Chi-Square Table of Critical Values

Critical values of the chi-square distribution for 1 to 100 degrees of freedom and selected larger values, for both tails. Print it, download it as a PDF or CSV, or use the calculator for any other value.

Upper-tail critical values

Upper-tail critical values: area α to the right of χ^2

df	0.1	0.05	0.025	0.01	0.005	0.001
1	2.706	3.841	5.024	6.635	7.879	10.828
2	4.605	5.991	7.378	9.210	10.597	13.816
3	6.251	7.815	9.348	11.345	12.838	16.266
4	7.779	9.488	11.143	13.277	14.860	18.467
5	9.236	11.070	12.833	15.086	16.750	20.515
6	10.645	12.592	14.449	16.812	18.548	22.458
7	12.017	14.067	16.013	18.475	20.278	24.322
8	13.362	15.507	17.535	20.090	21.955	26.124
9	14.684	16.919	19.023	21.666	23.589	27.877
10	15.987	18.307	20.483	23.209	25.188	29.588
11	17.275	19.675	21.920	24.725	26.757	31.264
12	18.549	21.026	23.337	26.217	28.300	32.909
13	19.812	22.362	24.736	27.688	29.819	34.528
14	21.064	23.685	26.119	29.141	31.319	36.123
15	22.307	24.996	27.488	30.578	32.801	37.697
16	23.542	26.296	28.845	32.000	34.267	39.252
17	24.769	27.587	30.191	33.409	35.718	40.790
18	25.989	28.869	31.526	34.805	37.156	42.312
19	27.204	30.144	32.852	36.191	38.582	43.820
20	28.412	31.410	34.170	37.566	39.997	45.315
21	29.615	32.671	35.479	38.932	41.401	46.797
22	30.813	33.924	36.781	40.289	42.796	48.268
23	32.007	35.172	38.076	41.638	44.181	49.728
24	33.196	36.415	39.364	42.980	45.559	51.179
25	34.382	37.652	40.646	44.314	46.928	52.620
26	35.563	38.885	41.923	45.642	48.290	54.052
27	36.741	40.113	43.195	46.963	49.645	55.476
28	37.916	41.337	44.461	48.278	50.993	56.892
29	39.087	42.557	45.722	49.588	52.336	58.301
30	40.256	43.773	46.979	50.892	53.672	59.703
31	41.422	44.985	48.232	52.191	55.003	61.098
32	42.585	46.194	49.480	53.486	56.328	62.487
33	43.745	47.400	50.725	54.776	57.648	63.870

df	0.1	0.05	0.025	0.01	0.005	0.001
34	44.903	48.602	51.966	56.061	58.964	65.247
35	46.059	49.802	53.203	57.342	60.275	66.619
36	47.212	50.998	54.437	58.619	61.581	67.985
37	48.363	52.192	55.668	59.893	62.883	69.346
38	49.513	53.384	56.896	61.162	64.181	70.703
39	50.660	54.572	58.120	62.428	65.476	72.055
40	51.805	55.758	59.342	63.691	66.766	73.402
41	52.949	56.942	60.561	64.950	68.053	74.745
42	54.090	58.124	61.777	66.206	69.336	76.084
43	55.230	59.304	62.990	67.459	70.616	77.419
44	56.369	60.481	64.201	68.710	71.893	78.750
45	57.505	61.656	65.410	69.957	73.166	80.077
46	58.641	62.830	66.617	71.201	74.437	81.400
47	59.774	64.001	67.821	72.443	75.704	82.720
48	60.907	65.171	69.023	73.683	76.969	84.037
49	62.038	66.339	70.222	74.919	78.231	85.351
50	63.167	67.505	71.420	76.154	79.490	86.661
51	64.295	68.669	72.616	77.386	80.747	87.968
52	65.422	69.832	73.810	78.616	82.001	89.272
53	66.548	70.993	75.002	79.843	83.253	90.573
54	67.673	72.153	76.192	81.069	84.502	91.872
55	68.796	73.311	77.380	82.292	85.749	93.168
56	69.919	74.468	78.567	83.513	86.994	94.461
57	71.040	75.624	79.752	84.733	88.236	95.751
58	72.160	76.778	80.936	85.950	89.477	97.039
59	73.279	77.931	82.117	87.166	90.715	98.324
60	74.397	79.082	83.298	88.379	91.952	99.607
61	75.514	80.232	84.476	89.591	93.186	100.888
62	76.630	81.381	85.654	90.802	94.419	102.166
63	77.745	82.529	86.830	92.010	95.649	103.442
64	78.860	83.675	88.004	93.217	96.878	104.716
65	79.973	84.821	89.177	94.422	98.105	105.988
66	81.085	85.965	90.349	95.626	99.330	107.258
67	82.197	87.108	91.519	96.828	100.554	108.526
68	83.308	88.250	92.689	98.028	101.776	109.791
69	84.418	89.391	93.856	99.228	102.996	111.055
70	85.527	90.531	95.023	100.425	104.215	112.317
71	86.635	91.670	96.189	101.621	105.432	113.577
72	87.743	92.808	97.353	102.816	106.648	114.835
73	88.850	93.945	98.516	104.010	107.862	116.092
74	89.956	95.081	99.678	105.202	109.074	117.346
75	91.061	96.217	100.839	106.393	110.286	118.599
76	92.166	97.351	101.999	107.583	111.495	119.850
77	93.270	98.484	103.158	108.771	112.704	121.100
78	94.374	99.617	104.316	109.958	113.911	122.348

