

16 An investigation into the hydrocarbon emissions, X g/km, from cars in the Large Data Set was carried out.

The results are summarised below.

$$\sum x = 128.657 \qquad \sum x^2 = 8.701\ 707 \qquad n = 2405$$

where n is the total number of cars which had a measured hydrocarbon emission in the Large Data Set.

16 (a) (i) Find the mean of X **[1 mark]**

16 (a) (ii) Find the standard deviation of X **[2 marks]**

16 (b) (i) The Large Data Set is a sample taken from the entire UK Department for Transport Stock Vehicle Database.

It is claimed that the values in part **(a)(i)** and part **(a)(ii)** obtained from the Large Data Set should be reliable estimates for the mean and standard deviation of the hydrocarbon emissions for the entire UK Department for Transport Stock Vehicle Database.

State, with a reason, whether this claim is likely to be correct. **[1 mark]**

16 (b) (ii) State one type of emission where more than 80% of the data is known for cars in the entire UK Department for Transport Stock Vehicle Database. **[1 mark]**