1. June/2023/Paper_9709/51/No.1

A summary of 50 values of x gives

$$\Sigma(x - q) = 700, \qquad \Sigma(x - q)^2 = 14\,235,$$

where q is a constant.

(a) Find the standard deviation of these values of x. [2]

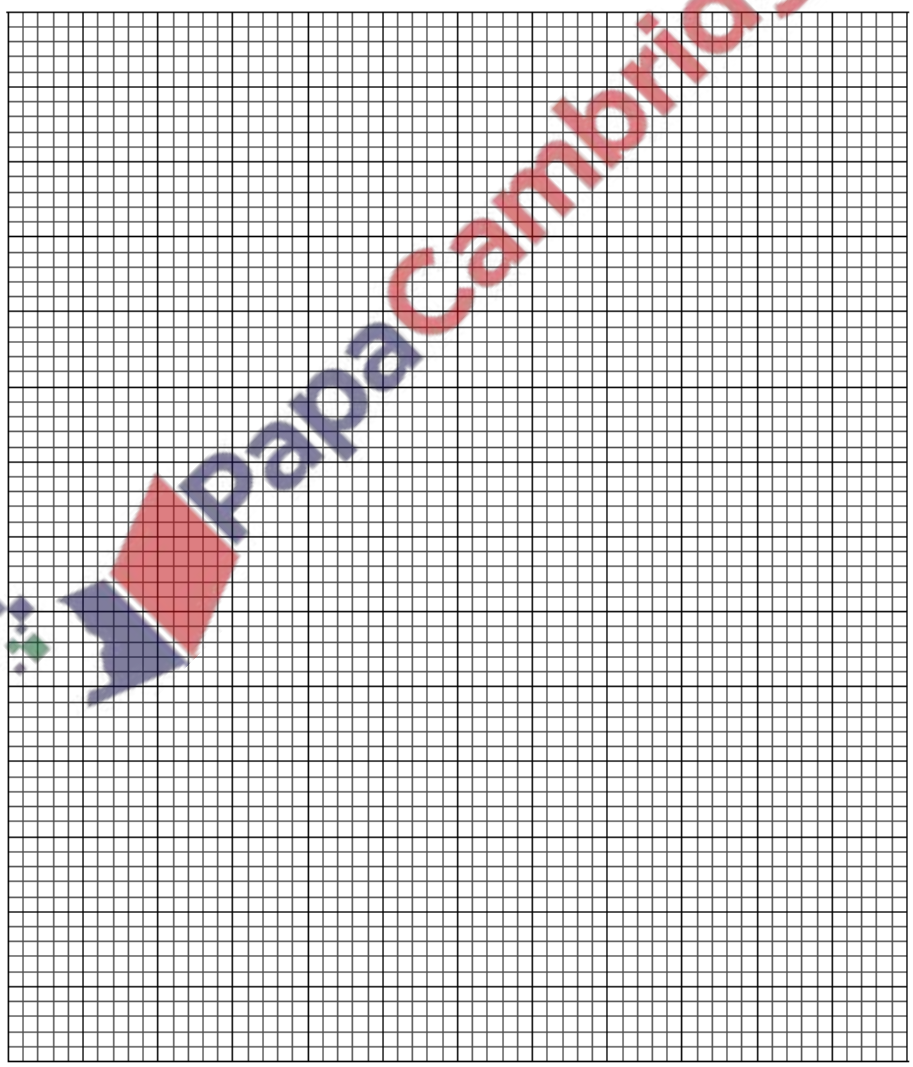
(b) Given that $\Sigma x = 2865$, find the value of q. [2]

2. June/2023/Paper_9709/51/No.5

The populations of 150 villages in the UK, to the nearest hundred, are summarised in the table.

Population	100 – 800	900 – 1200	1300 – 2000	2100 – 3200	3300 – 4800
Number of villages	8	12	50	48	32

(a) Draw a histogram to represent this information. [4]



(b) Write down the class interval which contains the median for this information. [1]

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(c) Find the greatest possible value of the interquartile range for the populations of the 150 villages. [2]

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3. June/2023/Paper_9709/52/No.3

The following back-to-back stem-and-leaf diagram represents the monthly salaries, in dollars, of 27 employees at each of two companies, A and B.