df	0.1	0.05	0.025	0.01	0.005	0.001
79	95.476	100.749	105.473	111.144	115.117	123.594
80	96.578	101.879	106.629	112.329	116.321	124.839
81	97.680	103.010	107.783	113.512	117.524	126.083
82	98.780	104.139	108.937	114.695	118.726	127.324
83	99.880	105.267	110.090	115.876	119.927	128.565
84	100.980	106.395	111.242	117.057	121.126	129.804
85	102.079	107.522	112.393	118.236	122.325	131.041
86	103.177	108.648	113.544	119.414	123.522	132.277
87	104.275	109.773	114.693	120.591	124.718	133.512
88	105.372	110.898	115.841	121.767	125.913	134.745
89	106.469	112.022	116.989	122.942	127.106	135.978
90	107.565	113.145	118.136	124.116	128.299	137.208
91	108.661	114.268	119.282	125.289	129.491	138.438
92	109.756	115.390	120.427	126.462	130.681	139.666
93	110.850	116.511	121.571	127.633	131.871	140.893
94	111.944	117.632	122.715	128.803	133.059	142.119
95	113.038	118.752	123.858	129.973	134.247	143.344
96	114.131	119.871	125.000	131.141	135.433	144.567
97	115.223	120.990	126.141	132.309	136.619	145.789
98	116.315	122.108	127.282	133.476	137.803	147.010
99	117.407	123.225	128.422	134.642	138.987	148.230
100	118.498	124.342	129.561	135.807	140.169	149.449
110	129.385	135.480	140.917	147.414	151.948	161.581
120	140.233	146.567	152.211	158.950	163.648	173.617
150	172.581	179.581	185.800	193.208	198.360	209.265
200	226.021	233.994	241.058	249.445	255.264	267.541
250	279.050	287.882	295.689	304.940	311.346	324.832
300	331.789	341.395	349.874	359.906	366.844	381.425
400	436.649	447.632	457.305	468.724	476.606	493.132
500	540.930	553.127	563.852	576.493	585.207	603.446
1000	1057.724	1074.679	1089.531	1106.969	1118.948	1143.917

Chi-Square Calculator, chisquarecalculator.com. Values computed exactly and rounded to three decimals.

Lower-tail critical values

Lower-tail critical values: area to the right of χ^2 (so 1 minus this is the area to the left)

df	0.995	0.99	0.975	0.95	0.9
1	0.000	0.000	0.001	0.004	0.016
2	0.010	0.020	0.051	0.103	0.211
3	0.072	0.115	0.216	0.352	0.584
4	0.207	0.297	0.484	0.711	1.064
5	0.412	0.554	0.831	1.145	1.610
6	0.676	0.872	1.237	1.635	2.204
7	0.989	1.239	1.690	2.167	2.833

