Appendix D
Tables

The following tables can be used for various computations. It is recommended, however, that the reader become familiar with the use of a statistical software package instead of relying on the tables. Computations of a much greater variety and accuracy can be carried out using the software, and, in the end, it is much more convenient.

D.1 Random Numbers

Each line in Table D.1 is a sample of 40 random digits, i.e., 40 independent and identically distributed (i.i.d.) values from the uniform distribution on the set {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}.

Suppose we want a sample of five i.i.d. values from the uniform distribution on $S = \{1, 2, \ldots, 25\}$, i.e., a random sample of five, with replacement, from S. To do this, pick a starting point in the table and start reading off successive (nonoverlapping) two-digit numbers, treating a pair such as 07 as 7, and discarding any pairs that are not in the range 1 to 25, until you have five values. For example, if we start at line 110, we read the pairs ($*$ indicates a sample element) 38, 44, 84, 87, 89, 18*, 33, 82, 46, 97, 39, 36, 44, 20*, 06*, 76, 68, 80, 87, 08*, 81, 48, 66, 94, 87, 60, 51, 30, 92, 97, 00, 41, 27, 12*. We can see at this point that we have a sample of five given by 18, 20, 6, 8, 12.

If we want a random sample of five, without replacement, from S, then we proceed as above but now ignore any repeats in the generated sample until we get the five numbers. In this preceding case, we did not get any repeats, so this is also a simple random sample of size five without replacement.

Table D.1 Random Numbers

Line								
101	19223	95034	05756	28713	96409	12531	42544	82853
102	73676	47150	99400	01927	27754	42648	82425	36290
103	45467	71709	77558	00095	32863	29485	82226	90056
104	52711	38889	93074	60227	40011	85848	48767	52573
105	95592	94007	69971	91481	60779	53791	17297	59335
106	68417	35013	15529	72765	85089	57067	50211	47487
107	82739	57890	20807	47511	81676	55300	94383	14893
108	60940	72024	17868	24943	61790	90656	87964	18883
109	36009	19365	15412	39638	85453	46816	83485	41979
110	38448	48789	18338	24697	39364	42006	76688	08708
111	81486	69487	60513	09297	00412	71238	27649	39950
112	59636	88804	04634	71197	19352	73089	84898	45785
113	62568	70206	40325	03699	71080	22553	11486	11776
114	45149	32992	75730	66280	03819	56202	02938	70915
115	61041	77684	94322	24709	73698	14526	31893	32592
116	14459	26056	31424	80371	65103	62253	50490	61181
117	38167	98532	62183	70632	23417	26185	41448	75532
118	73190	32533	04470	29669	84407	90785	65956	86382
119	95857	07118	87664	92099	58806	66979	98624	84826
120	35476	55972	39421	65850	04266	35435	43742	11937
121	71487	09984	29077	14863	61683	47052	62224	51025
122	13873	81598	95052	90908	73592	75186	87136	95761
123	54580	81507	27102	56027	55892	33063	41842	81868
124	71035	09001	43367	49497	72719	96758	27611	91596
125	96746	12149	37823	71868	18442	35119	62103	39244

Table D.1 Random Numbers (continued)

Line								
126	96927	19931	36809	74192	77567	88741	48409	41903
127	43909	99477	25330	64359	40085	16925	85117	36071
128	15689	14227	06565	14374	13352	49367	81982	87209
129	36759	58984	68288	22913	18638	54303	00795	08727
130	69051	64817	87174	09517	84534	06489	87201	97245
131	05007	16632	81194	14873	04197	85576	45195	96565
132	68732	55259	84292	08796	43165	93739	31685	97150
133	45740	41807	65561	33302	07051	93623	18132	09547
134	27816	78416	18329	21337	35213	37741	04312	68508
135	66925	55658	39100	78458	11206	19876	87151	31260
136	08421	44753	77377	28744	75592	08563	79140	92454
137	53645	66812	61421	47836	12609	15373	98481	14592
138	66831	68908	40772	21558	47781	33586	79177	06928
139	55588	99404	70708	41098	43563	56934	48394	51719
140	12975	13258	13048	45144	72321	81940	00360	02428
141	96767	35964	23822	96012	94591	65194	50842	53372
142	72829	50232	97892	63408	77919	44575	24870	04178
143	88565	42628	17797	49376	61762	16953	88604	12724
144	62964	88145	83083	69453	46109	59505	69680	00900
145	19687	12633	57857	95806	09931	02150	43163	58636
146	37609	59057	66967	83401	60705	02384	90597	93600
147	54973	86278	88737	74351	47500	84552	19909	67181
148	00694	05977	19664	65441	20903	62371	22725	53340
149	71546	05233	53946	68743	72460	27601	45403	88692
150	07511	88915	41267	16853	84569	79367	32337	03316
151	03802	29341	29264	80198	12371	13121	54969	43912
152	77320	35030	77519	41109	98296	18984	60869	12349
153	07886	56866	39648	69290	03600	05376	58958	22720
154	87065	74133	21117	70595	22791	67306	28420	52067
155	42090	09628	54035	93879	98441	04606	27381	82637
156	55494	67690	88131	81800	11188	28552	25752	21953
157	16698	30406	96587	65985	07165	50148	16201	86792
158	16297	07626	68683	45335	34377	72941	41764	77038
159	22897	17467	17638	70043	36243	13008	83993	22869
160	98163	45944	34210	64158	76971	27689	82926	75957
161	43400	25831	06283	22138	16043	15706	73345	26238
162	97341	46254	88153	62336	21112	35574	99271	45297
163	64578	67197	28310	90341	37531	63890	52630	76315
164	11022	79124	49525	63078	17229	32165	01343	21394
165	81232	43939	23840	05995	84589	06788	76358	26622

D.2 Standard Normal Cdf

If $Z \sim N(0,1)$, then we can use Table D.2 to compute the cumulative distribution function (cdf) Φ for Z. For example, suppose we want to compute $\Phi(z) = P(Z < 1.03)$. The symmetry of the $N(0,1)$ distribution about 0 implies that $\Phi(z) = 1 - \Phi(-z)$, so using Table D.2, we have that $P(Z < 1.03) = P(Z < 1.03) = 1 - P(Z < -1.03) = 1 - 0.1515 = 0.8485$.

