

18 Riley is investigating the daily water consumption, in litres, of his household. He records the amount used for a random sample of 120 days from the previous twelve-month period.

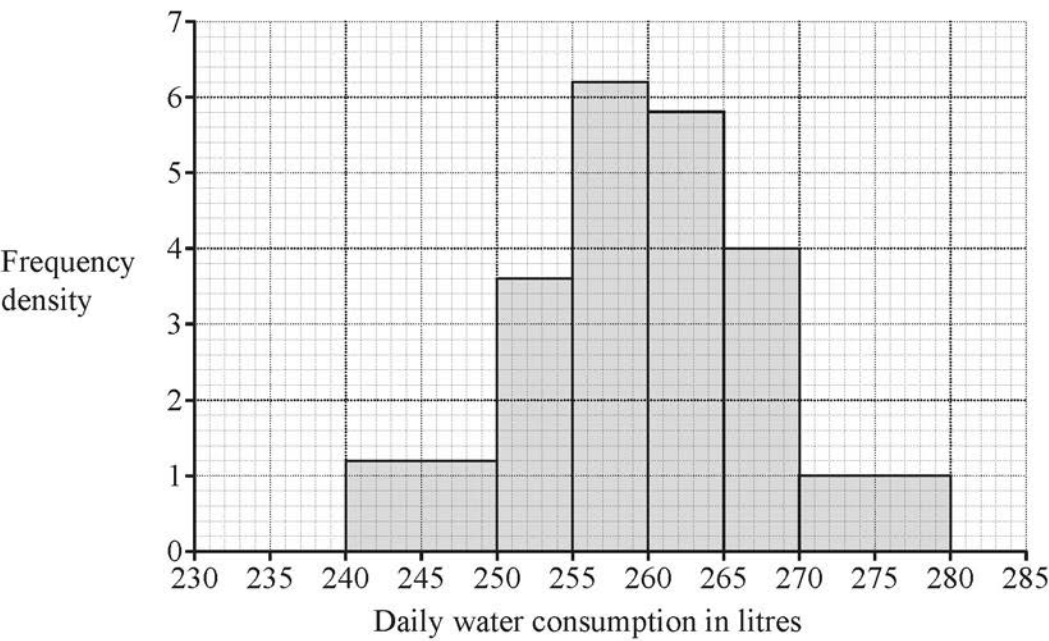
The daily water consumption, in litres, is denoted by x .

Summary statistics for Riley's sample are given below.

$$\sum x = 31164.7 \quad \sum x^2 = 8101050.91 \quad n = 120$$

(a) Calculate the sample mean giving your answer correct to **3** significant figures. **[1]**

Riley displays the data in a histogram.



(b) Find the number of days on which between 255 and 260 litres were used. **[1]**

(c) Give **two** reasons why a Normal distribution may be an appropriate model for the daily consumption of water. **[2]**

Riley uses the sample mean and the sample variance, both correct to **3** significant figures, as parameters of a Normal distribution to model the daily consumption of water.

(d) Use Riley's model to calculate the probability that on a randomly chosen day the household uses less than 255 litres of water. **[2]**

(e) Calculate the probability that the household uses less than 255 litres of water on **at least** 5 days out of a random sample of 28 days. **[2]**

The company which supplies the water makes charges relating to water consumption which are shown in the table below.

Standing charge per day in pence	7.8
Charge per litre in pence	0.18

- (f) Adapt Riley's model for daily water consumption to model the daily **charges** for water consumption.