

STATISTICAL TABLES

TABLE 1. 2250 Random Digits
Each row has 50 random digits, grouped into fives for convenience.

Row	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50
1	47918	57733	55245	48623	26967	85071	53931	29229	61730	72057
2	65930	85921	86794	62673	94454	70013	60190	79248	61998	21559
3	05595	09039	88683	78929	93306	48269	79536	88977	63884	70066
4	98701	76059	94858	44220	63966	34620	62617	32459	34113	71629
5	86769	94430	31975	91215	03534	02226	53037	69408	39424	81758
6	04282	74387	38818	36396	36882	89524	73853	51195	08321	87907
7	83059	03093	58029	31341	96562	45535	20433	25045	98385	94098
8	37411	57451	69440	87614	33968	09784	63070	38187	89194	01890
9	09632	18651	84757	60646	47935	63107	82426	09975	02049	46430
10	56665	42663	09718	66489	43884	72752	66803	82277	68337	12776
11	52374	54219	69939	45657	00493	61885	27711	59387	31924	09216
12	96624	67381	72597	02507	09035	87279	22032	71572	85271	74017
13	89494	81528	36497	48239	06981	82652	69256	82355	05739	35372
14	37882	41491	43145	86144	00696	18916	70221	01916	05954	04479
15	03540	85798	72246	15976	47619	72019	00358	99663	59466	58521
16	93174	99109	14827	24949	16210	95105	89186	86281	65888	15034
17	04506	11485	45016	55018	22362	71351	47022	08020	82048	89495
18	31733	99700	10919	28339	12681	65711	82459	49468	34970	38804
19	24129	34494	31614	91923	85547	12990	62679	66022	92029	17150
20	46741	29678	90242	32246	94521	43876	43572	54754	20405	51653
21	09630	31028	97174	12325	92727	33416	99378	97802	81167	36996
22	31039	98746	07587	70782	98336	72230	65198	23630	50693	19627
23	96614	23530	37342	12370	28426	62469	27581	18963	61079	08077
24	62749	79640	32803	87390	12614	97437	24107	64792	34341	32465
25	77694	90634	92169	69615	70729	41610	85509	14030	65261	50654
26	87135	55696	09169	08851	07565	53854	37132	98449	43392	56709
27	48476	75960	37295	95550	49820	64435	38361	25766	20608	13265
28	77377	89648	74563	75984	79397	55515	31557	12010	39508	89860
29	48695	59889	34486	38042	55481	99040	45297	51568	41868	95177
30	97930	95390	56787	53750	55284	70695	44054	62081	15986	03071
31	82256	97023	16626	34014	40375	68129	99012	33597	74464	17954
32	37709	08368	47847	88008	07793	04088	73370	80955	93051	06130
33	48649	26969	47986	99881	58308	82071	67103	66885	33592	73525
34	73703	78278	83809	98615	97006	89821	24610	29918	64731	89015
35	41365	12341	97005	67343	74850	02496	66677	23844	27174	80972
36	13219	56378	88897	61505	50059	20614	33569	21847	96682	95728
37	37243	61104	41333	59790	33878	77664	64749	31926	20670	44151
38	04470	77713	20113	72811	42421	43062	62535	94072	51364	50026
39	30289	27372	85581	95034	30635	97101	47653	30765	57149	75662
40	06115	71564	53228	75495	42429	92792	61959	54487	90050	81634
41	37615	67524	12225	40337	63097	57784	83963	64591	33707	59820
42	34515	72898	07746	57148	65304	27655	30625	62395	80328	01465
43	55959	30708	10908	66201	55243	98039	76326	81336	25544	54259
44	70380	55764	38828	30082	54542	81691	25065	32965	11271	70586
45	30082	36935	37949	46956	93497	37846	23290	44794	80548	38758

504 **TABLE 2a. Cumulative Binomial Distribution**

$$F_K(k) = Pr(K \leq k) = \sum_{t \leq k} \binom{n}{t} \pi^t (1 - \pi)^{n-t}$$

		π										
		$t \leq k \setminus \gamma$										
n	k	0.10	0.20	0.25	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.95
7	0	0.4783	0.2097	0.1335	0.0824	0.0280	0.0078	0.0016	0.0002	0.0000	0.0000	0.0000
	1	0.8503	0.5767	0.4449	0.3294	0.1586	0.0625	0.0188	0.0038	0.0004	0.0000	0.0000
	2	0.9743	0.8520	0.7564	0.6471	0.4199	0.2266	0.0963	0.0288	0.0047	0.0002	0.0000
	3	0.9973	0.9667	0.9294	0.8740	0.7102	0.5000	0.2898	0.1260	0.0333	0.0027	0.0002
	4	0.9998	0.9953	0.9871	0.9712	0.9037	0.7734	0.5801	0.3529	0.1480	0.0257	0.0038
	5	1.0000	0.9996	0.9987	0.9962	0.9812	0.9375	0.8414	0.6706	0.4233	0.1497	0.0444
	6	1.0000	1.0000	0.9999	0.9998	0.9984	0.9922	0.9720	0.9176	0.7903	0.5217	0.3017
8	0	0.4305	0.1678	0.1001	0.0576	0.0168	0.0039	0.0007	0.0001	0.0000	0.0000	0.0000
	1	0.8131	0.5033	0.3671	0.2553	0.1064	0.0352	0.0085	0.0013	0.0001	0.0000	0.0000
	2	0.9619	0.7969	0.6785	0.5518	0.3154	0.1445	0.0498	0.0113	0.0012	0.0000	0.0000
	3	0.9950	0.9437	0.8862	0.8059	0.5941	0.3633	0.1737	0.0580	0.0104	0.0004	0.0000
	4	0.9996	0.9896	0.9727	0.9420	0.8263	0.6367	0.4059	0.1941	0.0563	0.0050	0.0004
	5	1.0000	0.9988	0.9958	0.9887	0.9502	0.8555	0.6846	0.4482	0.2031	0.0381	0.0058
	6	1.0000	0.9999	0.9996	0.9987	0.9915	0.9648	0.8936	0.7447	0.4967	0.1869	0.0572
7	1.0000	1.0000	1.0000	0.9999	0.9993	0.9961	0.9832	0.9424	0.8322	0.5695	0.3366	
9	0	0.3874	0.1342	0.0751	0.0404	0.0101	0.0020	0.0003	0.0000	0.0000	0.0000	0.0000
	1	0.7748	0.4362	0.3003	0.1960	0.0705	0.0195	0.0038	0.0004	0.0000	0.0000	0.0000
	2	0.9470	0.7382	0.6007	0.4628	0.2318	0.0898	0.0250	0.0043	0.0003	0.0000	0.0000
	3	0.9917	0.9144	0.8343	0.7297	0.4826	0.2539	0.0994	0.0253	0.0031	0.0001	0.0000
	4	0.9991	0.9804	0.9511	0.9012	0.7334	0.5000	0.2666	0.0988	0.0196	0.0009	0.0000
	5	0.9999	0.9969	0.9900	0.9747	0.9006	0.7461	0.5174	0.2703	0.0856	0.0083	0.0006
	6	1.0000	0.9997	0.9987	0.9957	0.9750	0.9102	0.7682	0.5372	0.2618	0.0530	0.0084
	7	1.0000	1.0000	0.9999	0.9996	0.9962	0.9805	0.9295	0.8040	0.5638	0.2252	0.0712
8	1.0000	1.0000	1.0000	1.0000	0.9997	0.9980	0.9899	0.9596	0.8658	0.6126	0.3698	
10	0	0.3487	0.1074	0.0563	0.0282	0.0060	0.0010	0.0001	0.0000	0.0000	0.0000	0.0000
	1	0.7361	0.3758	0.2440	0.1493	0.0464	0.0107	0.0017	0.0001	0.0000	0.0000	0.0000
	2	0.9298	0.6778	0.5256	0.3828	0.1673	0.0547	0.0123	0.0016	0.0001	0.0000	0.0000
	3	0.9872	0.8791	0.7759	0.6496	0.3823	0.1719	0.0548	0.0106	0.0009	0.0000	0.0000
	4	0.9984	0.9672	0.9219	0.8497	0.6331	0.3770	0.1662	0.0473	0.0064	0.0001	0.0000
	5	0.9999	0.9936	0.9803	0.9527	0.8338	0.6230	0.3669	0.1503	0.0328	0.0016	0.0001
	6	1.0000	0.9991	0.9965	0.9894	0.9452	0.8281	0.6177	0.3504	0.1209	0.0128	0.0010
	7	1.0000	0.9999	0.9996	0.9984	0.9877	0.9453	0.8327	0.6172	0.3222	0.0702	0.0115
	8	1.0000	1.0000	1.0000	0.9999	0.9983	0.9893	0.9536	0.8507	0.6242	0.2639	0.0861
9	1.0000	1.0000	1.0000	1.0000	0.9999	0.9990	0.9940	0.9718	0.8926	0.6513	0.4013	
11	0	0.3138	0.0859	0.0422	0.0198	0.0036	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000
	1	0.6974	0.3221	0.1971	0.1130	0.0302	0.0059	0.0007	0.0000	0.0000	0.0000	0.0000
	2	0.9104	0.6174	0.4552	0.3127	0.1189	0.0327	0.0059	0.0006	0.0000	0.0000	0.0000
	3	0.9815	0.8389	0.7133	0.5696	0.2963	0.1133	0.0293	0.0043	0.0002	0.0000	0.0000
	4	0.9972	0.9496	0.8854	0.7897	0.5328	0.2744	0.0994	0.0216	0.0020	0.0000	0.0000
	5	0.9997	0.9883	0.9657	0.9218	0.7535	0.5000	0.2465	0.0782	0.0117	0.0003	0.0000
	6	1.0000	0.9980	0.9924	0.9784	0.9006	0.7256	0.4672	0.2103	0.0504	0.0028	0.0001
	7	1.0000	0.9998	0.9988	0.9957	0.9707	0.8867	0.7037	0.4304	0.1611	0.0185	0.0016
	8	1.0000	1.0000	0.9999	0.9994	0.9941	0.9673	0.8811	0.6873	0.3826	0.0896	0.0152
	9	1.0000	1.0000	1.0000	1.0000	0.9993	0.9941	0.9698	0.8870	0.6779	0.3026	0.1019
10	1.0000	1.0000	1.0000	1.0000	1.0000	0.9995	0.9964	0.9802	0.9141	0.6862	0.4312	