Table D.2 Standard Normal Cdf

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
−3.4	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0002
−3.3	.0005	.0005	.0005	.0004	.0004	.0004	.0004	.0004	.0004	.0003
−3.2	.0007	.0007	.0006	.0006	.0006	.0006	.0006	.0005	.0005	.0005
−3.1	.0010	.0009	.0009	.0009	.0008	.0008	.0008	.0008	.0007	.0007
−3.0	.0013	.0013	.0013	.0012	.0012	.0011	.0011	.0011	.0010	.0010
−2.9	.0019	.0018	.0018	.0017	.0016	.0016	.0015	.0015	.0014	.0014
−2.8	.0026	.0025	.0024	.0023	.0023	.0022	.0021	.0021	.0020	.0019
−2.7	.0035	.0034	.0033	.0032	.0031	.0030	.0029	.0028	.0027	.0026
−2.6	.0047	.0045	.0044	.0043	.0041	.0040	.0039	.0038	.0037	.0036
−2.5	.0062	.0060	.0059	.0057	.0055	.0054	.0052	.0051	.0049	.0048
−2.4	.0082	.0080	.0078	.0075	.0073	.0071	.0069	.0068	.0066	.0064
−2.3	.0107	.0104	.0102	.0099	.0096	.0094	.0091	.0089	.0087	.0084
−2.2	.0139	.0136	.0132	.0129	.0125	.0122	.0119	.0116	.0113	.0110
−2.1	.0179	.0174	.0170	.0166	.0162	.0158	.0154	.0150	.0146	.0143
−2.0	.0228	.0222	.0217	.0212	.0207	.0202	.0197	.0192	.0188	.0183
−1.9	.0287	.0281	.0274	.0268	.0262	.0256	.0250	.0244	.0239	.0233
−1.8	.0359	.0351	.0344	.0336	.0329	.0322	.0314	.0307	.0301	.0294
−1.7	.0446	.0436	.0427	.0418	.0409	.0401	.0392	.0384	.0375	.0367
−1.6	.0548	.0537	.0526	.0516	.0505	.0495	.0485	.0475	.0465	.0455
−1.5	.0668	.0655	.0643	.0630	.0618	.0606	.0594	.0582	.0571	.0559
−1.4	.0808	.0793	.0778	.0764	.0749	.0735	.0721	.0708	.0694	.0681
−1.3	.0968	.0951	.0934	.0918	.0901	.0885	.0869	.0853	.0838	.0823
−1.2	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.0985
−1.1	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170
−1.0	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379
−0.9	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611
−0.8	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867
−0.7	.2420	.2389	.2358	.2327	.2296	.2266	.2236	.2206	.2177	.2148
−0.6	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2451
−0.5	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776
−0.4	.3446	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121
−0.3	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483
−0.2	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859
−0.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247
−0.0	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641

D.3 Chi-Squared Distribution Quantiles

If $X \sim \chi^2(df)$, then we can use Table D.3 to obtain some quantiles for this distribution. For example, if $df = 10$ and $P = 0.98$, then $x_{0.98} = 21.16$ is the 0.98 quantile of this distribution.

Table D.3 $\chi^2(df)$ Quantiles

	P									
df	0.75	0.85	0.90	0.95	0.975	0.98	0.99	0.995	0.9975	0.999
1	1.32	2.07	2.71	3.84	5.02	5.41	6.63	7.88	9.14	10.83
2	2.77	3.79	4.61	5.99	7.38	7.82	9.21	10.60	11.98	13.82
3	4.11	5.32	6.25	7.81	9.35	9.84	11.34	12.84	14.32	16.27
4	5.39	6.74	7.78	9.49	11.14	11.67	13.28	14.86	16.42	18.47
5	6.63	8.12	9.24	11.07	12.83	13.39	15.09	16.75	18.39	20.51
6	7.84	9.45	10.64	12.59	14.45	15.03	16.81	18.55	20.25	22.46
7	9.04	10.75	12.02	14.07	16.01	16.62	18.48	20.28	22.04	24.32
8	10.22	12.03	13.36	15.51	17.53	18.17	20.09	21.95	23.77	26.12
9	11.39	13.29	14.68	16.92	19.02	19.68	21.67	23.59	25.46	27.88
10	12.55	14.53	15.99	18.31	20.48	21.16	23.21	25.19	27.11	29.59
11	13.70	15.77	17.28	19.68	21.92	22.62	24.72	26.76	28.73	31.26
12	14.85	16.99	18.55	21.03	23.34	24.05	26.22	28.30	30.32	32.91
13	15.98	18.20	19.81	22.36	24.74	25.47	27.69	29.82	31.88	34.53
14	17.12	19.41	21.06	23.68	26.12	26.87	29.14	31.32	33.43	36.12
15	18.25	20.60	22.31	25.00	27.49	28.26	30.58	32.80	34.95	37.70
16	19.37	21.79	23.54	26.30	28.85	29.63	32.00	34.27	36.46	39.25
17	20.49	22.98	24.77	27.59	30.19	31.00	33.41	35.72	37.95	40.79
18	21.60	24.16	25.99	28.87	31.53	32.35	34.81	37.16	39.42	42.31
19	22.72	25.33	27.20	30.14	32.85	33.69	36.19	38.58	40.88	43.82
20	23.83	26.50	28.41	31.41	34.17	35.02	37.57	40.00	42.34	45.31
21	24.93	27.66	29.62	32.67	35.48	36.34	38.93	41.40	43.78	46.80
22	26.04	28.82	30.81	33.92	36.78	37.66	40.29	42.80	45.20	48.27
23	27.14	29.98	32.01	35.17	38.08	38.97	41.64	44.18	46.62	49.73
24	28.24	31.13	33.20	36.42	39.36	40.27	42.98	45.56	48.03	51.18
25	29.34	32.28	34.38	37.65	40.65	41.57	44.31	46.93	49.44	52.62
26	30.43	33.43	35.56	38.89	41.92	42.86	45.64	48.29	50.83	54.05
27	31.53	34.57	36.74	40.11	43.19	44.14	46.96	49.64	52.22	55.48
28	32.62	35.71	37.92	41.34	44.46	45.42	48.28	50.99	53.59	56.89
29	33.71	36.85	39.09	42.56	45.72	46.69	49.59	52.34	54.97	58.30
30	34.80	37.99	40.26	43.77	46.98	47.96	50.89	53.67	56.33	59.70
40	45.62	49.24	51.81	55.76	59.34	60.44	63.69	66.77	69.70	73.40
50	56.33	60.35	63.17	67.50	71.42	72.61	76.15	79.49	82.66	86.66
60	66.98	71.34	74.40	79.08	83.30	84.58	88.38	91.95	95.34	99.61
80	88.13	93.11	96.58	101.9	106.6	108.1	112.3	116.3	120.1	124.8
100	109.1	114.7	118.5	124.3	129.6	131.1	135.8	140.2	144.3	149.4

D.4 t Distribution Quantiles

Table D.4 contains some quantiles for t or Student distributions. For example, if $X \sim t(df)$, with $df = 10$ and $P = 0.98$, then $x_{0.98} = 2.359$ is the 0.98 quantile of the $t(10)$ distribution. Recall that the $t(df)$ distribution is symmetric about 0 so, for example, $x_{0.25} = -x_{0.75}$.

