1. The weights, x kg, of each of 10 watermelons selected at random from Priya's shop were recorded. The results are summarised as follows

$$\sum x = 114.2 \qquad \sum x^2 = 1310.464$$

(a) Calculate unbiased estimates of the mean and the variance of the weights of the watermelons in Priya's shop.

(3)

Priya researches the weight of watermelons, for the variety she has in her shop, and discovers that the weights of these watermelons are normally distributed with a standard deviation of 0.8 kg

(b) Calculate a 95% confidence interval for the mean weight of watermelons in Priya's shop. Give the limits of your confidence interval to 2 decimal places.

(4)

Priya claims that the confidence interval in part (b) suggests that nearly all of the watermelons in her shop weigh more than 10.5 kg

(c) Use your answer to part (b) to estimate the smallest proportion of watermelons in her shop that weigh less than 10.5 kg

(3)

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(Total for Question 1 is 10 marks)

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