#### CHITEST

[Syntax](Syntax.docx):

CHITEST ( actual-range , expected-range )

Description: Computes the test for independence. CHITEST returns the value from the chi-squared distribution for the statistic and the appropriate degrees of freedom.

Mathematical Formula:

The χ2 test first calculates a χ2 statistic using the formula:

Equation

where:

Aij = actual frequency in the i-th [row](row.docx), j-th column  
Eij = expected frequency in the i-th [row](row.docx), j-th column  
[r](r.docx) = number or rows  
[c](c.docx) = number of columns

CHITEST uses the χ2 distribution with an appropriate number of degrees of freedom, df. If r > 1 and c > 1, then df = (r - 1)(c - 1). If r = 1 and c > 1, then df = c - 1 or if r > 1 and c = 1, then df = r - 1.

Arguments:

|  |  |  |
| --- | --- | --- |
| Name | Type | Description |
| actual-range | [reference](reference.docx) | The range of data that contains observations to test against expected values. |
| expected-range | [reference](reference.docx) | The range of data that contains the ratio of the product of [row](row.docx) totals and column totals to the grand total. |

Return Type and Value: number – The value from the chi-squared distribution for the statistic and the appropriate degrees of freedom.

However, if:

* The number of rows and columns is exactly one, the return value is unspecified.
* actual-range and expected-range have a different number of data points, the return value is unspecified.

[Example: Given the following data:

|  |  |  |  |
| --- | --- | --- | --- |
|  | A | B | C |
| 1 | Men (Actual) | Women (Actual) | Description |
| 2 | 58 | 35 | Agree |
| 3 | 11 | 25 | Neutral |
| 4 | 10 | 23 | Disagree |
| 5 | Men (Expected) | Women (Expected) | Description |
| 6 | 45.35 | 47.65 | Agree |
| 7 | 17.56 | 18.44 | Neutral |
| 8 | 16.09 | 16.91 | Disagree |

CHITEST(A2:B4,A6:B8) results in 0.000308  
  
end example]