Table D.4 $t(df)$ Quantiles

	P									
df	0.75	0.85	0.90	0.95	0.975	0.98	0.99	0.995	0.9975	0.999
1	1.000	1.963	3.078	6.314	12.71	15.89	31.82	63.66	127.3	318.3
2	0.816	1.386	1.886	2.920	4.303	4.849	6.965	9.925	14.09	22.33
3	0.765	1.250	1.638	2.353	3.182	3.482	4.541	5.841	7.453	10.21
4	0.741	1.190	1.533	2.132	2.776	2.999	3.747	4.604	5.598	7.173
5	0.727	1.156	1.476	2.015	2.571	2.757	3.365	4.032	4.773	5.893
6	0.718	1.134	1.440	1.943	2.447	2.612	3.143	3.707	4.317	5.208
7	0.711	1.119	1.415	1.895	2.365	2.517	2.998	3.499	4.029	4.785
8	0.706	1.108	1.397	1.860	2.306	2.449	2.896	3.355	3.833	4.501
9	0.703	1.100	1.383	1.833	2.262	2.398	2.821	3.250	3.690	4.297
10	0.700	1.093	1.372	1.812	2.228	2.359	2.764	3.169	3.581	4.144
11	0.697	1.088	1.363	1.796	2.201	2.328	2.718	3.106	3.497	4.025
12	0.695	1.083	1.356	1.782	2.179	2.303	2.681	3.055	3.428	3.930
13	0.694	1.079	1.350	1.771	2.160	2.282	2.650	3.012	3.372	3.852
14	0.692	1.076	1.345	1.761	2.145	2.264	2.624	2.977	3.326	3.787
15	0.691	1.074	1.341	1.753	2.131	2.249	2.602	2.947	3.286	3.733
16	0.690	1.071	1.337	1.746	2.120	2.235	2.583	2.921	3.252	3.686
17	0.689	1.069	1.333	1.740	2.110	2.224	2.567	2.898	3.222	3.646
18	0.688	1.067	1.330	1.734	2.101	2.214	2.552	2.878	3.197	3.611
19	0.688	1.066	1.328	1.729	2.093	2.205	2.539	2.861	3.174	3.579
20	0.687	1.064	1.325	1.725	2.086	2.197	2.528	2.845	3.153	3.552
21	0.686	1.063	1.323	1.721	2.080	2.189	2.518	2.831	3.135	3.527
22	0.686	1.061	1.321	1.717	2.074	2.183	2.508	2.819	3.119	3.505
23	0.685	1.060	1.319	1.714	2.069	2.177	2.500	2.807	3.104	3.485
24	0.685	1.059	1.318	1.711	2.064	2.172	2.492	2.797	3.091	3.467
25	0.684	1.058	1.316	1.708	2.060	2.167	2.485	2.787	3.078	3.450
26	0.684	1.058	1.315	1.706	2.056	2.162	2.479	2.779	3.067	3.435
27	0.684	1.057	1.314	1.703	2.052	2.158	2.473	2.771	3.057	3.421
28	0.683	1.056	1.313	1.701	2.048	2.154	2.467	2.763	3.047	3.408
29	0.683	1.055	1.311	1.699	2.045	2.150	2.462	2.756	3.038	3.396
30	0.683	1.055	1.310	1.697	2.042	2.147	2.457	2.750	3.030	3.385
40	0.681	1.050	1.303	1.684	2.021	2.123	2.423	2.704	2.971	3.307
50	0.679	1.047	1.299	1.676	2.009	2.109	2.403	2.678	2.937	3.261
60	0.679	1.045	1.296	1.671	2.000	2.099	2.390	2.660	2.915	3.232
80	0.678	1.043	1.292	1.664	1.990	2.088	2.374	2.639	2.887	3.195
100	0.677	1.042	1.290	1.660	1.984	2.081	2.364	2.626	2.871	3.174
1000	0.675	1.037	1.282	1.646	1.962	2.056	2.330	2.581	2.813	3.098
∞	0.674	1.036	1.282	1.645	1.960	2.054	2.326	2.576	2.807	3.091
	50%	70%	80%	90%	95%	96%	98%	99%	99.5%	99.8%
	Confidence level									

D.5 F Distribution Quantiles

If $X \sim F(ndf, ddf)$, then we can use Table D.5 to obtain some quantiles for this distribution. For example, if $ndf = 3, ddf = 4$, and $P = 0.975$, then $x_{0.975} = 9.98$ is the 0.975 quantile of the $F(3,4)$ distribution. Note that if $X \sim F(ndf, ddf)$, then $Y = 1/X \sim F(ddf, ndf)$ and $P(X \le x) = P(Y \ge 1/x)$.

Table D.5 $F(ndf, ddf)$ Quantiles

		ndf					
ddf	P	1	2	3	4	5	6
1	0.900	39.86	49.50	53.59	55.83	57.24	58.20
	0.950	161.45	199.50	215.71	224.58	230.16	233.99
	0.975	647.79	799.50	864.16	899.58	921.85	937.11
	0.990	4052.18	4999.50	5403.35	5624.58	5763.65	5858.99
	0.999	405284.07	499999.50	540379.20	562499.58	576404.56	585937.11
2	0.900	8.53	9.00	9.16	9.24	9.29	9.33
	0.950	18.51	19.00	19.16	19.25	19.30	19.33
	0.975	38.51	39.00	39.17	39.25	39.30	39.33
	0.990	98.50	99.00	99.17	99.25	99.30	99.33
	0.999	998.50	999.00	999.17	999.25	999.30	999.33
3	0.900	5.54	5.46	5.39	5.34	5.31	5.28
	0.950	10.13	9.55	9.28	9.12	9.01	8.94
	0.975	17.44	16.04	15.44	15.10	14.88	14.73
	0.990	34.12	30.82	29.46	28.71	28.24	27.91
	0.999	167.03	148.50	141.11	137.10	134.58	132.85
4	0.900	4.54	4.32	4.19	4.11	4.05	4.01
	0.950	7.71	6.94	6.59	6.39	6.26	6.16
	0.975	12.22	10.65	9.98	9.60	9.36	9.20
	0.990	21.20	18.00	16.69	15.98	15.52	15.21
	0.999	74.14	61.25	56.18	53.44	51.71	50.53
5	0.900	4.06	3.78	3.62	3.52	3.45	3.40
	0.950	6.61	5.79	5.41	5.19	5.05	4.95
	0.975	10.01	8.43	7.76	7.39	7.15	6.98
	0.990	16.26	13.27	12.06	11.39	10.97	10.67
	0.999	47.18	37.12	33.20	31.09	29.75	28.83
6	0.900	3.78	3.46	3.29	3.18	3.11	3.05
	0.950	5.99	5.14	4.76	4.53	4.39	4.28
	0.975	8.81	7.26	6.60	6.23	5.99	5.82
	0.990	13.75	10.92	9.78	9.15	8.75	8.47
	0.999	35.51	27.00	23.70	21.92	20.80	20.03
7	0.900	3.59	3.26	3.07	2.96	2.88	2.83
	0.950	5.59	4.74	4.35	4.12	3.97	3.87
	0.975	8.07	6.54	5.89	5.52	5.29	5.12
	0.990	12.25	9.55	8.45	7.85	7.46	7.19
	0.999	29.25	21.69	18.77	17.20	16.21	15.52

