

12.4: Critical Values for Dixon's Q-Test

The following table provides critical values for $Q(\alpha, n)$, where α is the probability of incorrectly rejecting the suspected outlier and n is the number of samples in the data set. There are several versions of Dixon's Q-Test, each of which calculates a value for Q_{ij} where i is the number of suspected outliers on one end of the data set and j is the number of suspected outliers on the opposite end of the data set. The critical values for Q here are for a single outlier, Q_{10} , where

$$Q_{\text{exp}} = Q_{10} = \frac{|\text{outlier's value} - \text{nearest value}|}{\text{largest value} - \text{smallest value}}$$

The suspected outlier is rejected if Q_{exp} is greater than $Q(\alpha, n)$. For additional information consult Rorabacher, D. B. "Statistical Treatment for Rejection of Deviant Values: Critical Values of Dixon's 'Q' Parameter and Related Subrange Ratios at the 95% confidence Level," *Anal. Chem.* **1991**, 63, 139–146.

Table 12.4.1: Critical Values for Dixon's Q-Test

$\frac{\alpha \rightarrow}{n \downarrow}$	0.1	0.05	0.04	0.02	0.01
3	0.941	0.970	0.976	0.988	0.994
4	0.765	0.829	0.846	0.889	0.926
5	0.642	0.710	0.729	0.780	0.821
6	0.560	0.625	0.644	0.698	0.740
7	0.507	0.568	0.586	0.637	0.680
8	0.468	0.526	0.543	0.590	0.634
9	0.437	0.493	0.510	0.555	0.598
10	0.412	0.466	0.483	0.527	0.568

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