6. **In this question solutions relying entirely on calculator technology are not acceptable.**

Petra travels to work by bus. A bus leaves the bus station every 15 minutes and Petra's arrival at the bus station is independent of when the bus is due to leave.

(a) Write down a suitable model for the distribution of the time, T minutes, that Petra has to wait for a bus to leave.

(1)

(b) Find the mean and standard deviation of T

(3)

During a 15-week period, Petra travels to work by bus on 50 occasions.

(c) Estimate the probability that the mean length of time that Petra has to wait for a bus to leave is between 7.2 and 7.8 minutes.

(5)

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Question 6 continued

(Total for Question 6 is 9 marks)