Table D.5 $F(ndf, ddf)$ **Quantiles** (continued)

		ndf					
ddf	P	7	8	9	10	11	12
1	0.900	58.91	59.44	59.86	60.19	60.47	60.71
	0.950	236.77	238.88	240.54	241.88	242.98	243.91
	0.975	948.22	956.66	963.28	968.63	973.03	976.71
	0.990	5928.36	5981.07	6022.47	6055.85	6083.32	6106.32
	0.999	592873.29	598144.16	602283.99	605620.97	608367.68	610667.82
2	0.900	9.35	9.37	9.38	9.39	9.40	9.41
	0.950	19.35	19.37	19.38	19.40	19.40	19.41
	0.975	39.36	39.37	39.39	39.40	39.41	39.41
	0.990	99.36	99.37	99.39	99.40	99.41	99.42
	0.999	999.36	999.37	999.39	999.40	999.41	999.42
3	0.900	5.27	5.25	5.24	5.23	5.22	5.22
	0.950	8.89	8.85	8.81	8.79	8.76	8.74
	0.975	14.62	14.54	14.47	14.42	14.37	14.34
	0.990	27.67	27.49	27.35	27.23	27.13	27.05
	0.999	131.58	130.62	129.86	129.25	128.74	128.32
4	0.900	3.98	3.95	3.94	3.92	3.91	3.90
	0.950	6.09	6.04	6.00	5.96	5.94	5.91
	0.975	9.07	8.98	8.90	8.84	8.79	8.75
	0.990	14.98	14.80	14.66	14.55	14.45	14.37
	0.999	49.66	49.00	48.47	48.05	47.70	47.41
5	0.900	3.37	3.34	3.32	3.30	3.28	3.27
	0.950	4.88	4.82	4.77	4.74	4.70	4.68
	0.975	6.85	6.76	6.68	6.62	6.57	6.52
	0.990	10.46	10.29	10.16	10.05	9.96	9.89
	0.999	28.16	27.65	27.24	26.92	26.65	26.42
6	0.900	3.01	2.98	2.96	2.94	2.92	2.90
	0.950	4.21	4.15	4.10	4.06	4.03	4.00
	0.975	5.70	5.60	5.52	5.46	5.41	5.37
	0.990	8.26	8.10	7.98	7.87	7.79	7.72
	0.999	19.46	19.03	18.69	18.41	18.18	17.99
7	0.900	2.78	2.75	2.72	2.70	2.68	2.67
	0.950	3.79	3.73	3.68	3.64	3.60	3.57
	0.975	4.99	4.90	4.82	4.76	4.71	4.67
	0.990	6.99	6.84	6.72	6.62	6.54	6.47
	0.999	15.02	14.63	14.33	14.08	13.88	13.71

Table D.5 $F(ndf, ddf)$ **Quantiles** (continued)

		ndf					
ddf	P	15	20	30	60	120	10000
1	0.900	61.22	61.74	62.26	62.79	63.06	63.32
	0.950	245.95	248.01	250.10	252.20	253.25	254.30
	0.975	984.87	993.10	1001.41	1009.80	1014.02	1018.21
	0.990	6157.28	6208.73	6260.65	6313.03	6339.39	6365.55
	0.999	615763.66	620907.67	626098.96	631336.56	633972.40	636587.61
2	0.900	9.42	9.44	9.46	9.47	9.48	9.49
	0.950	19.43	19.45	19.46	19.48	19.49	19.50
	0.975	39.43	39.45	39.46	39.48	39.49	39.50
	0.990	99.43	99.45	99.47	99.48	99.49	99.50
	0.999	999.43	999.45	999.47	999.48	999.49	999.50
3	0.900	5.20	5.18	5.17	5.15	5.14	5.13
	0.950	8.70	8.66	8.62	8.57	8.55	8.53
	0.975	14.25	14.17	14.08	13.99	13.95	13.90
	0.990	26.87	26.69	26.50	26.32	26.22	26.13
	0.999	127.37	126.42	125.45	124.47	123.97	123.48
4	0.900	3.87	3.84	3.82	3.79	3.78	3.76
	0.950	5.86	5.80	5.75	5.69	5.66	5.63
	0.975	8.66	8.56	8.46	8.36	8.31	8.26
	0.990	14.20	14.02	13.84	13.65	13.56	13.46
	0.999	46.76	46.10	45.43	44.75	44.40	44.06
5	0.900	3.24	3.21	3.17	3.14	3.12	3.11
	0.950	4.62	4.56	4.50	4.43	4.40	4.37
	0.975	6.43	6.33	6.23	6.12	6.07	6.02
	0.990	9.72	9.55	9.38	9.20	9.11	9.02
	0.999	25.91	25.39	24.87	24.33	24.06	23.79
6	0.900	2.87	2.84	2.80	2.76	2.74	2.72
	0.950	3.94	3.87	3.81	3.74	3.70	3.67
	0.975	5.27	5.17	5.07	4.96	4.90	4.85
	0.990	7.56	7.40	7.23	7.06	6.97	6.88
	0.999	17.56	17.12	16.67	16.21	15.98	15.75
7	0.900	2.63	2.59	2.56	2.51	2.49	2.47
	0.950	3.51	3.44	3.38	3.30	3.27	3.23
	0.975	4.57	4.47	4.36	4.25	4.20	4.14
	0.990	6.31	6.16	5.99	5.82	5.74	5.65
	0.999	13.32	12.93	12.53	12.12	11.91	11.70

Table D.5 $F(ndf, ddf)$ **Quantiles** (continued)

		ndf					
ddf	P	1	2	3	4	5	6
8	0.900	3.46	3.11	2.92	2.81	2.73	2.67
	0.950	5.32	4.46	4.07	3.84	3.69	3.58
	0.975	7.57	6.06	5.42	5.05	4.82	4.65
	0.990	11.26	8.65	7.59	7.01	6.63	6.37
	0.999	25.41	18.49	15.83	14.39	13.48	12.86
9	0.900	3.36	3.01	2.81	2.69	2.61	2.55
	0.950	5.12	4.26	3.86	3.63	3.48	3.37
	0.975	7.21	5.71	5.08	4.72	4.48	4.32
	0.990	10.56	8.02	6.99	6.42	6.06	5.80
	0.999	22.86	16.39	13.90	12.56	11.71	11.13
10	0.900	3.29	2.92	2.73	2.61	2.52	2.46
	0.950	4.96	4.10	3.71	3.48	3.33	3.22
	0.975	6.94	5.46	4.83	4.47	4.24	4.07
	0.990	10.04	7.56	6.55	5.99	5.64	5.39
	0.999	21.04	14.91	12.55	11.28	10.48	9.93
11	0.900	3.23	2.86	2.66	2.54	2.45	2.39
	0.950	4.84	3.98	3.59	3.36	3.20	3.09
	0.975	6.72	5.26	4.63	4.28	4.04	3.88
	0.990	9.65	7.21	6.22	5.67	5.32	5.07
	0.999	19.69	13.81	11.56	10.35	9.58	9.05
12	0.900	3.18	2.81	2.61	2.48	2.39	2.33
	0.950	4.75	3.89	3.49	3.26	3.11	3.00
	0.975	6.55	5.10	4.47	4.12	3.89	3.73
	0.990	9.33	6.93	5.95	5.41	5.06	4.82
	0.999	18.64	12.97	10.80	9.63	8.89	8.38
13	0.900	3.14	2.76	2.56	2.43	2.35	2.28
	0.950	4.67	3.81	3.41	3.18	3.03	2.92
	0.975	6.41	4.97	4.35	4.00	3.77	3.60
	0.990	9.07	6.70	5.74	5.21	4.86	4.62
	0.999	17.82	12.31	10.21	9.07	8.35	7.86
14	0.900	3.10	2.73	2.52	2.39	2.31	2.24
	0.950	4.60	3.74	3.34	3.11	2.96	2.85
	0.975	6.30	4.86	4.24	3.89	3.66	3.50
	0.990	8.86	6.51	5.56	5.04	4.69	4.46
	0.999	17.14	11.78	9.73	8.62	7.92	7.44

