'487
-0'779	-0'088	-0'668	-0'628	+0'877	+0'890	+1'008	-2'330
-1'486	-0'818	+1'571	+1'858	-1'161	-2'600	-0'648	+1'272
+1'188	+0'672	-1'956	+0'086	-0'042	+0'387	-0'985	-0'072
+0'081	+2'260	-0'010	-0'330	-0'307	+0'675	+1'020	-1'810
-2'077	-0'804	+1'246	-1'188	-0'257	-0'751	+0'139	+0'533
+0'219	+0'025	+0'331	+1'028	+1'032	-0'874	+0'454	-0'109
+0'808	+1'726	+1'052	-0'241	+0'098	+0'827	+2'465	+0'060
-0'617	-0'462	-0'351	-1'460	-0'517	+1'810	-0'176	+0'326
-1'041	+0'765	+0'684	-0'280	-0'574	-0'612	+0'958	-1'528
-1'599	-0'784	+1'092	+0'281	-0'017	+0'749	+0'572	+1'761
-0'876	+0'465	+0'018	+0'866	-0'599	+0'991	+1'986	-1'019

201	202	203	204	205	206	207	208
-0.467	+1.189	+1.003	+1.888	+0.190	+1.671	+0.606	-0.902
-0.749	+0.146	+2.117	+1.223	+0.005	+1.152	-1.357	-0.118
+2.380	-1.275	+0.904	+1.014	-0.434	-0.098	-0.120	-1.564
-1.950	+0.706	+0.399	+0.873	-1.067	-0.510	+1.081	-0.225
-1.185	-0.015	-0.346	+1.850	-1.699	-1.112	-1.184	-0.017
+1.042	-1.975	+0.959	-1.420	+0.978	-0.669	+0.238	+0.805
+0.715	+0.390	-1.007	-1.100	+0.510	-1.042	-1.289	-1.789
-0.168	-1.390	-0.586	-0.350	+0.142	+1.040	-0.261	-1.668
+0.134	-0.822	-0.602	+0.191	-0.034	+2.810	+1.129	-1.050
+0.367	+0.489	-1.522	+1.052	-0.385	-1.536	-0.679	-0.645
-0.276	-0.309	+0.345	-1.074	-0.782	-1.622	+0.258	+1.580
-0.807	-1.512	-1.899	-0.238	-0.817	-1.560	-1.789	-0.075
+1.985	+0.381	-0.833	+1.108	-0.593	-0.301	+0.249	+1.380
-2.780	-0.474	-1.105	-0.726	-1.097	-0.197	-2.078	-0.139
-0.852	-1.461	+1.548	+0.341	-0.940	+0.061	-0.199	-1.538
+1.001	+0.592	+0.029	-0.740	-1.251	+0.903	+1.540	-0.755
+0.691	-0.074	+1.010	+0.589	-0.580	+1.731	-0.200	-1.107
-0.205	-1.202	+1.446	-0.278	-0.610	-1.791	+1.383	+0.126
+0.101	+1.009	+0.943	+1.697	-0.305	-0.830	-0.029	-0.718
+0.362	+0.198	-0.053	+0.481	-0.118	+0.137	+1.691	+1.011
-0.274	-0.581	+1.168	-0.289	+0.001	+0.833	-0.239	-0.780
-0.836	+2.930	+1.795	-1.495	+0.380	+1.435	-1.736	+1.110
+1.894	+0.811	+1.250	+0.902	+0.711	-0.722	+0.157	-2.090
-2.393	-0.045	+0.066	+0.373	+1.795	+0.072	-0.886	-1.341
-0.660	-1.130	+1.257	-0.120	-2.163	+0.997	-1.262	+2.320
-1.083	+1.869	-1.894	-1.099	-0.432	-2.990	+0.460	-1.137
+1.154	-0.190	-1.931	+0.446	-0.297	+0.518	+0.549	-0.255
+0.775	+2.220	-1.325	-0.531	-2.346	-0.629	+0.954	+0.041
-0.110	-0.168	+1.649	+0.385	-0.219	+0.895	-1.890	-0.552
+0.180	+2.006	+3.291	+0.708	+0.892	-0.107	-0.757	+0.335
+0.426	+0.017	+0.880	+1.082	-0.819	-1.450	-0.511	-1.545
-0.504	-1.863	+0.563	-1.902	+0.475	+0.780	+0.197	-0.619
-0.778	+0.109	+0.221	-0.602	+0.021	-0.292	+0.661	+0.184
+2.046	-1.637	-0.402	-0.022	-2.505	-1.547	+1.470	-0.239
-0.881	+0.396	-1.391	+0.792	+0.039	+0.583	-1.123	+1.797
+0.989	-1.616	+0.581	-1.688	-2.253	-0.070	-0.263	-0.549
+0.631	+0.643	-0.511	-0.128	+0.125	-0.578	+0.473	+0.559
-0.248	-0.801	+1.280	+0.995	-1.099	+2.185	+1.080	+0.679
+0.074	+1.219	-0.341	-0.278	+0.274	+0.638	-1.287	+1.254
+0.292	-0.406	+0.573	+1.067	-0.715	-0.198	-0.366	-0.209
-0.335	+2.440	-1.962	-0.469	+1.039	-0.644	+0.392	-0.772
-0.636	+0.121	-0.689	+1.763	-0.112	-0.931	+0.932	+0.645
+1.512	-1.475	-0.377	-0.673	-1.703	+0.856	-0.950	-1.566
-1.491	+0.274	-0.399	-0.972	+0.569	+0.622	-0.195	+0.772
-1.089	-0.769	-0.779	+0.958	-0.075	+0.144	+0.703	+1.530
+1.230	+0.909	-0.757	-0.300	-2.515	-0.137	-1.475	+0.449
+0.839	-0.131	+1.828	+0.501	+0.532	-0.630	-0.362	+1.876
-0.079	-1.643	+0.274	-0.497	-0.015	-0.907	-0.492	+1.486
+0.245	+0.357	-1.114	-0.623	-0.577	-1.430	-1.455	-1.338
+0.451	-0.801	+0.121	-2.680	+1.869	-1.987	-0.379	+0.054