BACCALAURÉAT GÉNÉRAL ET TECHNOLOGIQUE

# Session 2012

## *ÉPREUVE SPÉCIFIQUE MENTION « SECTION EUROPÉENNE OU DE LANGUE ORIENTALE »*

Académies de Paris-Créteil-Versailles

**Binôme : Anglais / Mathématiques**

**STATISTICS**

**Sujet D4 - 02**

*The first part is a summary that can help you do the exercise.*

The running total of the frequencies at the end of each class interval is called the cumulative frequency. Cumulative frequency provides a convenient way of estimating a median (when the distribution is split into 2 parts), quartiles (when the distribution is split into 4 parts) and deciles (when the distribution is split into 10 parts) without considering the raw data.

We can estimate the median from the graph by reading off the half-way value on the vertical axis.

The lower quartile (LQ) is the value one-quarter of the way into the distribution.

The upper quartile (UQ) is the value three-quarters of the way into the distribution.



***EXERCISE :***

200 commuters were interviewed to find the distance travelled to work daily to the nearest kilometer. From the results, the following cumulative frequency curve was drawn:



1. Label both axes.
2. Use the graph to estimate

* the median distance travelled
* the interquartile range
* the percentage of people who live less than 25 *km* away from their work.

1. The same survey was carried out in Edinburgh. The results obtained were as follows :

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Distance in *km* | 0-5 | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 |
| Number of commuters | 5 | 15 | 40 | 60 | 50 | 20 | 10 |

Rewrite this information as a cumulative frequency table and from it draw the frequency cumulative curve on the above graph. Use this to find an estimate for:

* the median distance travelled
* the interquartile range
* the value of *a* such that 20% of the commuters travel *a* *km* or less.

1. Compare the two series.