Table D.5 $F(ndf, ddf)$ **Quantiles** (continued)

		ndf					
ddf	P	7	8	9	10	11	12
8	0.900	2.62	2.59	2.56	2.54	2.52	2.50
	0.950	3.50	3.44	3.39	3.35	3.31	3.28
	0.975	4.53	4.43	4.36	4.30	4.24	4.20
	0.990	6.18	6.03	5.91	5.81	5.73	5.67
	0.999	12.40	12.05	11.77	11.54	11.35	11.19
9	0.900	2.51	2.47	2.44	2.42	2.40	2.38
	0.950	3.29	3.23	3.18	3.14	3.10	3.07
	0.975	4.20	4.10	4.03	3.96	3.91	3.87
	0.990	5.61	5.47	5.35	5.26	5.18	5.11
	0.999	10.70	10.37	10.11	9.89	9.72	9.57
10	0.900	2.41	2.38	2.35	2.32	2.30	2.28
	0.950	3.14	3.07	3.02	2.98	2.94	2.91
	0.975	3.95	3.85	3.78	3.72	3.66	3.62
	0.990	5.20	5.06	4.94	4.85	4.77	4.71
	0.999	9.52	9.20	8.96	8.75	8.59	8.45
11	0.900	2.34	2.30	2.27	2.25	2.23	2.21
	0.950	3.01	2.95	2.90	2.85	2.82	2.79
	0.975	3.76	3.66	3.59	3.53	3.47	3.43
	0.990	4.89	4.74	4.63	4.54	4.46	4.40
	0.999	8.66	8.35	8.12	7.92	7.76	7.63
12	0.900	2.28	2.24	2.21	2.19	2.17	2.15
	0.950	2.91	2.85	2.80	2.75	2.72	2.69
	0.975	3.61	3.51	3.44	3.37	3.32	3.28
	0.990	4.64	4.50	4.39	4.30	4.22	4.16
	0.999	8.00	7.71	7.48	7.29	7.14	7.00
13	0.900	2.23	2.20	2.16	2.14	2.12	2.10
	0.950	2.83	2.77	2.71	2.67	2.63	2.60
	0.975	3.48	3.39	3.31	3.25	3.20	3.15
	0.990	4.44	4.30	4.19	4.10	4.02	3.96
	0.999	7.49	7.21	6.98	6.80	6.65	6.52
14	0.900	2.19	2.15	2.12	2.10	2.07	2.05
	0.950	2.76	2.70	2.65	2.60	2.57	2.53
	0.975	3.38	3.29	3.21	3.15	3.09	3.05
	0.990	4.28	4.14	4.03	3.94	3.86	3.80
	0.999	7.08	6.80	6.58	6.40	6.26	6.13

Table D.5 $F(ndf, ddf)$ **Quantiles** (continued)

		ndf					
ddf	P	15	20	30	60	120	10000
8	0.900	2.46	2.42	2.38	2.34	2.32	2.29
	0.950	3.22	3.15	3.08	3.01	2.97	2.93
	0.975	4.10	4.00	3.89	3.78	3.73	3.67
	0.990	5.52	5.36	5.20	5.03	4.95	4.86
	0.999	10.84	10.48	10.11	9.73	9.53	9.34
9	0.900	2.34	2.30	2.25	2.21	2.18	2.16
	0.950	3.01	2.94	2.86	2.79	2.75	2.71
	0.975	3.77	3.67	3.56	3.45	3.39	3.33
	0.990	4.96	4.81	4.65	4.48	4.40	4.31
	0.999	9.24	8.90	8.55	8.19	8.00	7.82
10	0.900	2.24	2.20	2.16	2.11	2.08	2.06
	0.950	2.85	2.77	2.70	2.62	2.58	2.54
	0.975	3.52	3.42	3.31	3.20	3.14	3.08
	0.990	4.56	4.41	4.25	4.08	4.00	3.91
	0.999	8.13	7.80	7.47	7.12	6.94	6.76
11	0.900	2.17	2.12	2.08	2.03	2.00	1.97
	0.950	2.72	2.65	2.57	2.49	2.45	2.41
	0.975	3.33	3.23	3.12	3.00	2.94	2.88
	0.990	4.25	4.10	3.94	3.78	3.69	3.60
	0.999	7.32	7.01	6.68	6.35	6.18	6.00
12	0.900	2.10	2.06	2.01	1.96	1.93	1.90
	0.950	2.62	2.54	2.47	2.38	2.34	2.30
	0.975	3.18	3.07	2.96	2.85	2.79	2.73
	0.990	4.01	3.86	3.70	3.54	3.45	3.36
	0.999	6.71	6.40	6.09	5.76	5.59	5.42
13	0.900	2.05	2.01	1.96	1.90	1.88	1.85
	0.950	2.53	2.46	2.38	2.30	2.25	2.21
	0.975	3.05	2.95	2.84	2.72	2.66	2.60
	0.990	3.82	3.66	3.51	3.34	3.25	3.17
	0.999	6.23	5.93	5.63	5.30	5.14	4.97
14	0.900	2.01	1.96	1.91	1.86	1.83	1.80
	0.950	2.46	2.39	2.31	2.22	2.18	2.13
	0.975	2.95	2.84	2.73	2.61	2.55	2.49
	0.990	3.66	3.51	3.35	3.18	3.09	3.01
	0.999	5.85	5.56	5.25	4.94	4.77	4.61

Table D.5 $F(ndf, ddf)$ **Quantiles** (continued)

		ndf					
ddf	P	1	2	3	4	5	6
15	0.900	3.07	2.70	2.49	2.36	2.27	2.21
	0.950	4.54	3.68	3.29	3.06	2.90	2.79
	0.975	6.20	4.77	4.15	3.80	3.58	3.41
	0.990	8.68	6.36	5.42	4.89	4.56	4.32
	0.999	16.59	11.34	9.34	8.25	7.57	7.09
20	0.900	2.97	2.59	2.38	2.25	2.16	2.09
	0.950	4.35	3.49	3.10	2.87	2.71	2.60
	0.975	5.87	4.46	3.86	3.51	3.29	3.13
	0.990	8.10	5.85	4.94	4.43	4.10	3.87
	0.999	14.82	9.95	8.10	7.10	6.46	6.02
30	0.900	2.88	2.49	2.28	2.14	2.05	1.98
	0.950	4.17	3.32	2.92	2.69	2.53	2.42
	0.975	5.57	4.18	3.59	3.25	3.03	2.87
	0.990	7.56	5.39	4.51	4.02	3.70	3.47
	0.999	13.29	8.77	7.05	6.12	5.53	5.12
60	0.900	2.79	2.39	2.18	2.04	1.95	1.87
	0.950	4.00	3.15	2.76	2.53	2.37	2.25
	0.975	5.29	3.93	3.34	3.01	2.79	2.63
	0.990	7.08	4.98	4.13	3.65	3.34	3.12
	0.999	11.97	7.77	6.17	5.31	4.76	4.37
120	0.900	2.75	2.35	2.13	1.99	1.90	1.82
	0.950	3.92	3.07	2.68	2.45	2.29	2.18
	0.975	5.15	3.80	3.23	2.89	2.67	2.52
	0.990	6.85	4.79	3.95	3.48	3.17	2.96
	0.999	11.38	7.32	5.78	4.95	4.42	4.04
10000	0.900	2.71	2.30	2.08	1.95	1.85	1.77
	0.950	3.84	3.00	2.61	2.37	2.21	2.10
	0.975	5.03	3.69	3.12	2.79	2.57	2.41
	0.990	6.64	4.61	3.78	3.32	3.02	2.80
	0.999	10.83	6.91	5.43	4.62	4.11	3.75

