

# QUARTILE Function

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Computes a specified quartile across all row values in a column or group. Input column can be of Integer or Decimal.

- If a row contains a missing or null value, it is not factored into the calculation. If the entire column contains no values, the function returns a null value.
- When used in a `pivot` transform, the function is computed for each instance of the value specified in the `group` parameter. See *Pivot Transform*.

Quartiles are computed as follows:

Quartile	Description
0	Minimum value
1	25th percentile
2	Median value
3	75th percentile and higher

**Wrangle vs. SQL:** This function is part of Wrangle , a proprietary data transformation language. Wrangle is not SQL. For more information, see *Wrangle Language*.

## Basic Usage

```
quartile(myScores, 3, linear)
```

**Output:** Computes the value that is at the 3rd quartile across all values in the `myScores` column.

## Syntax and Arguments

```
quartile(function_col_ref, num_quartile, interpolation_method) [group:group_col_ref] [limit:limit_count]
```

Argument	Required?	Data Type	Description
<code>function_col_ref</code>	Y	string	Name of column to which to apply the function
<code>num_quartile</code>	Y	integer	Integer value (0-3) of the quartile to compute
<code>interpolation_method</code>	Y	enum	Method by which to interpolate values between two row values. See below.

For more information on the `group` and `limit` parameters, see *Pivot Transform*.

For more information on syntax standards, see *Language Documentation Syntax Notes*.

### **function\_col\_ref**

Name of the column the values of which you want to calculate the quartile. Column must contain Integer or Decimal values.

- Literal values are not supported as inputs.
- Multiple columns and wildcards are not supported.

#### **Usage Notes:**

Required?	Data Type	Example Value
Yes	String (column reference)	precipitationIn

### **num\_quartile**

Integer literal value indicating the quartile that you wish to compute. Input value must be between 0 and 3, inclusive.

- Column or function references are not supported.
- Multiple columns and wildcards are not supported.

#### **Usage Notes:**

Required?	Data Type	Example Value
Yes	Integer	3

### **interpolation\_method**

Method of interpolation between each discrete value. The list of support methods is the following:

Interpolation method	Description
linear	Quartiles are calculated between two discrete values in a linear fashion.
exclusive	Excludes 0 (0th percentile) and 1 (100th percentile) from calculation of quartiles.
inclusive	Includes 0 (0th percentile) and 1 (100th percentile) from calculation of quartiles.
lower	Use the lower value when the computed value falls between two discrete values.
upper	Use the upper value when the computed value falls between two discrete values.
midpoint	Use the midpoint value when the computed value falls between two discrete values.

#### **Usage Notes:**

Required?	Data Type	Example Value
Yes	Enum	linear

## Examples

**Tip:** For additional examples, see *Common Tasks*.

### Example - Percentile functions

This example illustrates how you can apply the following percentile-related functions to your transformations:

- **MEDIAN** - Calculate the median value from a column of values. See *MEDIAN Function*.
- **PERCENTILE** - Calculate a specified percentile for a column of values. See *PERCENTILE Function*.
- **QUARTILE** - Calculate a specified quartile for a column of values. See *QUARTILE Function*.

The following functions use an approximation technique for calculating median, percentile, and quartiles. In some cases, these calculations can be computed faster across large datasets.

- **APPROXIMATEMEDIAN** - Calculate a close approximation of the median value from a column of values. See *APPROXIMATEMEDIAN Function*.
- **APPROXIMATEPERCENTILE** - Calculate a close approximation of a specified percentile for a column of values. See *APPROXIMATEPERCENTILE Function*.
- **APPROXIMATEQUARTILE** - Calculate a close approximation of a specified quartile for a column of values. See *APPROXIMATEQUARTILE Function*.

### Source:

The following table lists each student's height in inches:

Student	Height
1	64
2	65
3	63
4	64
5	62
6	66
7	66
8	65
9	69
10	66
11	73
12	69
13	69
14	61
15	64
16	61
17	71
18	67
19	73

**Transformation:**

Use the following transformations to calculate the median height in inches, a specified percentile and the first quartile.

- The first function uses a precise algorithm which can be slow to execute across large datasets.
- The second function uses an appropriate approximation algorithm, which is much faster to execute across large datasets.
  - These approximate functions can use an error boundary parameter, which is set to 0.4 (0.4%) across all functions.

**Median:** This transformation calculates the median value, which corresponds to the 50th percentile.

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	median(heightIn)
<b>Parameter: New column name</b>	'medianIn'

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	approximatemedian(heightIn, 0.4)
<b>Parameter: New column name</b>	'approxMedianIn'

**Percentile:** This transformation calculates the 68th percentile.

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	percentile(heightIn, 68, linear)
<b>Parameter: New column name</b>	'percentile68In'

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	approximatepercentile(heightIn, 68, 0.4)
<b>Parameter: New column name</b>	'approxPercentile68In'

**Quartile:** This transformation calculates the first quartile, which corresponds to the 25th percentile.

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula

<b>Parameter: Formula</b>	quartile(heightIn, 1, linear)
<b>Parameter: New column name</b>	'percentile25In'

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	approximatequartile(heightIn, 1, 0.4)
<b>Parameter: New column name</b>	'approxPercentile25In'

**Results:**

studentId	heightIn	approxPercentile25In	percentile25In	approxPercentile68In	percentile68In	approxMedianIn	
1	64	64	64	67.1	66.92	66	6
2	65	64	64	67.1	66.92	66	6
3	63	64	64	67.1	66.92	66	6
4	64	64	64	67.1	66.92	66	6
5	62	64	64	67.1	66.92	66	6
6	66	64	64	67.1	66.92	66	6
7	66	64	64	67.1	66.92	66	6
8	65	64	64	67.1	66.92	66	6
9	69	64	64	67.1	66.92	66	6
10	66	64	64	67.1	66.92	66	6
11	73	64	64	67.1	66.92	66	6
12	69	64	64	67.1	66.92	66	6
13	69	64	64	67.1	66.92	66	6
14	61	64	64	67.1	66.92	66	6
15	64	64	64	67.1	66.92	66	6
16	61	64	64	67.1	66.92	66	6
17	71	64	64	67.1	66.92	66	6
18	67	64	64	67.1	66.92	66	6
19	73	64	64	67.1	66.92	66	6
20	66	64	64	67.1	66.92	66	6