TABLE 2b. Cumulative Binomial Distribution

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n	k	π										
		0.10	0.20	0.25	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.95
12	0	0.2824	0.0687	0.0317	0.0138	0.0022	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000
	1	0.6590	0.2749	0.1584	0.0850	0.0196	0.0032	0.0003	0.0000	0.0000	0.0000	0.0000
	2	0.8891	0.5583	0.3907	0.2528	0.0834	0.0193	0.0028	0.0002	0.0000	0.0000	0.0000
	3	0.9744	0.7946	0.6488	0.4925	0.2253	0.0730	0.0153	0.0017	0.0001	0.0000	0.0000
	4	0.9957	0.9274	0.8424	0.7237	0.4382	0.1938	0.0573	0.0095	0.0006	0.0000	0.0000
	5	0.9995	0.9806	0.9456	0.8822	0.6652	0.3872	0.1582	0.0386	0.0039	0.0001	0.0000
	6	0.9999	0.9961	0.9857	0.9614	0.8418	0.6128	0.3348	0.1178	0.0194	0.0005	0.0000
	7	1.0000	0.9994	0.9972	0.9905	0.9427	0.8062	0.5618	0.2763	0.0726	0.0043	0.0002
	8	1.0000	0.9999	0.9996	0.9983	0.9847	0.9270	0.7747	0.5075	0.2054	0.0256	0.0022
	9	1.0000	1.0000	1.0000	0.9998	0.9972	0.9807	0.9166	0.7472	0.4417	0.1109	0.0196
	10	1.0000	1.0000	1.0000	1.0000	0.9997	0.9968	0.9804	0.9150	0.7251	0.3410	0.1184
	11	1.0000	1.0000	1.0000	1.0000	1.0000	0.9998	0.9978	0.9862	0.9313	0.7176	0.4596
13	0	0.2542	0.0550	0.0238	0.0097	0.0013	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
	1	0.6213	0.2336	0.1267	0.0637	0.0126	0.0017	0.0001	0.0000	0.0000	0.0000	0.0000
	2	0.8661	0.5017	0.3326	0.2025	0.0579	0.0112	0.0013	0.0001	0.0000	0.0000	0.0000
	3	0.9658	0.7473	0.5843	0.4206	0.1686	0.0461	0.0078	0.0007	0.0000	0.0000	0.0000
	4	0.9935	0.9009	0.7940	0.6543	0.3530	0.1334	0.0321	0.0040	0.0002	0.0000	0.0000
	5	0.9991	0.9700	0.9198	0.8346	0.5744	0.2905	0.0977	0.0182	0.0012	0.0000	0.0000
	6	0.9999	0.9930	0.9757	0.9376	0.7712	0.5000	0.2288	0.0624	0.0070	0.0001	0.0000
	7	1.0000	0.9988	0.9944	0.9818	0.9023	0.7095	0.4256	0.1654	0.0300	0.0009	0.0000
	8	1.0000	0.9998	0.9990	0.9960	0.9679	0.8666	0.6470	0.3457	0.0991	0.0065	0.0003
	9	1.0000	1.0000	0.9999	0.9993	0.9922	0.9539	0.8314	0.5794	0.2527	0.0342	0.0031
	10	1.0000	1.0000	1.0000	0.9999	0.9987	0.9888	0.9421	0.7975	0.4983	0.1339	0.0245
	11	1.0000	1.0000	1.0000	1.0000	0.9999	0.9983	0.9874	0.9363	0.7664	0.3787	0.1354
	12	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9987	0.9903	0.9450	0.7458	0.4867
14	0	0.2288	0.0440	0.0178	0.0068	0.0008	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
	1	0.5846	0.1979	0.1010	0.0475	0.0081	0.0009	0.0001	0.0000	0.0000	0.0000	0.0000
	2	0.8416	0.4481	0.2811	0.1608	0.0398	0.0065	0.0006	0.0000	0.0000	0.0000	0.0000
	3	0.9559	0.6982	0.5213	0.3552	0.1243	0.0287	0.0039	0.0002	0.0000	0.0000	0.0000
	4	0.9908	0.8702	0.7415	0.5842	0.2793	0.0898	0.0175	0.0017	0.0000	0.0000	0.0000
	5	0.9985	0.9561	0.8883	0.7805	0.4859	0.2120	0.0583	0.0083	0.0004	0.0000	0.0000
	6	0.9998	0.9884	0.9617	0.9067	0.6925	0.3953	0.1501	0.0315	0.0024	0.0000	0.0000
	7	1.0000	0.9976	0.9897	0.9685	0.8499	0.6047	0.3075	0.0933	0.0116	0.0002	0.0000
	8	1.0000	0.9996	0.9978	0.9917	0.9417	0.7880	0.5141	0.2195	0.0439	0.0015	0.0000
	9	1.0000	1.0000	0.9997	0.9983	0.9825	0.9102	0.7207	0.4158	0.1298	0.0092	0.0004
	10	1.0000	1.0000	1.0000	0.9998	0.9961	0.9713	0.8757	0.6448	0.3018	0.0441	0.0042
	11	1.0000	1.0000	1.0000	1.0000	0.9994	0.9935	0.9602	0.8392	0.5519	0.1584	0.0301
	12	1.0000	1.0000	1.0000	1.0000	0.9999	0.9991	0.9919	0.9525	0.8021	0.4154	0.1530
	13	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9992	0.9932	0.9560	0.7712	0.5123
15	0	0.2059	0.0352	0.0134	0.0047	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	1	0.5490	0.1671	0.0802	0.0353	0.0052	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000
	2	0.8159	0.3980	0.2361	0.1268	0.0271	0.0037	0.0003	0.0000	0.0000	0.0000	0.0000
	3	0.9444	0.6482	0.4613	0.2969	0.0905	0.0176	0.0019	0.0001	0.0000	0.0000	0.0000
	4	0.9873	0.8358	0.6865	0.5155	0.2173	0.0592	0.0093	0.0007	0.0000	0.0000	0.0000
	5	0.9978	0.9389	0.8516	0.7216	0.4032	0.1509	0.0338	0.0037	0.0001	0.0000	0.0000
	6	0.9997	0.9819	0.9434	0.8689	0.6098	0.3036	0.0950	0.0152	0.0008	0.0000	0.0000
	7	1.0000	0.9958	0.9827	0.9500	0.7869	0.5000	0.2131	0.0500	0.0042	0.0000	0.0000
	8	1.0000	0.9992	0.9958	0.9848	0.9050	0.6964	0.3902	0.1311	0.0181	0.0003	0.0000