Table D.5 $F(ndf, ddf)$ **Quantiles** (continued)

		ndf					
ddf	P	7	8	9	10	11	12
15	0.900	2.16	2.12	2.09	2.06	2.04	2.02
	0.950	2.71	2.64	2.59	2.54	2.51	2.48
	0.975	3.29	3.20	3.12	3.06	3.01	2.96
	0.990	4.14	4.00	3.89	3.80	3.73	3.67
	0.999	6.74	6.47	6.26	6.08	5.94	5.81
20	0.900	2.04	2.00	1.96	1.94	1.91	1.89
	0.950	2.51	2.45	2.39	2.35	2.31	2.28
	0.975	3.01	2.91	2.84	2.77	2.72	2.68
	0.990	3.70	3.56	3.46	3.37	3.29	3.23
	0.999	5.69	5.44	5.24	5.08	4.94	4.82
30	0.900	1.93	1.88	1.85	1.82	1.79	1.77
	0.950	2.33	2.27	2.21	2.16	2.13	2.09
	0.975	2.75	2.65	2.57	2.51	2.46	2.41
	0.990	3.30	3.17	3.07	2.98	2.91	2.84
	0.999	4.82	4.58	4.39	4.24	4.11	4.00
60	0.900	1.82	1.77	1.74	1.71	1.68	1.66
	0.950	2.17	2.10	2.04	1.99	1.95	1.92
	0.975	2.51	2.41	2.33	2.27	2.22	2.17
	0.990	2.95	2.82	2.72	2.63	2.56	2.50
	0.999	4.09	3.86	3.69	3.54	3.42	3.32
120	0.900	1.77	1.72	1.68	1.65	1.63	1.60
	0.950	2.09	2.02	1.96	1.91	1.87	1.83
	0.975	2.39	2.30	2.22	2.16	2.10	2.05
	0.990	2.79	2.66	2.56	2.47	2.40	2.34
	0.999	3.77	3.55	3.38	3.24	3.12	3.02
10000	0.900	1.72	1.67	1.63	1.60	1.57	1.55
	0.950	2.01	1.94	1.88	1.83	1.79	1.75
	0.975	2.29	2.19	2.11	2.05	1.99	1.95
	0.990	2.64	2.51	2.41	2.32	2.25	2.19
	0.999	3.48	3.27	3.10	2.96	2.85	2.75

Table D.5 $F(ndf, ddf)$ **Quantiles** (continued)

		ndf					
ddf	P	15	20	30	60	120	10000
15	0.900	1.97	1.92	1.87	1.82	1.79	1.76
	0.950	2.40	2.33	2.25	2.16	2.11	2.07
	0.975	2.86	2.76	2.64	2.52	2.46	2.40
	0.990	3.52	3.37	3.21	3.05	2.96	2.87
	0.999	5.54	5.25	4.95	4.64	4.47	4.31
20	0.900	1.84	1.79	1.74	1.68	1.64	1.61
	0.950	2.20	2.12	2.04	1.95	1.90	1.84
	0.975	2.57	2.46	2.35	2.22	2.16	2.09
	0.990	3.09	2.94	2.78	2.61	2.52	2.42
	0.999	4.56	4.29	4.00	3.70	3.54	3.38
30	0.900	1.72	1.67	1.61	1.54	1.50	1.46
	0.950	2.01	1.93	1.84	1.74	1.68	1.62
	0.975	2.31	2.20	2.07	1.94	1.87	1.79
	0.990	2.70	2.55	2.39	2.21	2.11	2.01
	0.999	3.75	3.49	3.22	2.92	2.76	2.59
60	0.900	1.60	1.54	1.48	1.40	1.35	1.29
	0.950	1.84	1.75	1.65	1.53	1.47	1.39
	0.975	2.06	1.94	1.82	1.67	1.58	1.48
	0.990	2.35	2.20	2.03	1.84	1.73	1.60
	0.999	3.08	2.83	2.55	2.25	2.08	1.89
120	0.900	1.55	1.48	1.41	1.32	1.26	1.19
	0.950	1.75	1.66	1.55	1.43	1.35	1.26
	0.975	1.94	1.82	1.69	1.53	1.43	1.31
	0.990	2.19	2.03	1.86	1.66	1.53	1.38
	0.999	2.78	2.53	2.26	1.95	1.77	1.55
10000	0.900	1.49	1.42	1.34	1.24	1.17	1.03
	0.950	1.67	1.57	1.46	1.32	1.22	1.03
	0.975	1.83	1.71	1.57	1.39	1.27	1.04
	0.990	2.04	1.88	1.70	1.48	1.33	1.05
	0.999	2.52	2.27	1.99	1.66	1.45	1.06

D.6 Binomial Distribution Probabilities

If $X \sim \text{Binomial}(n, p)$, then Table D.6 contains entries computing

$$P(X = k) = \binom{n}{k} p^k (1-p)^{n-k}$$

for various values of n, k, and p.

Note that if $X \sim \text{Binomial}(n, p)$, then $P(X = k) = P(Y = n - k)$, where $Y = n - X \sim \text{Binomial}(n, 1 - p)$.

Table D.6 Binomial Probabilities

		p								
n	k	.01	.02	.03	.04	.05	.06	.07	.08	.09
2	0	.9801	.9604	.9409	.9216	.9025	.8836	.8649	.8464	.8281
	1	.0198	.0392	.0582	.0768	.0950	.1128	.1302	.1472	.1638
	2	.0001	.0004	.0009	.0016	.0025	.0036	.0049	.0064	.0081
3	0	.9703	.9412	.9127	.8847	.8574	.8306	.8044	.7787	.7536
	1	.0294	.0576	.0847	.1106	.1354	.1590	.1816	.2031	.2236
	2	.0003	.0012	.0026	.0046	.0071	.0102	.0137	.0177	.0221
	3				.0001	.0001	.0002	.0003	.0005	.0007
4	0	.9606	.9224	.8853	.8493	.8145	.7807	.7481	.7164	.6857
	1	.0388	.0753	.1095	.1416	.1715	.1993	.2252	.2492	.2713
	2	.0006	.0023	.0051	.0088	.0135	.0191	.0254	.0325	.0402
	3			.0001	.0002	.0005	.0008	.0013	.0019	.0027
	4									.0001
5	0	.9510	.9039	.8587	.8154	.7738	.7339	.6957	.6591	.6240
	1	.0480	.0922	.1328	.1699	.2036	.2342	.2618	.2866	.3086
	2	.0010	.0038	.0082	.0142	.0214	.0299	.0394	.0498	.0610
	3		.0001	.0003	.0006	.0011	.0019	.0030	.0043	.0060
	4						.0001	.0001	.0002	.0003
	5									
6	0	.9415	.8858	.8330	.7828	.7351	.6899	.6470	.6064	.5679
	1	.0571	.1085	.1546	.1957	.2321	.2642	.2922	.3164	.3370
	2	.0014	.0055	.0120	.0204	.0305	.0422	.0550	.0688	.0833
	3		.0002	.0005	.0011	.0021	.0036	.0055	.0080	.0110
	4					.0001	.0002	.0003	.0005	.0008
	5									
	6									
7	0	.9321	.8681	.8080	.7514	.6983	.6485	.6017	.5578	.5168
	1	.0659	.1240	.1749	.2192	.2573	.2897	.3170	.3396	.3578
	2	.0020	.0076	.0162	.0274	.0406	.0555	.0716	.0886	.1061
	3		.0003	.0008	.0019	.0036	.0059	.0090	.0128	.0175
	4				.0001	.0002	.0004	.0007	.0011	.0017
	5								.0001	.0001
	6									
	7									
8	0	.9227	.8508	.7837	.7214	.6634	.6096	.5596	.5132	.4703
	1	.0746	.1389	.1939	.2405	.2793	.3113	.3370	.3570	.3721
	2	.0026	.0099	.0210	.0351	.0515	.0695	.0888	.1087	.1288
	3	.0001	.0004	.0013	.0029	.0054	.0089	.0134	.0189	.0255
	4			.0001	.0002	.0004	.0007	.0013	.0021	.0031
	5							.0001	.0001	.0002
	6									
	7									
	8									