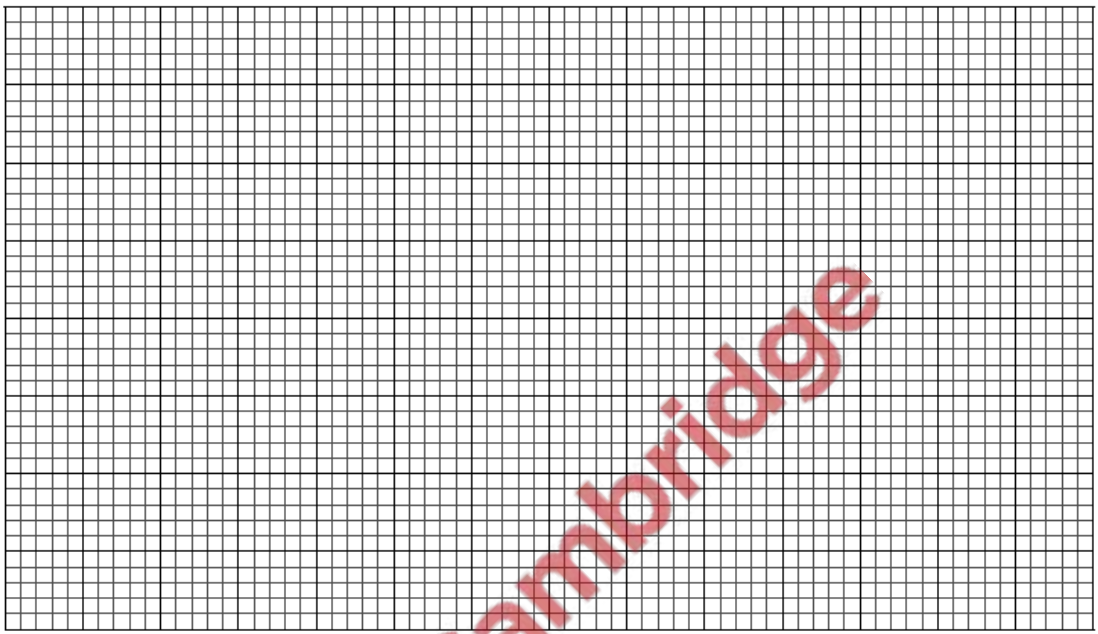
Company A								Company B							
		5	4	1	1	0	25	4	4	5	6	6	7		
9	9	8	7	2	1	0	26	0	1	3	5	5	7	9	9
	8	6	4	2	1	0	27	1	3	4	6	6	8	8	
		6	5	4	2	0	28	0	1	2	2	2			
				9	8	5	29								
						1	30	9							

Key: 1 \|27\| 6 means \$2710 for company A and \$2760 for company B

(a) Find the median and the interquartile range of the monthly salaries of employees in company A. [3]

The lower quartile, median and upper quartile for company *B* are \$2600, \$2690 and \$2780 respectively.

(b) Draw two box-and-whisker plots in a single diagram to represent the information for the salaries of employees at companies *A* and *B*. [3]



(c) Comment on whether the mean would be a more appropriate measure than the median for comparing the given information for the two companies. [1]

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4. June/2023/Paper_9709/53/No.4

The times taken, in minutes, to complete a cycle race by 19 cyclists from each of two clubs, the Cheetahs and the Panthers, are represented in the following back-to-back stem-and-leaf diagram.

Cheetahs						Panthers					
			9	8	7	4					
8	7	3	2	0	8	6	8				
		9	8	7	9	1	7	8	9	9	
6	5	3	3	1	10	2	3	4	4	5	6
		9	8	2	11	1	2	8			
				4	12	0	6				

Key: 7 |9| 1 means 97 minutes for Cheetahs and 91 minutes for Panthers

(a) Find the median and the interquartile range of the times of the Cheetahs. [3]

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The median and interquartile range for the Panthers are 103 minutes and 14 minutes respectively.

(b) Make two comparisons between the times taken by the Cheetahs and the times taken by the Panthers. [2]

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Another cyclist, Kenny, from the Cheetahs also took part in the race. The mean time taken by the 20 cyclists from the Cheetahs was 99 minutes.

(c) Find the time taken by Kenny to complete the race. [3]

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