TABLE 2c. Cumulative Binomial Distribution

n	k	π										
		0.10	0.20	0.25	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.95
	9	1.0000	0.9999	0.9992	0.9963	0.9662	0.8491	0.5968	0.2784	0.0611	0.0022	0.0001
	10	1.0000	1.0000	0.9999	0.9993	0.9907	0.9408	0.7827	0.4845	0.1642	0.0127	0.0006
	11	1.0000	1.0000	1.0000	0.9999	0.9981	0.9824	0.9095	0.7031	0.3518	0.0556	0.0055
	12	1.0000	1.0000	1.0000	1.0000	0.9997	0.9963	0.9729	0.8732	0.6020	0.1841	0.0362
	13	1.0000	1.0000	1.0000	1.0000	1.0000	0.9995	0.9948	0.9647	0.8329	0.4510	0.1710
	14	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9995	0.9953	0.9648	0.7941	0.5367
	15	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
16	0	0.1853	0.0281	0.0100	0.0033	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	1	0.5147	0.1407	0.0635	0.0261	0.0033	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000
	2	0.7892	0.3518	0.1971	0.0994	0.0183	0.0021	0.0001	0.0000	0.0000	0.0000	0.0000
	3	0.9316	0.5981	0.4050	0.2459	0.0651	0.0106	0.0009	0.0000	0.0000	0.0000	0.0000
	4	0.9830	0.7982	0.6302	0.4499	0.1666	0.0384	0.0049	0.0003	0.0000	0.0000	0.0000
	5	0.9967	0.9183	0.8103	0.6598	0.3288	0.1051	0.0191	0.0016	0.0000	0.0000	0.0000
	6	0.9995	0.9733	0.9204	0.8247	0.5272	0.2272	0.0583	0.0071	0.0002	0.0000	0.0000
	7	0.9999	0.9930	0.9729	0.9256	0.7161	0.4018	0.1423	0.0257	0.0015	0.0000	0.0000
	8	1.0000	0.9985	0.9925	0.9743	0.8577	0.5982	0.2839	0.0744	0.0070	0.0001	0.0000
	9	1.0000	0.9998	0.9984	0.9929	0.9417	0.7728	0.4728	0.1753	0.0267	0.0005	0.0000
	10	1.0000	1.0000	0.9997	0.9984	0.9809	0.8949	0.6712	0.3402	0.0817	0.0033	0.0001
	11	1.0000	1.0000	1.0000	0.9997	0.9951	0.9616	0.8334	0.5501	0.2018	0.0170	0.0009
	12	1.0000	1.0000	1.0000	1.0000	0.9991	0.9894	0.9349	0.7541	0.4019	0.0684	0.0070
	13	1.0000	1.0000	1.0000	1.0000	0.9999	0.9979	0.9817	0.9006	0.6482	0.2108	0.0429
	14	1.0000	1.0000	1.0000	1.0000	1.0000	0.9997	0.9967	0.9739	0.8593	0.4853	0.1892
	15	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9997	0.9967	0.9719	0.8147	0.5599
17	0	0.1668	0.0225	0.0075	0.0023	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	1	0.4818	0.1182	0.0501	0.0193	0.0021	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
	2	0.7618	0.3096	0.1637	0.0774	0.0123	0.0012	0.0001	0.0000	0.0000	0.0000	0.0000
	3	0.9174	0.5489	0.3530	0.2019	0.0464	0.0064	0.0005	0.0000	0.0000	0.0000	0.0000
	4	0.9779	0.7582	0.5739	0.3887	0.1260	0.0245	0.0025	0.0001	0.0000	0.0000	0.0000
	5	0.9953	0.8943	0.7653	0.5968	0.2639	0.0717	0.0106	0.0007	0.0000	0.0000	0.0000
	6	0.9992	0.9623	0.8929	0.7752	0.4478	0.1662	0.0348	0.0032	0.0001	0.0000	0.0000
	7	0.9999	0.9891	0.9598	0.8954	0.6405	0.3145	0.0919	0.0127	0.0005	0.0000	0.0000
	8	1.0000	0.9974	0.9876	0.9597	0.8011	0.5000	0.1989	0.0403	0.0026	0.0000	0.0000
	9	1.0000	0.9995	0.9969	0.9873	0.9081	0.6855	0.3595	0.1046	0.0109	0.0001	0.0000
	10	1.0000	0.9999	0.9994	0.9968	0.9652	0.8338	0.5522	0.2248	0.0377	0.0008	0.0000
	11	1.0000	1.0000	0.9999	0.9993	0.9894	0.9283	0.7361	0.4032	0.1057	0.0047	0.0001
	12	1.0000	1.0000	1.0000	0.9999	0.9975	0.9755	0.8740	0.6113	0.2418	0.0221	0.0012
	13	1.0000	1.0000	1.0000	1.0000	0.9995	0.9936	0.9536	0.7981	0.4511	0.0826	0.0088
	14	1.0000	1.0000	1.0000	1.0000	0.9999	0.9988	0.9877	0.9226	0.6904	0.2382	0.0503
	15	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9979	0.9807	0.8818	0.5182	0.2078
	16	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9998	0.9977	0.9775	0.8332	0.5819
18	0	0.1501	0.0180	0.0056	0.0016	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	1	0.4503	0.0991	0.0395	0.0142	0.0013	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
	2	0.7338	0.2713	0.1353	0.0600	0.0082	0.0007	0.0000	0.0000	0.0000	0.0000	0.0000
	3	0.9018	0.5010	0.3057	0.1646	0.0328	0.0038	0.0002	0.0000	0.0000	0.0000	0.0000
	4	0.9718	0.7164	0.5187	0.3327	0.0942	0.0154	0.0013	0.0000	0.0000	0.0000	0.0000
	5	0.9936	0.8671	0.7175	0.5344	0.2088	0.0481	0.0058	0.0003	0.0000	0.0000	0.0000
	6	0.9988	0.9487	0.8610	0.7217	0.3743	0.1189	0.0203	0.0014	0.0000	0.0000	0.0000
	7	0.9998	0.9837	0.9431	0.8593	0.5634	0.2403	0.0576	0.0061	0.0002	0.0000	0.0000
	8	1.0000	0.9957	0.9807	0.9404	0.7368	0.4073	0.1347	0.0210	0.0009	0.0000	0.0000