Table D.6 Binomial Probabilities (continued)

		p								
n	*k*	.10	.15	.20	.25	.30	.35	.40	.45	.50
2	0	.8100	.7225	.6400	.5625	.4900	.4225	.3600	.3025	.2500
	1	.1800	.2550	.3200	.3750	.4200	.4550	.4800	.4950	.5000
	2	.0100	.0225	.0400	.0625	.0900	.1225	.1600	.2025	.2500
3	0	.7290	.6141	.5120	.4219	.3430	.2746	.2160	.1664	.1250
	1	.2430	.3251	.3840	.4219	.4410	.4436	.4320	.4084	.3750
	2	.0270	.0574	.0960	.1406	.1890	.2389	.2880	.3341	.3750
	3	.0010	.0034	.0080	.0156	.0270	.0429	.0640	.0911	.1250
4	0	.6561	.5220	.4096	.3164	.2401	.1785	.1296	.0915	.0625
	1	.2916	.3685	.4096	.4219	.4116	.3845	.3456	.2995	.2500
	2	.0486	.0975	.1536	.2109	.2646	.3105	.3456	.3675	.3750
	3	.0036	.0115	.0256	.0469	.0756	.1115	.1536	.2005	.2500
	4	.0001	.0005	.0016	.0039	.0081	.0150	.0256	.0410	.0625
5	0	.5905	.4437	.3277	.2373	.1681	.1160	.0778	.0503	.0313
	1	.3280	.3915	.4096	.3955	.3602	.3124	.2592	.2059	.1563
	2	.0729	.1382	.2048	.2637	.3087	.3364	.3456	.3369	.3125
	3	.0081	.0244	.0512	.0879	.1323	.1811	.2304	.2757	.3125
	4	.0004	.0022	.0064	.0146	.0284	.0488	.0768	.1128	.1562
	5		.0001	.0003	.0010	.0024	.0053	.0102	.0185	.0312
6	0	.5314	.3771	.2621	.1780	.1176	.0754	.0467	.0277	.0156
	1	.3543	.3993	.3932	.3560	.3025	.2437	.1866	.1359	.0938
	2	.0984	.1762	.2458	.2966	.3241	.3280	.3110	.2780	.2344
	3	.0146	.0415	.0819	.1318	.1852	.2355	.2765	.3032	.3125
	4	.0012	.0055	.0154	.0330	.0595	.0951	.1382	.1861	.2344
	5	.0001	.0004	.0015	.0044	.0102	.0205	.0369	.0609	.0937
	6			.0001	.0002	.0007	.0018	.0041	.0083	.0156
7	0	.4783	.3206	.2097	.1335	.0824	.0490	.0280	.0152	.0078
	1	.3720	.3960	.3670	.3115	.2471	.1848	.1306	.0872	.0547
	2	.1240	.2097	.2753	.3115	.3177	.2985	.2613	.2140	.1641
	3	.0230	.0617	.1147	.1730	.2269	.2679	.2903	.2918	.2734
	4	.0026	.0109	.0287	.0577	.0972	.1442	.1935	.2388	.2734
	5	.0002	.0012	.0043	.0115	.0250	.0466	.0774	.1172	.1641
	6		.0001	.0004	.0013	.0036	.0084	.0172	.0320	.0547
	7				.0001	.0002	.0006	.0016	.0037	.0078
8	0	.4305	.2725	.1678	.1001	.0576	.0319	.0168	.0084	.0039
	1	.3826	.3847	.3355	.2670	.1977	.1373	.0896	.0548	.0313
	2	.1488	.2376	.2936	.3115	.2965	.2587	.2090	.1569	.1094
	3	.0331	.0839	.1468	.2076	.2541	.2786	.2787	.2568	.2188
	4	.0046	.0185	.0459	.0865	.1361	.1875	.2322	.2627	.2734
	5	.0004	.0026	.0092	.0231	.0467	.0808	.1239	.1719	.2188
	6		.0002	.0011	.0038	.0100	.0217	.0413	.0703	.1094
	7			.0001	.0004	.0012	.0033	.0079	.0164	.0312
	8					.0001	.0002	.0007	.0017	.0039

Table D.6 Binomial Probabilities (continued)

		p								
n	*k*	.01	.02	.03	.04	.05	.06	.07	.08	.09
9	0	.9135	.8337	.7602	.6925	.6302	.5730	.5204	.4722	.4279
	1	.0830	.1531	.2116	.2597	.2985	.3292	.3525	.3695	.3809
	2	.0034	.0125	.0262	.0433	.0629	.0840	.1061	.1285	.1507
	3	.0001	.0006	.0019	.0042	.0077	.0125	.0186	.0261	.0348
	4			.0001	.0003	.0006	.0012	.0021	.0034	.0052
	5						.0001	.0002	.0003	.0005
	6									
	7									
	8									
	9									
10	0	.9044	.8171	.7374	.6648	.5987	.5386	.4840	.4344	.3894
	1	.0914	.1667	.2281	.2770	.3151	.3438	.3643	.3777	.3851
	2	.0042	.0153	.0317	.0519	.0746	.0988	.1234	.1478	.1714
	3	.0001	.0008	.0026	.0058	.0105	.0168	.0248	.0343	.0452
	4			.0001	.0004	.0010	.0019	.0033	.0052	.0078
	5					.0001	.0001	.0003	.0005	.0009
	6									.0001
	7									
	8									
	9									
	10									
12	0	.8864	.7847	.6938	.6127	.5404	.4759	.4186	.3677	.3225
	1	.1074	.1922	.2575	.3064	.3413	.3645	.3781	.3837	.3827
	2	.0060	.0216	.0438	.0702	.0988	.1280	.1565	.1835	.2082
	3	.0002	.0015	.0045	.0098	.0173	.0272	.0393	.0532	.0686
	4		.0001	.0003	.0009	.0021	.0039	.0067	.0104	.0153
	5				.0001	.0002	.0004	.0008	.0014	.0024
	6							.0001	.0001	.0003
	7									
	8									
	9									
	10									
	11									
	12									
15	0	.8601	.7386	.6333	.5421	.4633	.3953	.3367	.2863	.2430
	1	.1303	.2261	.2938	.3388	.3658	.3785	.3801	.3734	.3605
	2	.0092	.0323	.0636	.0988	.1348	.1691	.2003	.2273	.2496
	3	.0004	.0029	.0085	.0178	.0307	.0468	.0653	.0857	.1070
	4		.0002	.0008	.0022	.0049	.0090	.0148	.0223	.0317
	5			.0001	.0002	.0006	.0013	.0024	.0043	.0069
	6						.0001	.0003	.0006	.0011
	7								.0001	.0001
	8									
	9									
	10									
	11									
	12									
	13									
	14									
	15									

