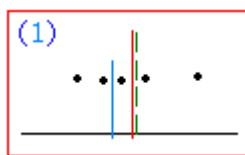


§ 2.3.1 acceptance or rejection of questionable results

The mistake can be judged by the acceptance or rejection of questionable results. There are two methods which are commonly used to judge the acceptance or rejection of results.

1. Q test

The procedure of the Q test is as follows:



1) Arranging the results from the lowest to the highest x_1, x_2, \dots, x_n 2) Calculating the difference between the maximum and the minimum values, $x_n - x_1$ (Range) 3) Finding the questionable value $x_n - x_{n-1}$ or $x_2 - x_1$

$$Q_c = \frac{x_n - x_{n-1}}{x_n - x_1} \quad \text{or} \quad Q_c = \frac{x_2 - x_1}{x_n - x_1} \quad 5)$$

4) Calculating the rejection quotient Q_c value

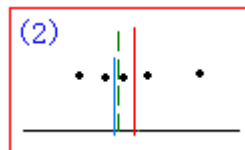
Finding the critical Q value from a table of critical values according to number of results and the confidence level (e.g., 90%)

Table 2-1 The Q value at different confidence levels

Number of results	Q90	Q95	Q99
3	0.94	0.98	0.99
4	0.76	0.85	0.93
8	0.47	0.54	0.63

6) Comparing the Q_c with the critical Q value The result is rejected if Q_c exceeds Q (the result is caused by mistake).

The result is retained if Q_c less than Q (the result is introduced by random error)



A datum should be added if a result is rejected when a set of data is not enough to evaluate the analytical results.

2. Grubbs (G) test

1) Arranging the results from the lowest to the highest

x_1, x_2, \dots, x_n

2) Calculating the mean of the results (\bar{x}) and the standard deviation, s :

3) Calculating the G_c value:

$$G_{H\#} = \frac{X_n - \bar{X}}{S}$$

或 $G_{H\#} = \frac{\bar{X} - X_1}{S}$

4) Finding the critical G value from a table of critical values according to number of results and the confidence level

5) Comparing the G_c with the critical G value

The result is rejected if G_c exceeds G .

The result is retained if G_c less than G .

The G test is accurate than Q test, because the former test introduces the standard deviation.