TABLE 2d. Cumulative Binomial Distribution

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n	k	π										
		0.10	0.20	0.25	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.95
9	9	1.0000	0.9991	0.9946	0.9790	0.8653	0.5927	0.2632	0.0596	0.0043	0.0000	0.0000
	10	1.0000	0.9998	0.9988	0.9939	0.9424	0.7597	0.4366	0.1407	0.0163	0.0002	0.0000
	11	1.0000	1.0000	0.9998	0.9986	0.9797	0.8811	0.6257	0.2783	0.0513	0.0012	0.0000
	12	1.0000	1.0000	1.0000	0.9997	0.9942	0.9519	0.7912	0.4656	0.1329	0.0064	0.0002
	13	1.0000	1.0000	1.0000	1.0000	0.9987	0.9846	0.9058	0.6673	0.2836	0.0282	0.0015
	14	1.0000	1.0000	1.0000	1.0000	0.9998	0.9962	0.9672	0.8354	0.4990	0.0982	0.0109
	15	1.0000	1.0000	1.0000	1.0000	1.0000	0.9993	0.9918	0.9400	0.7287	0.2662	0.0581
	16	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9987	0.9858	0.9009	0.5497	0.2265
	17	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9984	0.9820	0.8499	0.6028
	18	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
19	0	0.1351	0.0144	0.0042	0.0011	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	1	0.4203	0.0829	0.0310	0.0104	0.0008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	2	0.7054	0.2369	0.1113	0.0462	0.0055	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000
	3	0.8850	0.4551	0.2631	0.1332	0.0230	0.0022	0.0001	0.0000	0.0000	0.0000	0.0000
	4	0.9648	0.6733	0.4654	0.2822	0.0696	0.0096	0.0006	0.0000	0.0000	0.0000	0.0000
	5	0.9914	0.8369	0.6678	0.4739	0.1629	0.0318	0.0031	0.0001	0.0000	0.0000	0.0000
	6	0.9983	0.9324	0.8251	0.6655	0.3081	0.0835	0.0116	0.0006	0.0000	0.0000	0.0000
	7	0.9997	0.9767	0.9225	0.8180	0.4878	0.1796	0.0352	0.0028	0.0000	0.0000	0.0000
	8	1.0000	0.9933	0.9713	0.9161	0.6675	0.3238	0.0885	0.0105	0.0003	0.0000	0.0000
	9	1.0000	0.9984	0.9911	0.9674	0.8139	0.5000	0.1861	0.0326	0.0016	0.0000	0.0000
	10	1.0000	0.9997	0.9977	0.9895	0.9115	0.6762	0.3325	0.0839	0.0067	0.0000	0.0000
	11	1.0000	1.0000	0.9995	0.9972	0.9648	0.8204	0.5122	0.1820	0.0233	0.0003	0.0000
	12	1.0000	1.0000	0.9999	0.9994	0.9884	0.9165	0.6919	0.3345	0.0676	0.0017	0.0000
	13	1.0000	1.0000	1.0000	0.9999	0.9969	0.9682	0.8371	0.5261	0.1631	0.0086	0.0002
	14	1.0000	1.0000	1.0000	1.0000	0.9994	0.9904	0.9304	0.7178	0.3267	0.0352	0.0020
	15	1.0000	1.0000	1.0000	1.0000	0.9999	0.9978	0.9770	0.8668	0.5449	0.1150	0.0132
	16	1.0000	1.0000	1.0000	1.0000	1.0000	0.9996	0.9945	0.9538	0.7631	0.2946	0.0665
	17	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9992	0.9896	0.9171	0.5797	0.2453
	18	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9989	0.9856	0.8649	0.6226
20	0	0.1216	0.0115	0.0032	0.0008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	1	0.3917	0.0692	0.0243	0.0076	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	2	0.6769	0.2061	0.0913	0.0355	0.0036	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000
	3	0.8670	0.4114	0.2252	0.1071	0.0160	0.0013	0.0000	0.0000	0.0000	0.0000	0.0000
	4	0.9568	0.6296	0.4148	0.2375	0.0510	0.0059	0.0003	0.0000	0.0000	0.0000	0.0000
	5	0.9887	0.8042	0.6172	0.4164	0.1256	0.0207	0.0016	0.0000	0.0000	0.0000	0.0000
	6	0.9976	0.9133	0.7858	0.6080	0.2500	0.0577	0.0065	0.0003	0.0000	0.0000	0.0000
	7	0.9996	0.9679	0.8982	0.7723	0.4159	0.1316	0.0210	0.0013	0.0000	0.0000	0.0000
	8	0.9999	0.9900	0.9591	0.8867	0.5956	0.2517	0.0565	0.0051	0.0001	0.0000	0.0000
	9	1.0000	0.9974	0.9861	0.9520	0.7553	0.4119	0.1275	0.0171	0.0006	0.0000	0.0000
	10	1.0000	0.9994	0.9961	0.9829	0.8725	0.5881	0.2447	0.0480	0.0026	0.0000	0.0000
	11	1.0000	0.9999	0.9991	0.9949	0.9435	0.7483	0.4044	0.1133	0.0100	0.0001	0.0000
	12	1.0000	1.0000	0.9998	0.9987	0.9790	0.8684	0.5841	0.2277	0.0321	0.0004	0.0000
	13	1.0000	1.0000	1.0000	0.9997	0.9935	0.9423	0.7500	0.3920	0.0867	0.0024	0.0000
	14	1.0000	1.0000	1.0000	1.0000	0.9984	0.9793	0.8744	0.5836	0.1958	0.0113	0.0003
	15	1.0000	1.0000	1.0000	1.0000	0.9997	0.9941	0.9490	0.7625	0.3704	0.0432	0.0026
	16	1.0000	1.0000	1.0000	1.0000	1.0000	0.9987	0.9840	0.8929	0.5886	0.1330	0.0159
	17	1.0000	1.0000	1.0000	1.0000	1.0000	0.9998	0.9964	0.9645	0.7939	0.3231	0.0755
	18	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9995	0.9924	0.9308	0.6083	0.2642
	19	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9992	0.9885	0.8784	0.6415

