

Question 15**(9 marks)**

The WeLuvYas Bank extends personal loans to approved customers. A random sample of n personal loans is taken. A 99% confidence interval for the population mean loan μ (in thousands of dollars) based on this sample is $10.2 < \mu < 25.4$.

(a) What is the mean personal loan \bar{x} for this sample? (2 marks)

(b) Calculate the standard deviation of the sample mean. (2 marks)

Ali exclaims excitedly 'everyone here at WeLuvYas is 99% certain that the true population mean is within the interval $10.2 < \mu < 25.4$ '.

(c) State **two** reasons why Ali is not correct. (2 marks)

A data analyst discovers that the sample size was actually $2n$. In addition to this, the sample mean was actually \$2000 more than that originally determined.

- (d) Re-calculate the 99% confidence interval for the population mean on the basis of the updated information. (3 marks)