df	0.995	0.99	0.975	0.95	0.9
8	1.344	1.646	2.180	2.733	3.490
9	1.735	2.088	2.700	3.325	4.168
10	2.156	2.558	3.247	3.940	4.865
11	2.603	3.053	3.816	4.575	5.578
12	3.074	3.571	4.404	5.226	6.304
13	3.565	4.107	5.009	5.892	7.042
14	4.075	4.660	5.629	6.571	7.790
15	4.601	5.229	6.262	7.261	8.547
16	5.142	5.812	6.908	7.962	9.312
17	5.697	6.408	7.564	8.672	10.085
18	6.265	7.015	8.231	9.390	10.865
19	6.844	7.633	8.907	10.117	11.651
20	7.434	8.260	9.591	10.851	12.443
21	8.034	8.897	10.283	11.591	13.240
22	8.643	9.542	10.982	12.338	14.041
23	9.260	10.196	11.689	13.091	14.848
24	9.886	10.856	12.401	13.848	15.659
25	10.520	11.524	13.120	14.611	16.473
26	11.160	12.198	13.844	15.379	17.292
27	11.808	12.879	14.573	16.151	18.114
28	12.461	13.565	15.308	16.928	18.939
29	13.121	14.256	16.047	17.708	19.768
30	13.787	14.953	16.791	18.493	20.599
31	14.458	15.655	17.539	19.281	21.434
32	15.134	16.362	18.291	20.072	22.271
33	15.815	17.074	19.047	20.867	23.110
34	16.501	17.789	19.806	21.664	23.952
35	17.192	18.509	20.569	22.465	24.797
36	17.887	19.233	21.336	23.269	25.643
37	18.586	19.960	22.106	24.075	26.492
38	19.289	20.691	22.878	24.884	27.343
39	19.996	21.426	23.654	25.695	28.196
40	20.707	22.164	24.433	26.509	29.051
41	21.421	22.906	25.215	27.326	29.907
42	22.138	23.650	25.999	28.144	30.765
43	22.859	24.398	26.785	28.965	31.625
44	23.584	25.148	27.575	29.787	32.487
45	24.311	25.901	28.366	30.612	33.350
46	25.041	26.657	29.160	31.439	34.215
47	25.775	27.416	29.956	32.268	35.081
48	26.511	28.177	30.755	33.098	35.949
49	27.249	28.941	31.555	33.930	36.818
50	27.991	29.707	32.357	34.764	37.689
51	28.735	30.475	33.162	35.600	38.560
52	29.481	31.246	33.968	36.437	39.433

df	0.995	0.99	0.975	0.95	0.9
53	30.230	32.018	34.776	37.276	40.308
54	30.981	32.793	35.586	38.116	41.183
55	31.735	33.570	36.398	38.958	42.060
56	32.490	34.350	37.212	39.801	42.937
57	33.248	35.131	38.027	40.646	43.816
58	34.008	35.913	38.844	41.492	44.696
59	34.770	36.698	39.662	42.339	45.577
60	35.534	37.485	40.482	43.188	46.459
61	36.301	38.273	41.303	44.038	47.342
62	37.068	39.063	42.126	44.889	48.226
63	37.838	39.855	42.950	45.741	49.111
64	38.610	40.649	43.776	46.595	49.996
65	39.383	41.444	44.603	47.450	50.883
66	40.158	42.240	45.431	48.305	51.770
67	40.935	43.038	46.261	49.162	52.659
68	41.713	43.838	47.092	50.020	53.548
69	42.494	44.639	47.924	50.879	54.438
70	43.275	45.442	48.758	51.739	55.329
71	44.058	46.246	49.592	52.600	56.221
72	44.843	47.051	50.428	53.462	57.113
73	45.629	47.858	51.265	54.325	58.006
74	46.417	48.666	52.103	55.189	58.900
75	47.206	49.475	52.942	56.054	59.795
76	47.997	50.286	53.782	56.920	60.690
77	48.788	51.097	54.623	57.786	61.586
78	49.582	51.910	55.466	58.654	62.483
79	50.376	52.725	56.309	59.522	63.380
80	51.172	53.540	57.153	60.391	64.278
81	51.969	54.357	57.998	61.261	65.176
82	52.767	55.174	58.845	62.132	66.076
83	53.567	55.993	59.692	63.004	66.976
84	54.368	56.813	60.540	63.876	67.876
85	55.170	57.634	61.389	64.749	68.777
86	55.973	58.456	62.239	65.623	69.679
87	56.777	59.279	63.089	66.498	70.581
88	57.582	60.103	63.941	67.373	71.484
89	58.389	60.928	64.793	68.249	72.387
90	59.196	61.754	65.647	69.126	73.291
91	60.005	62.581	66.501	70.003	74.196
92	60.815	63.409	67.356	70.882	75.100
93	61.625	64.238	68.211	71.760	76.006
94	62.437	65.068	69.068	72.640	76.912
95	63.250	65.898	69.925	73.520	77.818
96	64.063	66.730	70.783	74.401	78.725
97	64.878	67.562	71.642	75.282	79.633

df	0.995	0.99	0.975	0.95	0.9
98	65.694	68.396	72.501	76.164	80.541
99	66.510	69.230	73.361	77.046	81.449
100	67.328	70.065	74.222	77.929	82.358
110	75.550	78.458	82.867	86.792	91.471
120	83.852	86.923	91.573	95.705	100.624
150	109.142	112.668	117.985	122.692	128.275
200	152.241	156.432	162.728	168.279	174.835
250	196.161	200.939	208.098	214.392	221.806
300	240.663	245.972	253.912	260.878	269.068
400	330.903	337.155	346.482	354.641	364.207
500	422.303	429.388	439.936	449.147	459.926
1000	888.564	898.912	914.257	927.594	943.133