TABLE 3a. Cumulative Distribution of Standard Normal Curve

Cumulative probability (shaded area) $\Phi(z) = Pr(Z \leq z)$ for negative z

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
-4.1	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001
-4.0	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002
-3.9	0.00005	0.00005	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003
-3.8	0.00007	0.00007	0.00007	0.00006	0.00006	0.00006	0.00006	0.00005	0.00005	0.00005
-3.7	0.00011	0.00010	0.00010	0.00010	0.00009	0.00009	0.00008	0.00008	0.00008	0.00008
-3.6	0.00016	0.00015	0.00015	0.00014	0.00014	0.00013	0.00013	0.00012	0.00012	0.00011
-3.5	0.00023	0.00022	0.00022	0.00021	0.00020	0.00019	0.00019	0.00018	0.00017	0.00017
-3.4	0.00034	0.00032	0.00031	0.00030	0.00029	0.00028	0.00027	0.00026	0.00025	0.00024
-3.3	0.00048	0.00047	0.00045	0.00043	0.00042	0.00040	0.00039	0.00038	0.00036	0.00035
-3.2	0.00069	0.00066	0.00064	0.00062	0.00060	0.00058	0.00056	0.00054	0.00052	0.00050
-3.1	0.00097	0.00094	0.00090	0.00087	0.00084	0.00082	0.00079	0.00076	0.00074	0.00071
-3.0	0.00135	0.00131	0.00126	0.00122	0.00118	0.00114	0.00111	0.00107	0.00104	0.00100
-2.9	0.00187	0.00181	0.00175	0.00169	0.00164	0.00159	0.00154	0.00149	0.00144	0.00139
-2.8	0.00256	0.00248	0.00240	0.00233	0.00226	0.00219	0.00212	0.00205	0.00199	0.00193
-2.7	0.00347	0.00336	0.00326	0.00317	0.00307	0.00298	0.00289	0.00280	0.00272	0.00264
-2.6	0.00466	0.00453	0.00440	0.00427	0.00415	0.00402	0.00391	0.00379	0.00368	0.00357
-2.5	0.00621	0.00604	0.00587	0.00570	0.00554	0.00539	0.00523	0.00508	0.00494	0.00480
-2.4	0.00820	0.00798	0.00776	0.00755	0.00734	0.00714	0.00695	0.00676	0.00657	0.00639
-2.3	0.01072	0.01044	0.01017	0.00990	0.00964	0.00939	0.00914	0.00889	0.00866	0.00842
-2.2	0.01390	0.01355	0.01321	0.01287	0.01255	0.01222	0.01191	0.01160	0.01130	0.01101
-2.1	0.01786	0.01743	0.01700	0.01659	0.01618	0.01578	0.01539	0.01500	0.01463	0.01426
-2.0	0.02275	0.02222	0.02169	0.02118	0.02068	0.02018	0.01970	0.01923	0.01876	0.01831
-1.9	0.02872	0.02807	0.02743	0.02680	0.02619	0.02559	0.02500	0.02442	0.02385	0.02330
-1.8	0.03593	0.03515	0.03438	0.03362	0.03288	0.03216	0.03144	0.03074	0.03005	0.02938
-1.7	0.04457	0.04363	0.04272	0.04182	0.04093	0.04006	0.03920	0.03836	0.03754	0.03673
-1.6	0.05480	0.05370	0.05262	0.05155	0.05050	0.04947	0.04846	0.04746	0.04648	0.04551
-1.5	0.06681	0.06552	0.06426	0.06301	0.06178	0.06057	0.05938	0.05821	0.05705	0.05592
-1.4	0.08076	0.07927	0.07780	0.07636	0.07493	0.07353	0.07215	0.07078	0.06944	0.06811
-1.3	0.09680	0.09510	0.09342	0.09176	0.09012	0.08851	0.08692	0.08534	0.08379	0.08226
-1.2	0.11507	0.11314	0.11123	0.10935	0.10749	0.10565	0.10383	0.10204	0.10027	0.09853
-1.1	0.13567	0.13350	0.13136	0.12924	0.12714	0.12507	0.12302	0.12100	0.11900	0.11702
-1.0	0.15866	0.15625	0.15386	0.15151	0.14917	0.14686	0.14457	0.14231	0.14007	0.13786
-0.9	0.18406	0.18141	0.17879	0.17619	0.17361	0.17106	0.16853	0.16602	0.16354	0.16109
-0.8	0.21186	0.20897	0.20611	0.20327	0.20045	0.19766	0.19489	0.19215	0.18943	0.18673
-0.7	0.24196	0.23885	0.23576	0.23270	0.22965	0.22663	0.22363	0.22065	0.21770	0.21476
-0.6	0.27425	0.27093	0.26763	0.26435	0.26109	0.25785	0.25463	0.25143	0.24825	0.24510
-0.5	0.30854	0.30503	0.30153	0.29806	0.29460	0.29116	0.28774	0.28434	0.28096	0.27760
-0.4	0.34458	0.34090	0.33724	0.33360	0.32997	0.32636	0.32276	0.31918	0.31561	0.31207
-0.3	0.38209	0.37828	0.37448	0.37070	0.36693	0.36317	0.35942	0.35569	0.35197	0.34827
-0.2	0.42074	0.41683	0.41294	0.40905	0.40517	0.40129	0.39743	0.39358	0.38974	0.38591
-0.1	0.46017	0.45620	0.45224	0.44828	0.44433	0.44038	0.43644	0.43251	0.42858	0.42465
-0.0	0.50000	0.49601	0.49202	0.48803	0.48405	0.48006	0.47608	0.47210	0.46812	0.46414

TABLE 3b. Cumulative Distribution of Standard Normal Curve

Cumulative probability (shaded area) $\Phi(z) = Pr(Z \leq z)$ for positive z

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.50000	0.50399	0.50798	0.51197	0.51595	0.51994	0.52392	0.52790	0.53188	0.53586
0.1	0.53983	0.54380	0.54776	0.55172	0.55567	0.55962	0.56356	0.56749	0.57142	0.57535
0.2	0.57926	0.58317	0.58706	0.59095	0.59483	0.59871	0.60257	0.60642	0.61026	0.61409
0.3	0.61791	0.62172	0.62552	0.62930	0.63307	0.63683	0.64058	0.64431	0.64803	0.65173
0.4	0.65542	0.65910	0.66276	0.66640	0.67003	0.67364	0.67724	0.68082	0.68439	0.68793
0.5	0.69146	0.69497	0.69847	0.70194	0.70540	0.70884	0.71226	0.71566	0.71904	0.72240
0.6	0.72575	0.72907	0.73237	0.73565	0.73891	0.74215	0.74537	0.74857	0.75175	0.75490
0.7	0.75804	0.76115	0.76424	0.76730	0.77035	0.77337	0.77637	0.77935	0.78230	0.78524
0.8	0.78814	0.79103	0.79389	0.79673	0.79955	0.80234	0.80511	0.80785	0.81057	0.81327
0.9	0.81594	0.81859	0.82121	0.82381	0.82639	0.82894	0.83147	0.83398	0.83646	0.83891
1.0	0.84134	0.84375	0.84614	0.84849	0.85083	0.85314	0.85543	0.85769	0.85993	0.86214
1.1	0.86433	0.86650	0.86864	0.87076	0.87286	0.87493	0.87698	0.87900	0.88100	0.88298
1.2	0.88493	0.88686	0.88877	0.89065	0.89251	0.89435	0.89617	0.89796	0.89973	0.90147
1.3	0.90320	0.90490	0.90658	0.90824	0.90988	0.91149	0.91308	0.91466	0.91621	0.91774
1.4	0.91924	0.92073	0.92220	0.92364	0.92507	0.92647	0.92785	0.92922	0.93056	0.93189
1.5	0.93319	0.93448	0.93574	0.93699	0.93822	0.93943	0.94062	0.94179	0.94295	0.94408
1.6	0.94520	0.94630	0.94738	0.94845	0.94950	0.95053	0.95154	0.95254	0.95352	0.95449
1.7	0.95543	0.95637	0.95728	0.95818	0.95907	0.95994	0.96080	0.96164	0.96246	0.96327
1.8	0.96407	0.96485	0.96562	0.96638	0.96712	0.96784	0.96856	0.96926	0.96995	0.97062
1.9	0.97128	0.97193	0.97257	0.97320	0.97381	0.97441	0.97500	0.97558	0.97615	0.97670
2.0	0.97725	0.97778	0.97831	0.97882	0.97932	0.97982	0.98030	0.98077	0.98124	0.98169
2.1	0.98214	0.98257	0.98300	0.98341	0.98382	0.98422	0.98461	0.98500	0.98537	0.98574
2.2	0.98610	0.98645	0.98679	0.98713	0.98745	0.98778	0.98809	0.98840	0.98870	0.98899
2.3	0.98928	0.98956	0.98983	0.99010	0.99036	0.99061	0.99086	0.99111	0.99134	0.99158
2.4	0.99180	0.99202	0.99224	0.99245	0.99266	0.99286	0.99305	0.99324	0.99343	0.99361
2.5	0.99379	0.99396	0.99413	0.99430	0.99446	0.99461	0.99477	0.99492	0.99506	0.99520
2.6	0.99534	0.99547	0.99560	0.99573	0.99585	0.99598	0.99609	0.99621	0.99632	0.99643
2.7	0.99653	0.99664	0.99674	0.99683	0.99693	0.99702	0.99711	0.99720	0.99728	0.99736
2.8	0.99744	0.99752	0.99760	0.99767	0.99774	0.99781	0.99788	0.99795	0.99801	0.99807
2.9	0.99813	0.99819	0.99825	0.99831	0.99836	0.99841	0.99846	0.99851	0.99856	0.99861
3.0	0.99865	0.99869	0.99874	0.99878	0.99882	0.99886	0.99889	0.99893	0.99896	0.99900
3.1	0.99903	0.99906	0.99910	0.99913	0.99916	0.99918	0.99921	0.99924	0.99926	0.99929
3.2	0.99931	0.99934	0.99936	0.99938	0.99940	0.99942	0.99944	0.99946	0.99948	0.99950
3.3	0.99952	0.99953	0.99955	0.99957	0.99958	0.99960	0.99961	0.99962	0.99964	0.99965
3.4	0.99966	0.99968	0.99969	0.99970	0.99971	0.99972	0.99973	0.99974	0.99975	0.99976
3.5	0.99977	0.99978	0.99978	0.99979	0.99980	0.99981	0.99981	0.99982	0.99983	0.99983
3.6	0.99984	0.99985	0.99985	0.99986	0.99986	0.99987	0.99987	0.99988	0.99988	0.99989
3.7	0.99989	0.99990	0.99990	0.99990	0.99991	0.99991	0.99992	0.99992	0.99992	0.99992
3.8	0.99993	0.99993	0.99993	0.99994	0.99994	0.99994	0.99994	0.99995	0.99995	0.99995
3.9	0.99995	0.99995	0.99996	0.99996	0.99996	0.99996	0.99996	0.99996	0.99997	0.99997
4.0	0.99997	0.99997	0.99997	0.99997	0.99997	0.99997	0.99998	0.99998	0.99998	0.99998

