

Upper Critical Values for the Kruskal-Wallis Test (k samples)

- Notes: 1. In the table below, the critical values give significance levels as close as possible to, but not exceeding the nominal α . The actual levels of significance are in brackets.
2. When the table below is not applicable and $k = 3$ with the three group sizes above 5 or $k > 3$ with all group sizes above 4, use the following approximation:

$$h_\alpha = \chi_\alpha^2, \quad df = k - 1.$$

Group Sizes			Nominal size α			
			0.10	0.05	0.025	0.01
2	2	2	4.571 (.06667)	--	--	--
3	2	1	4.286 (.10000)	--	--	--
3	2	2	4.500 (.06667)	4.714 (.04762)	--	--
3	3	1	4.571 (.10000)	5.143 (.04286)	--	--
3	3	2	4.556 (.10000)	5.361 (.03214)	5.556 (.02500)	--
3	3	3	4.622 (.10000)	5.600 (.05000)	5.956 (.02500)	7.200 (.00357)
4	2	1	4.500 (.07619)	--	--	--
4	2	2	4.458 (.10000)	5.333 (.03333)	5.500 (.02381)	--
4	3	1	4.056 (.09286)	5.208 (.05000)	5.833 (.02143)	--
4	3	2	4.511 (.09841)	5.444 (.04603)	6.000 (.02381)	6.444 (.00794)
4	3	3	4.709 (.09238)	5.791 (.04571)	6.155 (.02476)	6.745 (.01000)
4	4	1	4.167 (.08254)	4.967 (.04762)	6.167 (.02222)	6.667 (.00952)
4	4	2	4.555 (.09778)	5.455 (.04571)	6.327 (.02413)	7.036 (.00571)
4	4	3	4.545 (.09905)	5.598 (.04866)	6.394 (.02476)	7.144 (.00970)
4	4	4	4.654 (.09662)	5.692 (.04866)	6.615 (.02424)	7.654 (.00762)
5	2	1	4.200 (.09524)	5.000 (.04762)	--	--
5	2	2	4.373 (.08995)	5.160 (.03439)	6.000 (.01852)	6.533 (.00794)
5	3	1	4.018 (.09524)	4.960 (.04762)	6.044 (.01984)	--
5	3	2	4.651 (.09127)	5.251 (.04921)	6.004 (.02460)	6.909 (.00873)
5	3	3	4.533 (.09697)	5.648 (.04892)	6.315 (.02121)	7.079 (.00866)
5	4	1	3.987 (.09841)	4.985 (.04444)	5.858 (.02381)	6.955 (.00794)
5	4	2	4.541 (.09841)	5.273 (.04877)	6.068 (.02482)	7.205 (.00895)
5	4	3	4.549 (.09892)	5.656 (.04863)	6.410 (.02496)	7.445 (.00974)
5	4	4	4.668 (.09817)	5.657 (.04906)	6.673 (.02429)	7.760 (.00946)
5	5	1	4.109 (.08586)	5.127 (.04618)	6.000 (.02165)	7.309 (.00938)
5	5	2	4.623 (.09704)	5.338 (.04726)	6.346 (.02489)	7.338 (.00962)
5	5	3	4.545 (.09965)	5.705 (.04612)	6.549 (.02436)	7.578 (.00968)
5	5	4	4.523 (.09935)	5.666 (.04931)	6.760 (.02490)	7.823 (.00978)
5	5	5	4.560 (.09952)	5.780 (.04878)	6.740 (.02475)	8.000 (.00946)

Group Sizes			Nominal size α			
			0.10	0.05	0.025	0.01
6	1	1	--	--	--	--
6	2	1	4.200 (.09524)	4.822 (.04762)	5.600 (.02381)	--
6	2	2	4.545 (.08889)	5.345 (.03810)	5.745 (.02063)	6.655 (.00794)
6	3	1	3.909 (.09524)	4.855 (.05000)	5.945 (.02143)	6.873 (.00714)
6	3	2	4.682 (.08528)	5.348 (.04632)	6.136 (.02294)	6.970 (.00909)
6	3	3	4.590 (.09773)	5.615 (.04968)	6.436 (.02229)	7.410 (.00779)
6	4	1	4.038 (.09437)	4.947 (.04675)	5.856 (.02424)	7.106 (.00866)
6	4	2	4.494 (.09986)	5.340 (.04906)	6.186 (.02453)	7.340 (.00967)
6	4	3	4.604 (.09997)	5.610 (.04862)	6.538 (.02498)	7.500 (.00966)
6	4	4	4.595 (.09847)	5.681 (.04881)	6.667 (.02495)	7.795 (.00990)
6	5	1	4.128 (.09271)	4.990 (.04726)	5.951 (.02453)	7.182 (.00974)
6	5	2	4.596 (.09807)	5.338 (.04729)	6.196 (.02481)	7.376 (.00982)
6	5	3	4.535 (.09932)	5.602 (.04956)	6.667 (.02452)	7.590 (.00999)
6	5	4	4.522 (.09974)	5.661 (.04991)	6.750 (.02473)	7.936 (.00998)
6	5	5	4.547 (.09835)	5.729 (.04973)	6.788 (.02484)	8.028 (.00988)
6	6	1	4.000 (.09774)	4.945 (.04779)	5.923 (.02381)	7.121 (.00932)
6	6	2	4.438 (.09824)	5.410 (.04993)	6.210 (.02443)	7.467 (.00982)
6	6	3	4.558 (.09948)	5.625 (.04999)	6.725 (.02462)	7.725 (.00985)
6	6	4	4.548 (.09982)	5.724 (.04950)	6.812 (.02458)	8.000 (.00998)
6	6	5	4.542 (.09987)	5.765 (.04993)	6.848 (.02489)	8.124 (.00990)
6	6	6	4.643 (.09874)	5.801 (.04905)	6.889 (.02493)	8.222 (.00994)
7	7	7	4.594 (.09933)	5.819 (.04911)	6.954 (.02446)	8.378 (.00992)
8	8	8	4.595 (.09933)	5.805 (.04973)	6.995 (.02485)	8.465 (.00991)