Wilcoxon Signed-Rank Test Table — Two-Tailed Critical Values of W

n = 5 to 50 · Alpha Levels: α = 0.10, 0.05, 0.02, 0.01 · Reject H■ if W ≤ W_critical

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What this table provides: Critical values of W for the Wilcoxon signed-rank test — a non-parametric alternative to the paired Student's t-test. The test compares two related samples (before/after, matched pairs) without assuming normality of differences.

Decision rule: Compute W = min(W^+, W^-). Reject H_0 if W ≤ $W_{critical}$ from the table. The critical value is an *inclusive* bound — if W equals the tabled value exactly, you still reject H_0.

Dashes (—): Indicate that statistical significance is mathematically impossible at that n and α. Minimum effective n for two-tailed α = 0.05 is n = 6.

Effective sample size n: Count pairs after removing any pair where $D_i = X_i - Y_i = 0$. Use this reduced count — not the original n — for table lookup.

Verification check: $W^+ + W^- = n(n+1)/2$. Use this to catch arithmetic errors before looking up the critical value.

Large samples (n > 20): Use the normal approximation: $Z = (W - n(n+1)/4) / \sqrt{n(n+1)(2n+1)/24}$ and compare to the Z-table.

Complete Two-Tailed Critical Values of W (n = 5 to 50)

n (effective)	Two-Tailed α = 0.10 (One-Tailed α = 0.05)	Two-Tailed α = 0.05 ★ (One-Tailed α = 0.025)	Two-Tailed (One-Tailed	n (effective)	Two-Tailed α = 0.10 (One-Tailed α = 0.05)	Two-Tailed α = 0.05 ★ (One-Tailed α = 0.025)	Two-Tailed α = 0.02 (One-Tailed α = 0.01
5	0	–	–	28	130–	116	101
6	2	0	–	29	140	126	110
7	3	2	0	30	151–	137	120
8	5	3	1	31	163	147	130
9	8	5	3	32	1751	159	140
10	10	8	5	33	187	170	151
11	13	10	7	34	2005	182	162
12	17	13	9	35	213	195	173
13	21	17	1	36	2279	208	185
14	25	21	1	37	241	221	198
15	30	25	1	38	2561	235	211
16	35	29	2	39	271	249	224
17	41	34	2	40	2862	264	238
18	47	40	3	41	302	279	252
19	53	46	3	42	3192	294	266
20	60	52	4	43	336	310	281
21	67	58	4	44	3534	327	296
22	75	65	5	45	371	343	312
23	83	73	6	46	3895	361	328
24	91	81	6	47	407	378	345
25	100	89	7	48	4268	396	362
26	110	98	8	49	446	415	379
27	119	107	9	50	4668	434	397

★ Two-tailed α = 0.05 (highlighted) is the standard significance level for most academic and clinical research. Milestone rows at n = 10, 20, 30, 40, 50 are marked for fast lookup.

REJECT H_0	FAIL TO REJECT H_0
$W \leq W_{critical}$	$W > W_{critical}$
Statistically significant difference between paired groups	No significant difference detected at chosen alpha level

n	n(n+1)/2	W_{crit} α=0.10	W_{crit} α=0.05 ★	W_{crit} α=0.02	W_{crit} α=0.01
6	21	2	**0**	–	–
7	28	3	**2**	0	–
8	36	5	**3**	1	0
9	45	8	**5**	3	1
10	55	10	**8**	5	3
12	78	17	**13**	9	7
15	120	30	**25**	19	15
18	171	47	**40**	32	27
20	210	60	**52**	43	37
25	325	100	**89**	76	68
30	465	151	**137**	120	109
35	630	213	**195**	173	159
40	820	286	**264**	238	220
45	1035	371	**343**	312	291
50	1275	466	**434**	397	373

Sources: Wilcoxon (1945) *Biometrics Bulletin 1*(6) doi:10.2307/3001968 · Conover (1999) *Practical Nonparametric Statistics* 3rd ed., Wiley · NIST/SEMATECH e-Handbook itl.nist.gov/div898/handbook/prc/section2/prc262.htm · Penn State STAT 415 online.stat.psu.edu/stat415/lesson/20/20.2