https://fineview.academy
FINEVIEW

4. Kaiyang and Maggie are studying the pattern of rainfall where they live in Hurn.

Kaiyang decides to record whether or not it is raining at 6 a.m. for the next 10 days.

(a) State the name of the sampling method Kaiyang is using.

(1)

Kaiyang suggests that the binomial distribution with $n = 10$ would be a good model for the number of days in a 10-day period when it is raining at 6 a.m.

(b) Explain why the binomial distribution might not be a good model in this situation.

(1)

Maggie uses data from the large data set for Hurn in 2015.
She randomly selects 30 days from the large data set for Hurn in 2015 and for each day records the Daily Total Rainfall, x (mm)
Some of her 30 days have 'tr' recorded as the Daily Total Rainfall.

(c) Using your knowledge of the large data set

- state what 'tr' means
- suggest what Maggie could do with these 'tr' entries to clean her data set
- explain what effect this action is likely to have on an estimate of the mean Daily Total Rainfall

(3)

Maggie summarises her data in the grouped frequency table shown below.

Daily Total Rainfall, x (mm)	0	$0 < x \leqslant 1$	$1 < x \leqslant 3$	$3 < x \leqslant 7$	$7 < x \leqslant 15$
Frequency, f	7	10	2	7	4

(d) Use this information to estimate the mean Daily Total Rainfall for these 30 days.

(2)

(e) Show that the estimated value of S_{xx} for the Daily Total Rainfall for these 30 days is 411.4 to 1 decimal place.

(3)

Maggie defines an outlier as a value which is more than 3 standard deviations from the mean.

(f) State, giving a reason, whether or not there could be any possible outliers in Maggie's data.

(3)