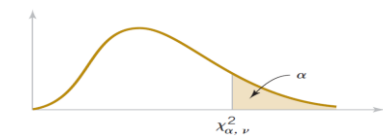


χ^2 TABLE: Critical values of χ^2

For a particular number of degrees of freedom (ν), entry represents the critical value of χ^2 corresponding to the upper-tail area (α).



Degree of Freedom	Upper-Tail Areas (α)																		
	0.9995	0.999	0.9975	0.995	0.99	0.975	0.95	0.9	0.75	0.5	0.25	0.1	0.05	0.025	0.01	0.005	0.0025	0.001	0.0005
1	0.000+	0.000+	0.000+	0.000+	0.000+	0.001	0.004	0.016	0.102	0.455	1.323	2.706	3.841	5.024	6.635	7.879	9.141	10.828	12.116
2	0.001	0.002	0.005	0.010	0.020	0.051	0.103	0.211	0.575	1.386	2.773	4.605	5.991	7.378	9.210	10.597	11.983	13.816	15.202
3	0.015	0.024	0.045	0.072	0.115	0.216	0.352	0.584	1.213	2.366	4.108	6.251	7.815	9.348	11.345	12.838	14.320	16.266	17.730
4	0.064	0.091	0.145	0.207	0.297	0.484	0.711	1.064	1.923	3.357	5.385	7.779	9.488	11.143	13.277	14.860	16.424	18.467	19.997
5	0.158	0.210	0.307	0.412	0.554	0.831	1.145	1.610	2.675	4.351	6.626	9.236	11.070	12.833	15.086	16.750	18.386	20.515	22.105
6	0.299	0.381	0.527	0.676	0.872	1.237	1.635	2.204	3.455	5.348	7.841	10.645	12.592	14.449	16.812	18.548	20.249	22.458	24.103
7	0.485	0.598	0.794	0.989	1.239	1.690	2.167	2.833	4.255	6.346	9.037	12.017	14.067	16.013	18.475	20.278	22.040	24.322	26.018
8	0.710	0.857	1.104	1.344	1.646	2.180	2.733	3.490	5.071	7.344	10.219	13.362	15.507	17.535	20.090	21.955	23.774	26.124	27.868
9	0.972	1.152	1.450	1.735	2.088	2.700	3.325	4.168	5.899	8.343	11.389	14.684	16.919	19.023	21.666	23.589	25.462	27.877	29.666
10	1.265	1.479	1.827	2.156	2.558	3.247	3.940	4.865	6.737	9.342	12.549	15.987	18.307	20.483	23.209	25.188	27.112	29.588	31.420
11	1.587	1.834	2.232	2.603	3.053	3.816	4.575	5.578	7.584	10.341	13.701	17.275	19.675	21.920	24.725	26.757	28.729	31.264	33.137
12	1.934	2.214	2.661	3.074	3.571	4.404	5.226	6.304	8.438	11.340	14.845	18.549	21.026	23.337	26.217	28.300	30.318	32.909	34.821
13	2.305	2.617	3.112	3.565	4.107	5.009	5.892	7.042	9.299	12.340	15.984	19.812	22.362	24.736	27.688	29.819	31.883	34.528	36.478
14	2.697	3.041	3.582	4.075	4.660	5.629	6.571	7.790	10.165	13.339	17.117	21.064	23.685	26.119	29.141	31.319	33.426	36.123	38.109
15	3.108	3.483	4.070	4.601	5.229	6.262	7.261	8.547	11.037	14.339	18.245	22.307	24.996	27.488	30.578	32.801	34.950	37.697	39.719
16	3.536	3.942	4.573	5.142	5.812	6.908	7.962	9.312	11.912	15.338	19.369	23.542	26.296	28.845	32.000	34.267	36.456	39.252	41.308
17	3.980	4.416	5.092	5.697	6.408	7.564	8.672	10.085	12.792	16.338	20.489	24.769	27.587	30.191	33.409	35.718	37.946	40.790	42.879
18	4.439	4.905	5.623	6.265	7.015	8.231	9.390	10.865	13.675	17.338	21.605	25.989	28.869	31.526	34.805	37.156	39.422	42.312	44.434
19	4.912	5.407	6.167	6.844	7.633	8.907	10.117	11.651	14.562	18.338	22.718	27.204	30.144	32.852	36.191	38.582	40.885	43.820	45.973
20	5.398	5.921	6.723	7.434	8.260	9.591	10.851	12.443	15.452	19.337	23.828	28.412	31.410	34.170	37.566	39.997	42.336	45.315	47.498
21	5.896	6.447	7.289	8.034	8.897	10.283	11.591	13.240	16.344	20.337	24.935	29.615	32.671	35.479	38.932	41.401	43.775	46.797	49.011
22	6.404	6.983	7.865	8.643	9.542	10.982	12.338	14.041	17.240	21.337	26.039	30.813	33.924	36.781	40.289	42.796	45.204	48.268	50.511
23	6.924	7.529	8.450	9.260	10.196	11.689	13.091	14.848	18.137	22.337	27.141	32.007	35.172	38.076	41.638	44.181	46.623	49.728	52.000
