Median, Quartiles, IQR and Outlier Fences

Minimum, quartiles, median, maximum, interquartile range and Tukey outlier fences of up to 12 values, using the common linear-interpolation quartile method.

Method: Sample quantiles; type 7

Input parameters

Unit system: SI

Parameter	Value	Unit
Number of values used (3–12)	9.0000	
Value 1	12.100	
Value 2	14.500	
Value 3	11.800	
Value 4	13.200	
Value 5	19.700	
Value 6	12.900	
Value 7	13.600	
Value 8	12.400	
Value 9	14.000	
Value 10	0	
Value 11	0	
Value 12	0	

Calculated results

Parameter	Value	Unit
Minimum	11.800	
First quartile	12.400	
Median	13.200	
Third quartile	14.000	
Maximum	19.700	
Interquartile range	1.6000	
Lower fence Q_1 − 1.5 IQR	10.000	
Upper fence Q_3 + 1.5 IQR	16.400	
Values outside the fences	1.0000	

Notes for this case

• The sorted values are interpolated at position (n − 1)p (Hyndman and Fan type 7, used by Excel's QUARTILE.INC and most software). Other methods give slightly different quartiles for small samples. Values beyond 1.5 IQR from the quartiles are flagged as possible outliers (Tukey's box plot rule); investigate them rather than deleting them automatically.

Formula and method

$$Q(p) = x_{(\lfloor h \rfloor)} + (h - \lfloor h \rfloor)(x_{(\lfloor h \rfloor + 1)} - x_{(\lfloor h \rfloor)}),\ h = (n-1)p, \quad F = Q_1 - 1.5\,IQR,\ Q_3 + 1.5\,IQR$$

Variables

n	Number of values used (3–12)	-
x_1	Value 1	-

x_2	Value 2	-
x_3	Value 3	-
x_4	Value 4	-
x_5	Value 5	-
x_6	Value 6	-
x_7	Value 7	-
x_8	Value 8	-
x_9	Value 9	-
x_{10}	Value 10	-
x_{11}	Value 11	-
x_{12}	Value 12	-
x_{min}	Minimum	-
Q_1	First quartile	-
$\widetilde{x}$	Median	-
Q_3	Third quartile	-
x_{max}	Maximum	-
IQR	Interquartile range	-
F_L	Lower fence Q_1 − 1.5 IQR	-
F_U	Upper fence Q_3 + 1.5 IQR	-
n_{out}	Values outside the fences	-

Method and standards

Quartiles.

Assumptions and limits

- Up to 12 values; quantile type 7.

References

Sample quantiles, type 7

Report details

Report reference	FCC-K6Y3-5GBK (the same inputs always give the same reference)
Generated	23 November 2026, 18:08 UTC
Calculator	Median, Quartiles, IQR and Outlier Fences
Method last reviewed	17 November 2026
Software release	FireCAD Calc, release of 22 November 2026
Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/general/geometry/median-quartiles-iqr

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.