Representation of Data Exam Questions (From OCR MEI 4766)

Q1, (Jan 2005, Q1)

The number of minutes of recorded music on a sample of 100 CDs is summarised below.

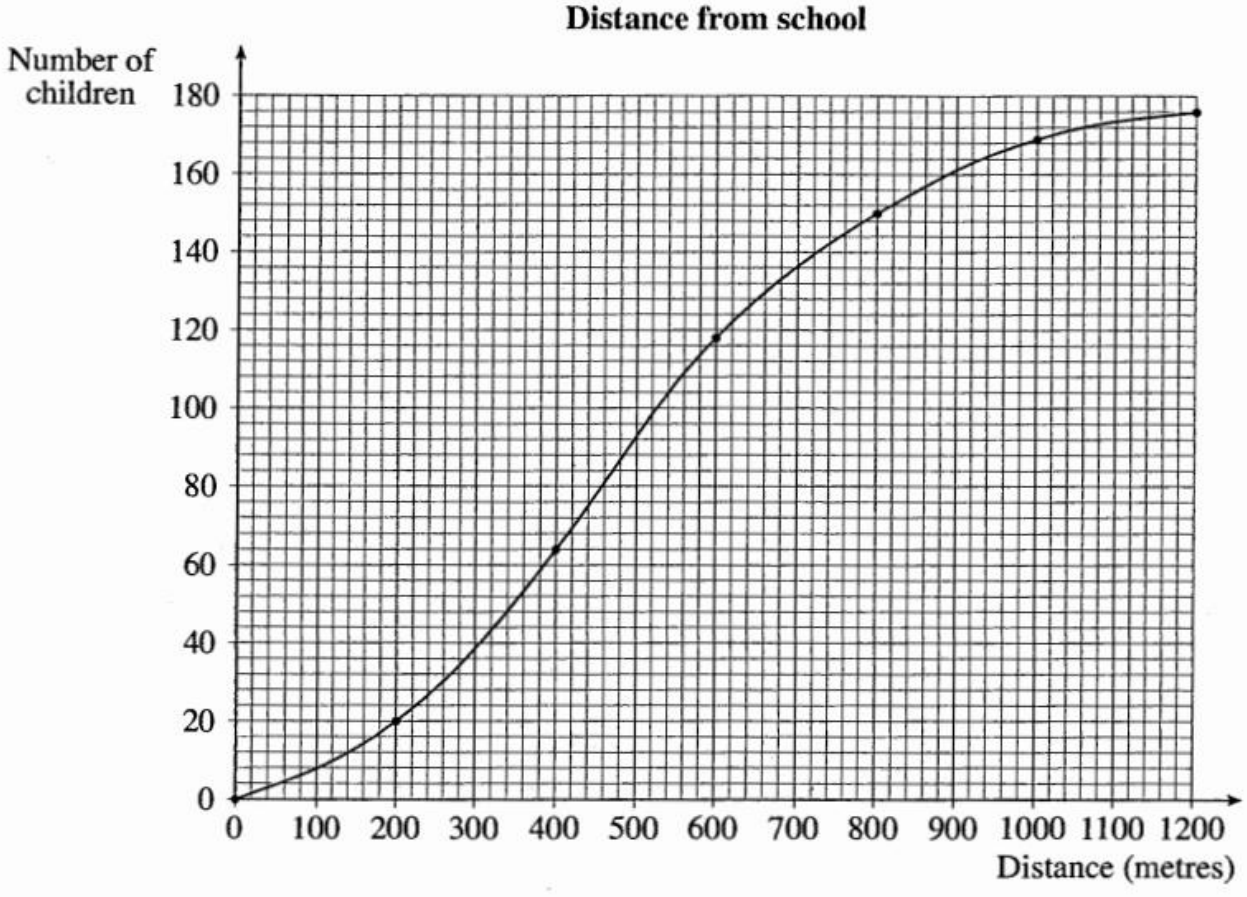
Time (t minutes)	$40 \leqslant t < 45$	$45 \leqslant t < 50$	$50 \leqslant t < 60$	$60 \leqslant t < 70$	$70 \leqslant t < 90$
Number of CDs	26	18	31	16	9

(i) Illustrate the data by means of a histogram. [5]

(ii) Identify two features of the distribution. [2]

Q2, (Jan 2005, Q7)

The cumulative frequency graph below illustrates the distances that 176 children live from their primary school.