Table D.6 Binomial Probabilities (continued)

		p								
n	*k*	.10	.15	.20	.25	.30	.35	.40	.45	.50
9	0	.3874	.2316	.1342	.0751	.0404	.0207	.0101	.0046	.0020
	1	.3874	.3679	.3020	.2253	.1556	.1004	.0605	.0339	.0176
	2	.1722	.2597	.3020	.3003	.2668	.2162	.1612	.1110	.0703
	3	.0446	.1069	.1762	.2336	.2668	.2716	.2508	.2119	.1641
	4	.0074	.0283	.0661	.1168	.1715	.2194	.2508	.2600	.2461
	5	.0008	.0050	.0165	.0389	.0735	.1181	.1672	.2128	.2461
	6	.0001	.0006	.0028	.0087	.0210	.0424	.0743	.1160	.1641
	7			.0003	.0012	.0039	.0098	.0212	.0407	.0703
	8				.0001	.0004	.0013	.0035	.0083	.0176
	9						.0001	.0003	.0008	.0020
10	0	.3487	.1969	.1074	.0563	.0282	.0135	.0060	.0025	.0010
	1	.3874	.3474	.2684	.1877	.1211	.0725	.0403	.0207	.0098
	2	.1937	.2759	.3020	.2816	.2335	.1757	.1209	.0763	.0439
	3	.0574	.1298	.2013	.2503	.2668	.2522	.2150	.1665	.1172
	4	.0112	.0401	.0881	.1460	.2001	.2377	.2508	.2384	.2051
	5	.0015	.0085	.0264	.0584	.1029	.1536	.2007	.2340	.2461
	6	.0001	.0012	.0055	.0162	.0368	.0689	.1115	.1596	.2051
	7		.0001	.0008	.0031	.0090	.0212	.0425	.0746	.1172
	8			.0001	.0004	.0014	.0043	.0106	.0229	.0439
	9					.0001	.0005	.0016	.0042	.0098
	10							.0001	.0003	.0010
12	0	.2824	.1422	.0687	.0317	.0138	.0057	.0022	.0008	.0002
	1	.3766	.3012	.2062	.1267	.0712	.0368	.0174	.0075	.0029
	2	.2301	.2924	.2835	.2323	.1678	.1088	.0639	.0339	.0161
	3	.0852	.1720	.2362	.2581	.2397	.1954	.1419	.0923	.0537
	4	.0213	.0683	.1329	.1936	.2311	.2367	.2128	.1700	.1208
	5	.0038	.0193	.0532	.1032	.1585	.2039	.2270	.2225	.1934
	6	.0005	.0040	.0155	.0401	.0792	.1281	.1766	.2124	.2256
	7		.0006	.0033	.0115	.0291	.0591	.1009	.1489	.1934
	8		.0001	.0005	.0024	.0078	.0199	.0420	.0762	.1208
	9			.0001	.0004	.0015	.0048	.0125	.0277	.0537
	10					.0002	.0008	.0025	.0068	.0161
	11						.0001	.0003	.0010	.0029
	12								.0001	.0002
15	0	.2059	.0874	.0352	.0134	.0047	.0016	.0005	.0001	
	1	.3432	.2312	.1319	.0668	.0305	.0126	.0047	.0016	.0005
	2	.2669	.2856	.2309	.1559	.0916	.0476	.0219	.0090	.0032
	3	.1285	.2184	.2501	.2252	.1700	.1110	.0634	.0318	.0139
	4	.0428	.1156	.1876	.2252	.2186	.1792	.1268	.0780	.0417
	5	.0105	.0449	.1032	.1651	.2061	.2123	.1859	.1404	.0916
	6	.0019	.0132	.0430	.0917	.1472	.1906	.2066	.1914	.1527
	7	.0003	.0030	.0138	.0393	.0811	.1319	.1771	.2013	.1964
	8		.0005	.0035	.0131	.0348	.0710	.1181	.1647	.1964
	9		.0001	.0007	.0034	.0116	.0298	.0612	.1048	.1527
	10			.0001	.0007	.0030	.0096	.0245	.0515	.0916
	11				.0001	.0006	.0024	.0074	.0191	.0417
	12					.0001	.0004	.0016	.0052	.0139
	13						.0001	.0003	.0010	.0032
	14								.0001	.0005
	15									

Table D.6 Binomial Probabilities (continued)

		p								
n	*k*	.01	.02	.03	.04	.05	.06	.07	.08	.09
20	0	.8179	.6676	.5438	.4420	.3585	.2901	.2342	.1887	.1516
	1	.1652	.2725	.3364	.3683	.3774	.3703	.3526	.3282	.3000
	2	.0159	.0528	.0988	.1458	.1887	.2246	.2521	.2711	.2818
	3	.0010	.0065	.0183	.0364	.0596	.0860	.1139	.1414	.1672
	4		.0006	.0024	.0065	.0133	.0233	.0364	.0523	.0703
	5			.0002	.0009	.0022	.0048	.0088	.0145	.0222
	6				.0001	.0003	.0008	.0017	.0032	.0055
	7						.0001	.0002	.0005	.0011
	8								.0001	.0002
	9									
	10									
	11									
	12									
	13									
	14									
	15									
	16									
	17									
	18									
	19									
	20									

Table D.6 Binomial Probabilities (continued)

		p								
n	*k*	.10	.15	.20	.25	.30	.35	.40	.45	.50
20	0	.1216	.0388	.0115	.0032	.0008	.0002			
	1	.2702	.1368	.0576	.0211	.0068	.0020	.0005	.0001	
	2	.2852	.2293	.1369	.0669	.0278	.0100	.0031	.0008	.0002
	3	.1901	.2428	.2054	.1339	.0716	.0323	.0123	.0040	.0011
	4	.0898	.1821	.2182	.1897	.1304	.0738	.0350	.0139	.0046
	5	.0319	.1028	.1746	.2023	.1789	.1272	.0746	.0365	.0148
	6	.0089	.0454	.1091	.1686	.1916	.1712	.1244	.0746	.0370
	7	.0020	.0160	.0545	.1124	.1643	.1844	.1659	.1221	.0739
	8	.0004	.0046	.0222	.0609	.1144	.1614	.1797	.1623	.1201
	9	.0001	.0011	.0074	.0271	.0654	.1158	.1597	.1771	.1602
	10		.0002	.0020	.0099	.0308	.0686	.1171	.1593	.1762
	11			.0005	.0030	.0120	.0336	.0710	.1185	.1602
	12			.0001	.0008	.0039	.0136	.0355	.0727	.1201
	13				.0002	.0010	.0045	.0146	.0366	.0739
	14					.0002	.0012	.0049	.0150	.0370
	15						.0003	.0013	.0049	.0148
	16							.0003	.0013	.0046
	17								.0002	.0011
	18									.0002
	19									
	20									