TABLE 4. Cumulative Distribution of Student's t Curves

Cumulative probability (shaded region) $Pr(T \leq t)$ for positive t										
df	0.80	0.90	0.95	0.96	0.97	0.975	0.98	0.99	0.995	0.9995
1	1.3764	3.0777	6.3137	7.9158	10.5789	12.7062	15.8945	31.8210	63.6559	636.5776
2	1.0607	1.8856	2.9200	3.3198	3.8964	4.3027	4.8487	6.9645	9.9250	31.5998
3	0.9785	1.6377	2.3534	2.6054	2.9505	3.1824	3.4819	4.5407	5.8408	12.9244
4	0.9410	1.5332	2.1318	2.3329	2.6008	2.7765	2.9985	3.7469	4.6041	8.6101
5	0.9195	1.4759	2.0150	2.1910	2.4216	2.5706	2.7565	3.3649	4.0321	6.8685
6	0.9057	1.4398	1.9432	2.1043	2.3133	2.4469	2.6122	3.1427	3.7074	5.9587
7	0.8960	1.4149	1.8946	2.0460	2.2409	2.3646	2.5168	2.9979	3.4995	5.4081
8	0.8889	1.3968	1.8595	2.0042	2.1892	2.3060	2.4490	2.8965	3.3554	5.0414
9	0.8834	1.3830	1.8331	1.9727	2.1504	2.2622	2.3984	2.8214	3.2498	4.7809
10	0.8791	1.3722	1.8125	1.9481	2.1202	2.2281	2.3593	2.7638	3.1693	4.5868
11	0.8755	1.3634	1.7959	1.9284	2.0961	2.2010	2.3281	2.7181	3.1058	4.4369
12	0.8726	1.3562	1.7823	1.9123	2.0764	2.1788	2.3027	2.6810	3.0545	4.3178
13	0.8702	1.3502	1.7709	1.8989	2.0600	2.1604	2.2816	2.6503	3.0123	4.2209
14	0.8681	1.3450	1.7613	1.8875	2.0462	2.1448	2.2638	2.6245	2.9768	4.1403
15	0.8662	1.3406	1.7531	1.8777	2.0343	2.1315	2.2485	2.6025	2.9467	4.0728
16	0.8647	1.3368	1.7459	1.8693	2.0240	2.1199	2.2354	2.5835	2.9208	4.0149
17	0.8633	1.3334	1.7396	1.8619	2.0150	2.1098	2.2238	2.5669	2.8982	3.9651
18	0.8620	1.3304	1.7341	1.8553	2.0071	2.1009	2.2137	2.5524	2.8784	3.9217
19	0.8610	1.3277	1.7291	1.8495	2.0000	2.0930	2.2047	2.5395	2.8609	3.8833
20	0.8600	1.3253	1.7247	1.8443	1.9937	2.0860	2.1967	2.5280	2.8453	3.8496
21	0.8591	1.3232	1.7207	1.8397	1.9880	2.0796	2.1894	2.5176	2.8314	3.8193
22	0.8583	1.3212	1.7171	1.8354	1.9829	2.0739	2.1829	2.5083	2.8188	3.7922
23	0.8575	1.3195	1.7139	1.8316	1.9783	2.0687	2.1770	2.4999	2.8073	3.7676
24	0.8569	1.3178	1.7109	1.8281	1.9740	2.0639	2.1715	2.4922	2.7970	3.7454
25	0.8562	1.3163	1.7081	1.8248	1.9701	2.0595	2.1666	2.4851	2.7874	3.7251
26	0.8557	1.3150	1.7056	1.8219	1.9665	2.0555	2.1620	2.4786	2.7787	3.7067
27	0.8551	1.3137	1.7033	1.8191	1.9632	2.0518	2.1578	2.4727	2.7707	3.6895
28	0.8546	1.3125	1.7011	1.8166	1.9601	2.0484	2.1539	2.4671	2.7633	3.6739
29	0.8542	1.3114	1.6991	1.8142	1.9573	2.0452	2.1503	2.4620	2.7564	3.6595
30	0.8538	1.3104	1.6973	1.8120	1.9546	2.0423	2.1470	2.4573	2.7500	3.6460
31	0.8534	1.3095	1.6955	1.8100	1.9522	2.0395	2.1438	2.4528	2.7440	3.6335
32	0.8530	1.3086	1.6939	1.8081	1.9499	2.0369	2.1409	2.4487	2.7385	3.6218
33	0.8526	1.3077	1.6924	1.8063	1.9477	2.0345	2.1382	2.4448	2.7333	3.6109
34	0.8523	1.3070	1.6909	1.8046	1.9457	2.0322	2.1356	2.4411	2.7284	3.6007
35	0.8520	1.3062	1.6896	1.8030	1.9438	2.0301	2.1332	2.4377	2.7238	3.5911
36	0.8517	1.3055	1.6883	1.8015	1.9419	2.0281	2.1309	2.4345	2.7195	3.5821
37	0.8514	1.3049	1.6871	1.8001	1.9402	2.0262	2.1287	2.4314	2.7154	3.5737
38	0.8512	1.3042	1.6860	1.7988	1.9386	2.0244	2.1267	2.4286	2.7116	3.5657
39	0.8509	1.3036	1.6849	1.7975	1.9371	2.0227	2.1247	2.4258	2.7079	3.5581
40	0.8507	1.3031	1.6839	1.7963	1.9357	2.0211	2.1229	2.4233	2.7045	3.5510
50	0.8489	1.2987	1.6759	1.7870	1.9244	2.0086	2.1087	2.4033	2.6778	3.4960
60	0.8477	1.2958	1.6706	1.7808	1.9170	2.0003	2.0994	2.3901	2.6603	3.4602
80	0.8461	1.2922	1.6641	1.7732	1.9078	1.9901	2.0878	2.3739	2.6387	3.4164
100	0.8452	1.2901	1.6602	1.7687	1.9024	1.9840	2.0809	2.3642	2.6259	3.3905
∞	0.8416	1.2815	1.6448	1.7507	1.8808	1.9600	2.0537	2.3264	2.5758	3.2905
	60%	80%	90%	92%	94%	95%	96%	98%	99%	99.9%

Two-sided confidence level

TABLE 5a. Exact two-sided 95% confidence intervals for binomial π

The numbers printed along the curves indicate the sample size n . Given a statistic p , draw a vertical line at p . Observe where the vertical line intersects the two curves marked n . Read their heights π_1 and π_2 off the vertical scale. These are the end points of the exact 95% confidence interval.

