Correlation Coefficient Critical Values for 0.05 and 0.01 Significance Levels

Sample Size n	0.05 Critical Value	0.01 Critical Value
4	0.950	0.990
5	0.878	0.959
6	0.811	0.917
7	0.754	0.875
8	0.707	0.834
9	0.666	0.798
10	0.632	0.765
11	0.602	0.735
12	0.576	0.708
13	0.553	0.684
14	0.532	0.661
15	0.514	0.641
16	0.497	0.623
17	0.482	0.606
18	0.468	0.590
19	0.456	0.575
20	0.444	0.561

Sample Size n	0.05 Critical Value	0.01 Critical Value
21	0.433	0.549
22	0.423	0.537
23	0.413	0.526
24	0.404	0.515
25	0.396	0.505
26	0.388	0.496
27	0.381	0.487
28	0.374	0.479
29	0.367	0.471
30	0.361	0.463
35	0.335	0.430
40	0.312	0.403
45	0.294	0.380
50	0.279	0.361
60	0.254	0.330
70	0.236	0.305
80	0.220	0.286

Interpreting the correlation coefficient **r** and the coefficient of determination r^2

For sample sizes $\mathbf{n} \geq 4$, **r** is statistically significant if $|\mathbf{r}|$ > the critical value.

Example 1: n = 20 and **r** = 0.587
With **n** = 20 and **r** = 0.587, we can say there is a statically significant linear relationship between the explanatory variable and the response variable at the 0.01 level of significance. There is at most a 1% chance that this apparent relationship is due to chance or other unknown factors.

The coefficient of determination $r^2 = 0.3446$. This tells us about 34% of the variation or change in the response variable can be explained by variation or change in the explanatory variable. The remaining 66 % of the variation in the response variable is unexplained and is due to chance or other unknown factors.

Example 2: n = 9 and **r** = -0.758
With **n** = 9 and **r** = -0.758, we can say there is a statically significant linear relationship between the explanatory variable and the response variable at the 0.05 level of significance. There is at most a 5% chance that this apparent relationship is due to chance or other unknown factors.

The coefficient of determination $\mathbf{r^2} = 0.5746$. This tells us about 57% of the variation or change in the response variable can be explained by variation or change in the explanatory variable. The remaining 43 % of the variation in the response variable is unexplained and is due to chance or other unknown factors.

Example 3: n = 16 and **r** = 0.478
With **n** = 9 and **r** = 0.478, we can say there is no statistically significant linear relationship between the explanatory variable and the response variable at the 0.01 or 0.05 level of significance .