

A-Level Mathematics: 9709 Mathematics November 2025 Question Paper 51

- 1

- (a)

[illegible]

- (b)

.....

.....

.....

.....

- (c)

[illegible]

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2

(a)

[1]

[illegible]

(b)

[3]

[illegible]

3 The back-to-back stem-and-leaf diagram shows the annual salaries, in dollars, of 27 employees at each of two companies, Browns and Greens.

Browns									Greens								
(3)	9 8 4							30	6	8	(2)						
(7)	8	8	5	3	3	1	0	31	2	4	5	8	(4)				
(7)	9	7	6	4	2	2	0	32	3	6	6	7	9	(5)			
(6)	8 7 5			5	3	1	33	1	1	3	7	8	8	9	9	(8)	
(3)	4 2 2				34	0	2	3	5	6	9	(6)					
(1)	7							35	3	7	(2)						

Key: 6|32|7 means \$32 600 for Browns and \$32 700 for Greens.

(a) Find the median and interquartile range for the annual salaries of employees at Browns. [3]

The annual salary of an employee at Browns is denoted by x thousand dollars and the annual salary of an employee at Greens is denoted by y thousand dollars. It is given that, for the 27 employees at each of the companies,

$\sum x = 878.3, \sum x^2 = 28\,616.09, \sum y = 896.5, \sum y^2 = 29\,815.63.$

(b) Find the mean and standard deviation of the annual salaries of these 54 employees. [5]

- 6** A factory produces chocolate bars. The weights of the bars are normally distributed with mean 155 g and standard deviation 6 g. A random sample of 350 of these bars is chosen.
- (a)** How many of these 350 bars would you expect to weigh between 148 g and 160 g? [4]

This image shows a full page of white paper with horizontal dashed lines, typical of primary school writing paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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A second factory also produces chocolate bars. The weights of these bars are normally distributed with mean μ g and standard deviation σ g. Tests show that 8% of the bars weigh more than 114.0 g and 20% weigh less than 99.5 g.

(b) Find the value of μ and the value of σ .

[5]

Handwriting practice lines (dotted lines) for the letter 'e'.

7 (a) How many different arrangements are there of the 10 letters in the word SEYCHELLES? [1]

(b) How many different arrangements are there of the 10 letters in the word SEYCHELLES in which there are exactly two letters between the Ss and one of these two letters is C? [3]

(c) How many different arrangements are there of the 10 letters in the word SEYCHELLES in which there is an S at the beginning, an S at the end and the three Es are **not** all next to each other? [3]

5 letters are selected at random from the 10 letters in the word SEYCHELLES.

(d) Find the probability that these 5 letters include the three Es. [3]

Additional page

If you use the following page to complete the answer to any question, the question number must be clearly shown.

This image shows a full page of primary-ruled paper. It features multiple horizontal rows, each defined by two parallel dashed lines. The lines are evenly spaced across the entire page, providing a guide for handwriting practice. There are no margins, text, or other markings present.