(i) Use the graph to estimate, to the nearest 10 metres,

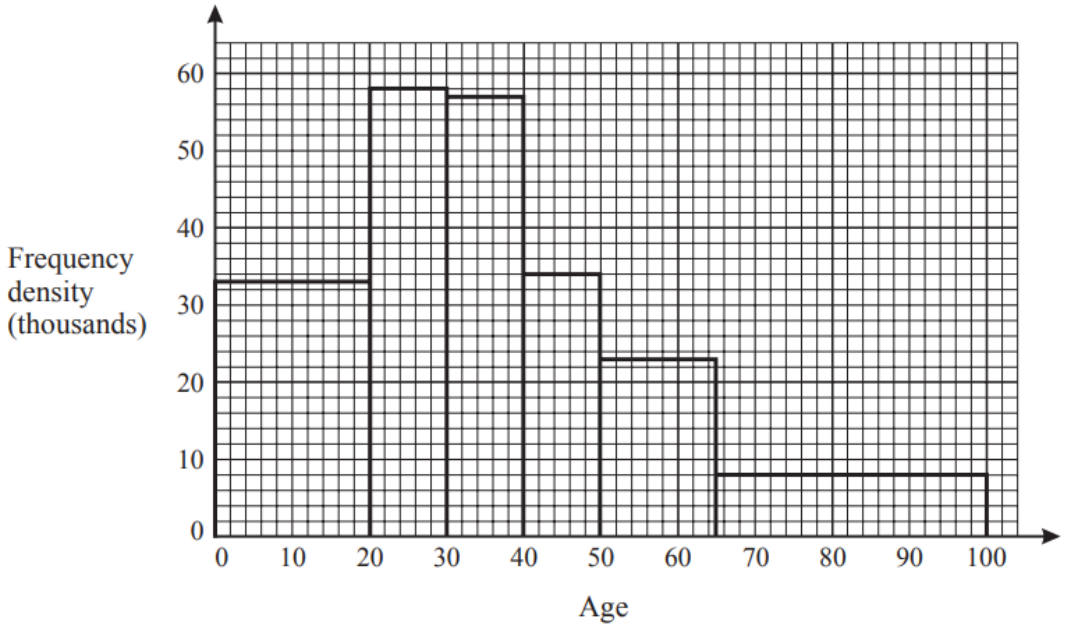
(*A*) the median distance from school, [2]

(*B*) the lower quartile, upper quartile and interquartile range. [3]

(ii) Draw a box and whisker plot to illustrate the data. [3]

Q3, (Jun 2008, Q7)

The histogram shows the age distribution of people living in Inner London in 2001.



Data sourced from the 2001 Census, www.statistics.gov.uk

(i) State the type of skewness shown by the distribution. [1]

(ii) Use the histogram to estimate the number of people aged under 25. [3]

(iii) The table below shows the cumulative frequency distribution.

Age	20	30	40	50	65	100
Cumulative frequency (thousands)	660	1240	1810	a	2490	2770

(*A*) Use the histogram to find the value of a. [2]

(*B*) Use the table to calculate an estimate of the median age of these people. [3]

The ages of people living in Outer London in 2001 are summarised below.

Age (x years)	$0 \leqslant x < 20$	$20 \leqslant x < 30$	$30 \leqslant x < 40$	$40 \leqslant x < 50$	$50 \leqslant x < 65$	$65 \leqslant x < 100$
Frequency (thousands)	1120	650	770	590	680	610

(iv) Illustrate these data by means of a histogram. [5]

(v) Make two brief comments on the differences between the age distributions of the populations of Inner London and Outer London. [2]

(vi) The data given in the table for Outer London are used to calculate the following estimates.

Mean 38.5, median 35.7, midrange 50, standard deviation 23.7, interquartile range 34.4.

The final group in the table assumes that the maximum age of any resident is 100 years. These estimates are to be recalculated, based on a maximum age of 105, rather than 100. For each of the five estimates, state whether it would increase, decrease or be unchanged. [4]