

# Representation of Data 1

Q1.

The values,  $x$ , in a particular set of data are summarised by

$$\Sigma(x - 25) = 133, \quad \Sigma(x - 25)^2 = 3762.$$

The mean,  $\bar{x}$ , is 28.325.

- (i) Find the standard deviation of  $x$ . [4]
- (ii) Find  $\Sigma x^2$ . [2]
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Q2.

The marks of the pupils in a certain class in a History examination are as follows.

28 33 55 38 42 39 27 48 51 37 57 49 33

The marks of the pupils in a Physics examination are summarised as follows.

Lower quartile: 28, Median: 39, Upper quartile: 67.

The lowest mark was 17 and the highest mark was 74.

- (i) Draw box-and-whisker plots in a single diagram on graph paper to illustrate the marks for History and Physics. [5]
- (ii) State one difference, which can be seen from the diagram, between the marks for History and Physics. [1]
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Q3.

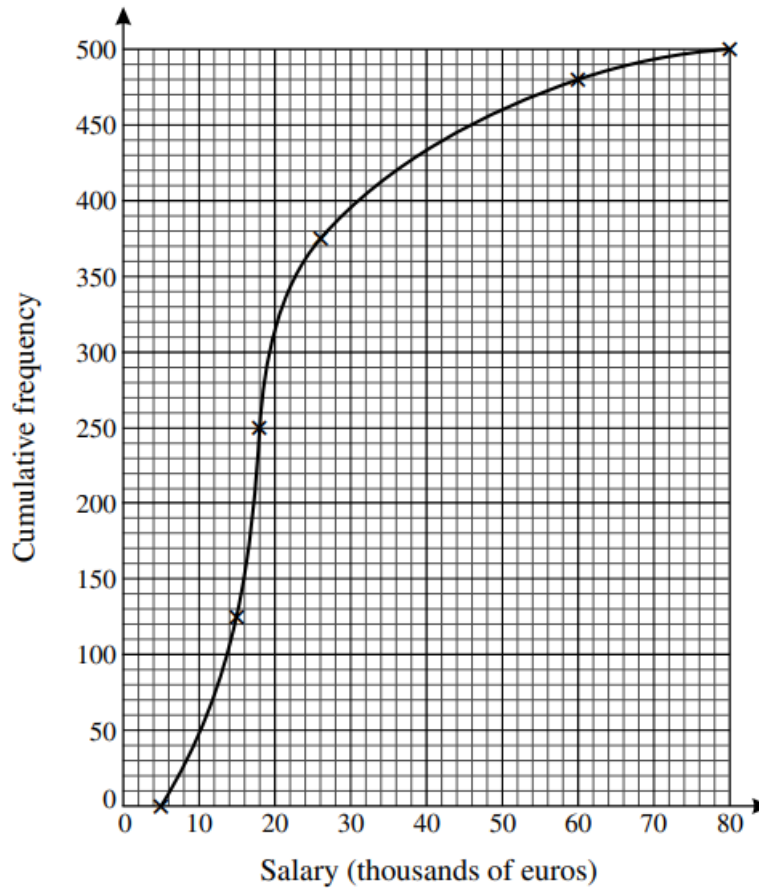
The weights of 220 sausages are summarised in the following table.

Weight (grams)	<20	<30	<40	<45	<50	<60	<70
Cumulative frequency	0	20	50	100	160	210	220

- (i) State which interval the median weight lies in. [1]
- (ii) Find the smallest possible value and the largest possible value for the interquartile range. [2]
- (iii) State how many sausages weighed between 50 g and 60 g. [1]
- (iv) On graph paper, draw a histogram to represent the weights of the sausages. [4]
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Q4.



The cumulative frequency graph shows the annual salaries, in thousands of euros, of a random sample of 500 adults with jobs, in France. It has been plotted using grouped data. You may assume that the lowest salary is 5000 euros and the highest salary is 80 000 euros.

- (i) On graph paper, draw a box-and-whisker plot to illustrate these salaries. [4]
  - (ii) Comment on the salaries of the people in this sample. [1]
  - (iii) An 'outlier' is defined as any data value which is more than 1.5 times the interquartile range above the upper quartile, or more than 1.5 times the interquartile range below the lower quartile.
    - (a) How high must a salary be in order to be classified as an outlier? [3]
    - (b) Show that none of the salaries is low enough to be classified as an outlier. [1]
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# Representation of Data 1

Q5.

The ages,  $x$  years, of 150 cars are summarised by  $\Sigma x = 645$  and  $\Sigma x^2 = 8287.5$ . Find  $\Sigma(x - \bar{x})^2$ , where  $\bar{x}$  denotes the mean of  $x$ . [4]

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Q6.

The back-to-back stem-and-leaf diagram shows the values taken by two variables  $A$  and  $B$ .

	<i>A</i>		<i>B</i>	
(3)	3 1 0	15	1 3 3 5	(4)
(2)	4 1	16	2 2 3 4 4 5 7 7 7 8	(10)
(3)	8 3 3	17	0 1 3 3 3 4 6 6 7 9 9	(11)
(12)	9 8 8 6 5 5 4 3 2 1 1 0	18	2 4 7	(3)
(8)	9 9 8 8 6 5 4 2	19	1 5	(2)
(5)	9 8 7 1 0	20	4	(1)

Key: 4 | 16 | 7 means  $A = 0.164$  and  $B = 0.167$ .

(i) Find the median and the interquartile range for variable  $A$ . [3]

(ii) You are given that, for variable  $B$ , the median is 0.171, the upper quartile is 0.179 and the lower quartile is 0.164. Draw box-and-whisker plots for  $A$  and  $B$  in a single diagram on graph paper. [3]

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Q7.

The heights,  $x$  cm, of a group of young children are summarised by

$$\Sigma(x - 100) = 72, \quad \Sigma(x - 100)^2 = 499.2.$$

The mean height is 104.8 cm.

(i) Find the number of children in the group. [2]

(ii) Find  $\Sigma(x - 104.8)^2$ . [3]

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# Representation of Data 1

Q8.

The table summarises the times that 112 people took to travel to work on a particular day.

Time to travel to work ( $t$ minutes)	$0 < t \leq 10$	$10 < t \leq 15$	$15 < t \leq 20$	$20 < t \leq 25$	$25 < t \leq 40$	$40 < t \leq 60$
Frequency	19	12	28	22	18	13

- (i) State which time interval in the table contains the median and which time interval contains the upper quartile. [2]
- (ii) On graph paper, draw a histogram to represent the data. [4]
- (iii) Calculate an estimate of the mean time to travel to work. [2]
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