# Statistical Functions

Excel offers a whole range of statistical functions. You should have previously used the functions MAX, MIN and AVERAGE. We are now going to look at some of the other commonly used functions. For example:

- **MODE, MEDIAN** — The mode and median of a set of data.
- **COUNT, COUNTBLANK, COUNTIF** — Count the cells that fulfill the given criteria**.**
- **LARGE, SMALL** — Find the 7th largest, or the 4th smallest value etc.
- **STDEV** — Standard deviation in a set of data.
- **RANK** — The value occupying a certain rank in the list.
- **QUARTILE** — The number one quarter of the way through the set etc.
- **PERCENTILE** — The number 90% of the way through the set etc.

The spreadsheet below uses a number of statistical functions to analyze a set of data (present in columns B and C).

| | | Data | | FUNCTIONS | | | | MORE ADVANCED FUNCTIONS | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 34 | 35 | Maximum | 65 | | | StDev | 14 | Standard Deviation |
| 2 | | 24 | 34 | Minimum | 23 | | | | | |
| 3 | | 53 | 65 | | | | | Rank | 4 | Position of e.g. 25 |
| 4 | | 25 | | Average | 41.55 | | | | | |
| 5 | | 23 | 53 | Mode | 34 | | | Percentile (0.90) | 63.20 | 90th Percentile |
| 6 | | 54 | 32 | Median | 35.5 | | | Percentile (0.65) | 47.80 | 65th Percentile |
| 7 | | 45 | 36 | | | | | Percentile (0.1) | 24.00 | 10th Percentile |
| 8 | | 34 | 65 | Count | 20 | | | | | |
| 9 | | 43 | 24 | CountBlank | 2 | | | Quartile (0) | 23.00 | Minimum |
| 10 | | | 63 | CountIf (>30) | 16 | | | Quartile (1) | 33.50 | 25th Percentile |
| 11 | | 54 | 35 | | | | | Quartile (2) | 35.50 | Median |
| 12 | | | | Large | 63 | 3 | rd largest | Quartile (3) | 53.25 | 75th Percentile |
| 13 | | | | Small | 24 | 2 | nd smallest | Quartile (4) | 65.00 | Maximum |

### Task 1 – Data

Ignoring the blank cells, write out the data in order, starting with the smallest, in a table like the one shown below.

| Rank | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Data | | | | | | | | | | | | | | | | | | | | |
| | | | | | | Mode | | | | | | | | | | | | | | |
| | Minimum | 2nd smallest | | | 25th Percentile | | | | | Median | | | 65th Percentile | | 75th Percentile | | | 3rd largest | | Maximum |

***Note*** *– The way Excel calculates its quartiles and percentiles is fairly complicated. It will not be covered here.*

### Task 2 – Using the Functions

Recreate the spreadsheet shown above. Make sure that all the statistical values are created using formulae that refer to the data in the range B3:C13.