95% CI: $\pi_1 \leq \pi \leq \pi_2$

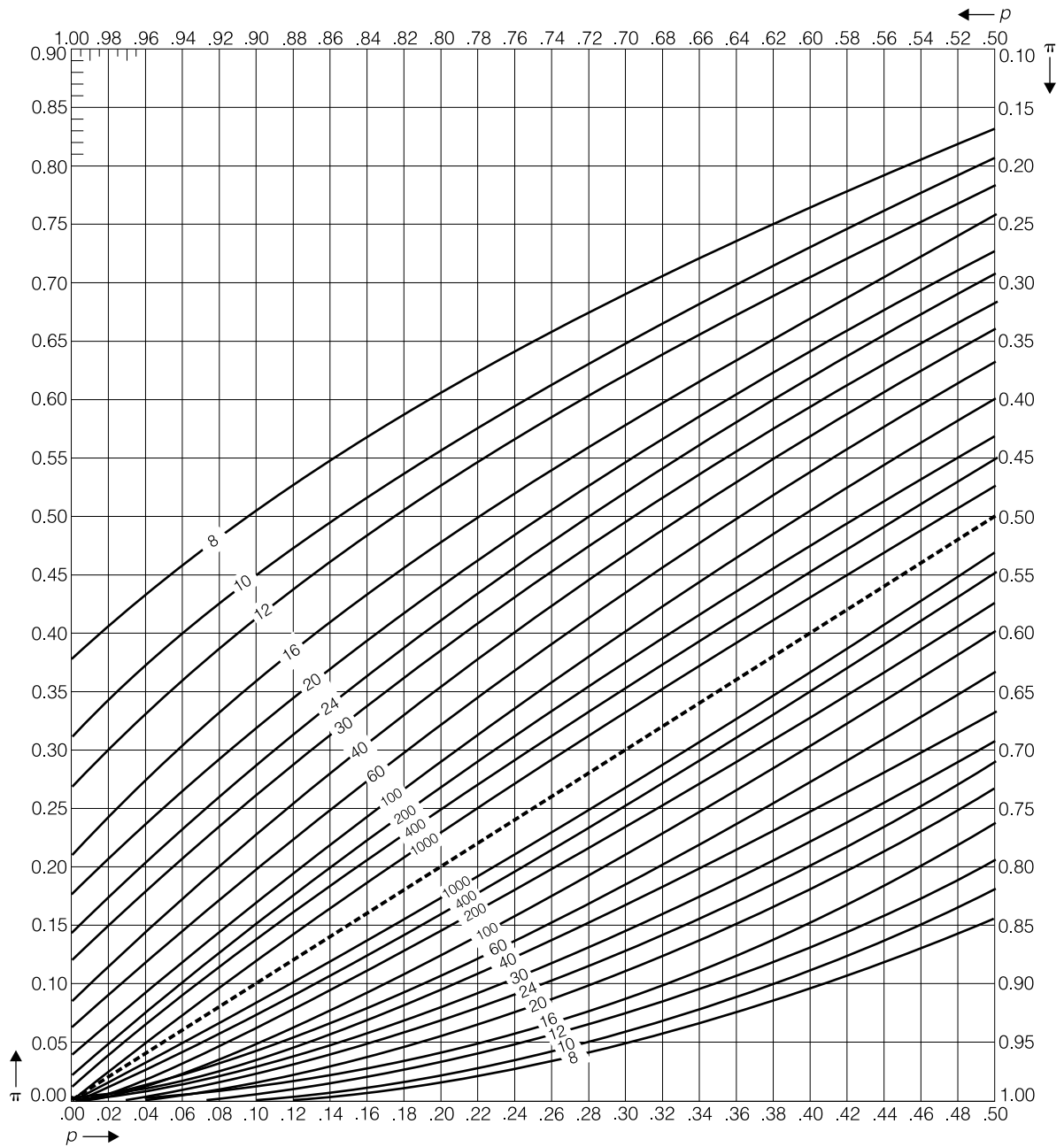
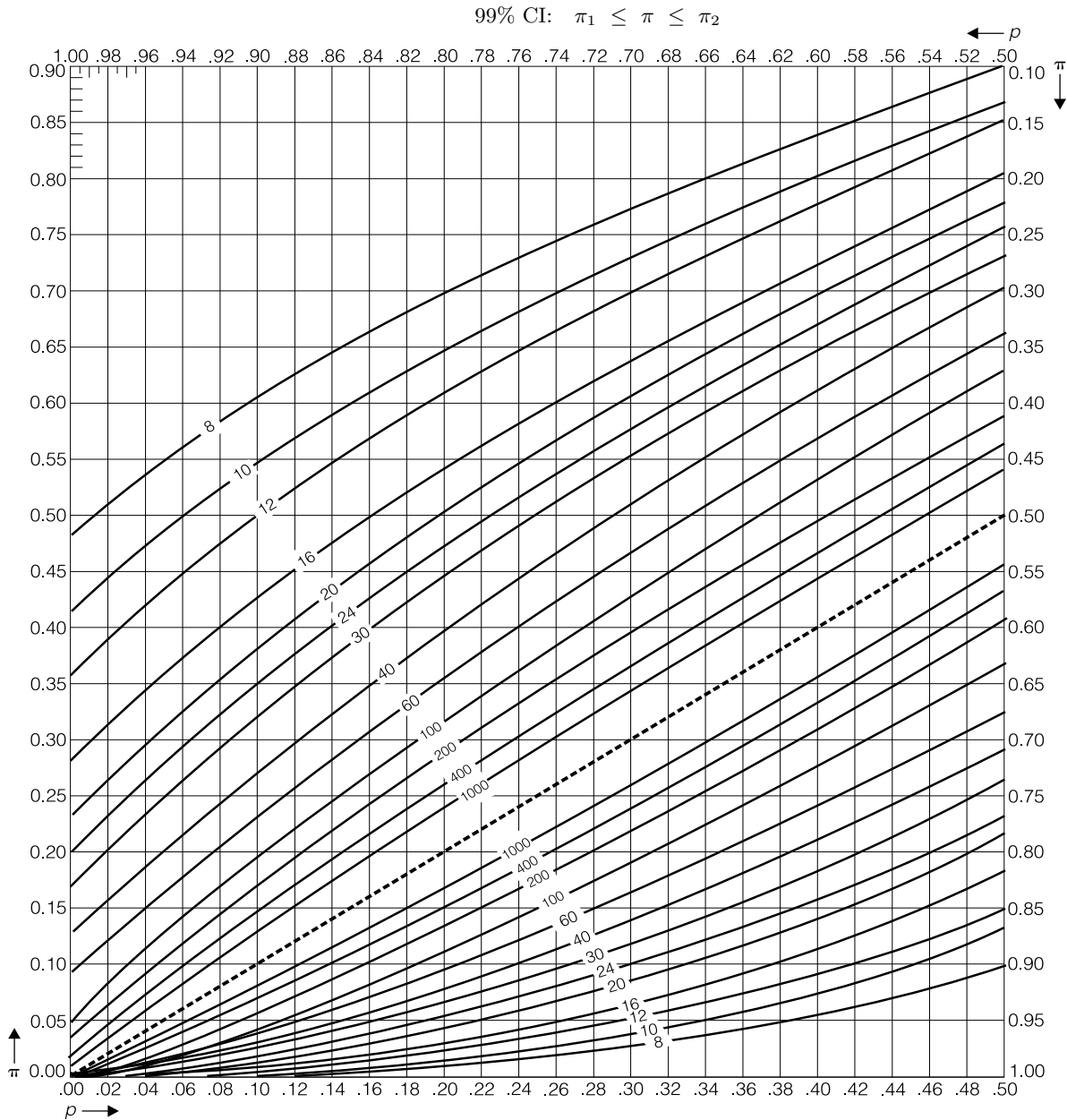


TABLE 5b. Exact two-sided 99% confidence intervals for binomial π

The numbers printed along the curves indicate the sample size n . Given a statistic p , draw a vertical line at p . Observe where the vertical line intersects the two curves marked n . Read their heights π_1 and π_2 off the vertical scale. These are the end points of the exact 99% confidence interval.