24	7.453	8.085	9.044	9.886	10.856	12.401	13.848	15.659	19.037	23.337	28.241	33.196	36.415	39.364	42.980	45.559	48.034	51.179	53.479
25	7.991	8.649	9.646	10.520	11.524	13.120	14.611	16.473	19.939	24.337	29.339	34.382	37.652	40.646	44.314	46.928	49.435	52.620	54.947
26	8.538	9.222	10.256	11.160	12.198	13.844	15.379	17.292	20.843	25.336	30.435	35.563	38.885	41.923	45.642	48.290	50.829	54.052	56.407
27	9.093	9.803	10.873	11.808	12.879	14.573	16.151	18.114	21.749	26.336	31.528	36.741	40.113	43.195	46.963	49.645	52.215	55.476	57.858
28	9.656	10.391	11.497	12.461	13.565	15.308	16.928	18.939	22.657	27.336	32.620	37.916	41.337	44.461	48.278	50.993	53.594	56.892	59.300
29	10.227	10.986	12.128	13.121	14.256	16.047	17.708	19.768	23.567	28.336	33.711	39.087	42.557	45.722	49.588	52.336	54.967	58.301	60.735
30	10.804	11.588	12.765	13.787	14.953	16.791	18.493	20.599	24.478	29.336	34.800	40.256	43.773	46.979	50.892	53.672	56.332	59.703	62.162
31	11.389	12.196	13.407	14.458	15.655	17.539	19.281	21.434	25.390	30.336	35.887	41.422	44.985	48.232	52.191	55.003	57.692	61.098	63.582
32	11.979	12.811	14.056	15.134	16.362	18.291	20.072	22.271	26.304	31.336	36.973	42.585	46.194	49.480	53.486	56.328	59.046	62.487	64.995
33	12.576	13.431	14.709	15.815	17.074	19.047	20.867	23.110	27.219	32.336	38.058	43.745	47.400	50.725	54.776	57.648	60.395	63.870	66.403
34	13.179	14.057	15.368	16.501	17.789	19.806	21.664	23.952	28.136	33.336	39.141	44.903	48.602	51.966	56.061	58.964	61.738	65.247	67.803
35	13.787	14.688	16.032	17.192	18.509	20.569	22.465	24.797	29.054	34.336	40.223	46.059	49.802	53.203	57.342	60.275	63.076	66.619	69.199
36	14.401	15.324	16.700	17.887	19.233	21.336	23.269	25.643	29.973	35.336	41.304	47.212	50.998	54.437	58.619	61.581	64.410	67.985	70.588
37	15.020	15.965	17.373	18.586	19.960	22.106	24.075	26.492	30.893	36.336	42.383	48.363	52.192	55.668	59.893	62.883	65.739	69.346	71.972
38	15.644	16.611	18.050	19.289	20.691	22.878	24.884	27.343	31.815	37.335	43.462	49.513	53.384	56.896	61.162	64.181	67.063	70.703	73.351
39	16.273	17.262	18.732	19.996	21.426	23.654	25.695	28.196	32.737	38.335	44.539	50.660	54.572	58.120	62.428	65.476	68.383	72.055	74.725
40	16.906	17.916	19.417	20.707	22.164	24.433	26.509	29.051	33.660	39.335	45.616	51.805	55.758	59.342	63.691	66.766	69.699	73.402	76.095
45	20.137	21.251	22.900	24.311	25.901	28.366	30.612	33.350	38.291	44.335	50.985	57.505	61.656	65.410	69.957	73.166	76.223	80.077	82.876
50	23.461	24.674	26.464	27.991	29.707	32.357	34.764	37.689	42.942	49.335	56.334	63.167	67.505	71.420	76.154	79.490	82.664	86.661	89.561
60	30.340	31.738	33.791	35.534	37.485	40.482	43.188	46.459	52.294	59.335	66.981	74.397	79.082	83.298	88.379	91.952	95.344	99.607	102.69
70	37.467	39.036	41.332	43.275	45.442	48.758	51.739	55.329	61.698	69.334	77.577	85.527	90.531	95.023	100.43	104.21	107.81	112.32	115.58
80	44.791	46.520	49.043	51.172	53.540	57.153	60.391	64.278	71.145	79.334	88.130	96.578	101.88	106.63	112.33	116.32	120.10	124.84	128.26
90	52.276	54.155	56.892	59.196	61.754	65.647	69.126	73.291	80.625	89.334	98.650	107.57	113.15	118.14	124.12	128.30	132.26	137.21	140.78
100	59.896	61.918	64.857	67.328	70.065	74.222	77.929	82.358	90.133	99.334	109.14	118.50	124.34	129.56	135.81	140.17	144.29	149.45	153.17