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TABLE 6. Cumulative Chi-Square Distribution

Cumulative probability (represented by area of unshaded region in graph below)										
<i>df</i>	0.010	0.025	0.050	0.100	0.750	0.900	0.950	0.975	0.990	0.999
1	0.0002	0.0010	0.0039	0.0158	1.3233	2.7055	3.8415	5.0239	6.6349	10.8274
2	0.0201	0.0506	0.1026	0.2107	2.7726	4.6052	5.9915	7.3778	9.2104	13.8150
3	0.1148	0.2158	0.3518	0.5844	4.1083	6.2514	7.8147	9.3484	11.3449	16.2660
4	0.2971	0.4844	0.7107	1.0636	5.3853	7.7794	9.4877	11.1433	13.2767	18.4662
5	0.5543	0.8312	1.1455	1.6103	6.6257	9.2363	11.0705	12.8325	15.0863	20.5147
6	0.8721	1.2373	1.6354	2.2041	7.8408	10.6446	12.5916	14.4494	16.8119	22.4575
7	1.2390	1.6899	2.1673	2.8331	9.0371	12.0170	14.0671	16.0128	18.4753	24.3213
8	1.6465	2.1797	2.7326	3.4895	10.2189	13.3616	15.5073	17.5345	20.0902	26.1239
9	2.0879	2.7004	3.3251	4.1682	11.3887	14.6837	16.9190	19.0228	21.6660	27.8767
10	2.5582	3.2470	3.9403	4.8652	12.5489	15.9872	18.3070	20.4832	23.2093	29.5879
11	3.0535	3.8157	4.5748	5.5778	13.7007	17.2750	19.6752	21.9200	24.7250	31.2635
12	3.5706	4.4038	5.2260	6.3038	14.8454	18.5493	21.0261	23.3367	26.2170	32.9092
13	4.1069	5.0087	5.8919	7.0415	15.9839	19.8119	22.3620	24.7356	27.6882	34.5274
14	4.6604	5.6287	6.5706	7.7895	17.1169	21.0641	23.6848	26.1189	29.1412	36.1239
15	5.2294	6.2621	7.2609	8.5468	18.2451	22.3071	24.9958	27.4884	30.5780	37.6978
16	5.8122	6.9077	7.9616	9.3122	19.3689	23.5418	26.2962	28.8453	31.9999	39.2518
17	6.4077	7.5642	8.6718	10.0852	20.4887	24.7690	27.5871	30.1910	33.4087	40.7911
18	7.0149	8.2307	9.3904	10.8649	21.6049	25.9894	28.8693	31.5264	34.8052	42.3119
19	7.6327	8.9065	10.1170	11.6509	22.7178	27.2036	30.1435	32.8523	36.1908	43.8194
20	8.2604	9.5908	10.8508	12.4426	23.8277	28.4120	31.4104	34.1696	37.5663	45.3142
21	8.8972	10.2829	11.5913	13.2396	24.9348	29.6151	32.6706	35.4789	38.9322	46.7963
22	9.5425	10.9823	12.3380	14.0415	26.0393	30.8133	33.9245	36.7807	40.2894	48.2676
23	10.1957	11.6885	13.0905	14.8480	27.1413	32.0069	35.1725	38.0756	41.6383	49.7276
24	10.8563	12.4011	13.8484	15.6587	28.2412	33.1962	36.4150	39.3641	42.9798	51.1790
25	11.5240	13.1197	14.6114	16.4734	29.3388	34.3816	37.6525	40.6465	44.3140	52.6187
26	12.1982	13.8439	15.3792	17.2919	30.4346	35.5632	38.8851	41.9231	45.6416	54.0511
27	12.8785	14.5734	16.1514	18.1139	31.5284	36.7412	40.1133	43.1945	46.9628	55.4751
28	13.5647	15.3079	16.9279	18.9392	32.6205	37.9159	41.3372	44.4608	48.2782	56.8918
29	14.2564	16.0471	17.7084	19.7677	33.7109	39.0875	42.5569	45.7223	49.5878	58.3006
30	14.9535	16.7908	18.4927	20.5992	34.7997	40.2560	43.7730	46.9792	50.8922	59.7022
31	15.6555	17.5387	19.2806	21.4336	35.8871	41.4217	44.9853	48.2319	52.1914	61.0980
32	16.3622	18.2908	20.0719	22.2706	36.9730	42.5847	46.1942	49.4804	53.4857	62.4873
33	17.0735	19.0467	20.8665	23.1102	38.0575	43.7452	47.3999	50.7251	54.7754	63.8694
34	17.7891	19.8062	21.6643	23.9522	39.1408	44.9032	48.6024	51.9660	56.0609	65.2471
35	18.5089	20.5694	22.4650	24.7966	40.2228	46.0588	49.8018	53.2033	57.3420	66.6192
36	19.2326	21.3359	23.2686	25.6433	41.3036	47.2122	50.9985	54.4373	58.6192	67.9850
37	19.9603	22.1056	24.0749	26.4921	42.3833	48.3634	52.1923	55.6680	59.8926	69.3476
38	20.6914	22.8785	24.8839	27.3430	43.4619	49.5126	53.3835	56.8955	61.1620	70.7039
39	21.4261	23.6543	25.6954	28.1958	44.5395	50.6598	54.5722	58.1201	62.4281	72.0550
40	22.1642	24.4331	26.5093	29.0505	45.6160	51.8050	55.7585	59.3417	63.6908	73.4029
	0.990	0.975	0.950	0.900	0.250	0.100	0.050	0.025	0.010	0.001

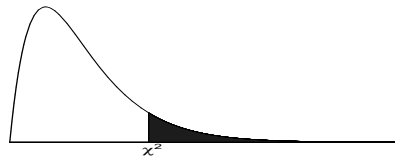
P-value for χ^2 test (represented by area of shaded region)

TABLE 7. Means and standard deviations of special random variables

NAME	DENSITY	MEAN	SD
Discrete Uniform	$f(k) = \frac{1}{n}$ for $k = 1, 2, \dots, n$	$\frac{n+1}{2}$	$\sqrt{\frac{n^2-1}{12}}$
Bernoulli	$f(k) = \pi^k(1-\pi)^{1-k}$ for $k = 0, 1$	π	$\sqrt{\pi(1-\pi)}$
Binomial	$f(k) = \binom{n}{k} \pi^k (1-\pi)^{n-k}$ for $k = 0, 1, \dots, n$	$n\pi$	$\sqrt{n\pi(1-\pi)}$
Hypergeometric	$f(k) = \frac{\binom{N_1}{k} \binom{N-N_1}{n-k}}{\binom{N}{n}}$ for $k = 1, 2, \dots, n$	$n\pi = n \frac{N_1}{N}$	$\sqrt{\frac{N-n}{N-1}} \sqrt{n\pi(1-\pi)}$
Continuous Uniform	$f(u) = \frac{1}{\beta-\alpha}$ for $\alpha \leq u \leq \beta$	$\frac{\alpha+\beta}{2}$	$\frac{\beta-\alpha}{\sqrt{12}}$
Normal	$f(x) = \frac{1}{\sqrt{2\pi}\sigma} e^{-\frac{1}{2}(\frac{x-\mu}{\sigma})^2}$ for $-\infty < x < \infty$	μ	σ
Geometric	$f(k) = (1-\pi)^{k-1}\pi$ for $k = 1, 2, \dots$	$\frac{1}{\pi}$	$\frac{\sqrt{1-\pi}}{\pi}$
Exponential	$f(t) = \frac{1}{\theta} e^{-\frac{t}{\theta}}$ for $t \geq 0$	θ	θ
Poisson	$f(y) = e^{-\lambda} \frac{\lambda^y}{y!}$ for $y = 0, 1, \dots$	λ	$\sqrt{\lambda}$
Sample Count K	$\begin{cases} \text{Binomial if } n \text{ is small} \\ \text{Normal if } n \text{ is large } \{n\pi \geq 5 \& n(1-\pi) \geq 5\} \\ \text{Poisson if } n \text{ large, } \pi \text{ small } \{n \geq 100 \& n\pi \leq 7\} \end{cases}$	$n\pi$	$f\sqrt{n\pi(1-\pi)}$
Sample Proportion P	$\begin{cases} \text{Normal if } n \text{ is large } \{n\pi \geq 5 \& n(1-\pi) \geq 5\} \\ \text{Poisson if } n \text{ large, } \pi \text{ small } \{n \geq 100 \& n\pi \leq 7\} \end{cases}$	π	$f\sqrt{\frac{\pi(1-\pi)}{n}}$
Sample SUM	Normal if n large $\{n \geq 40\}$	$n\mu$	$f\sqrt{n}\sigma$
Sample mean $\bar{X}$	Normal if n large $\{n \geq 40\}$	μ	$f\frac{\sigma}{\sqrt{n}}$

Reduction factor: $f = \begin{cases} \sqrt{\frac{N-n}{N-1}} & \text{if sampling without replacement and } N \text{ small } \{n \geq N/20\}; \\ 1 & \text{if sampling with replacement or if } n \text{ is small } \{n \leq N/20\}. \end{cases}$