1. The daily mean air temperatures from the large data set, x °C, for the month of June 2015 in Jacksonville are summarised in the table below.

Daily mean air temperature (°C)	$22 \leqslant x < 24$	$24 \leqslant x < 25$	$25 \leqslant x < 26$	$26 \leqslant x < 27$	$27 \leqslant x < 28$	$28 \leqslant x < 32$
Frequency	2	5	7	4	6	6

(a) Use your calculator to estimate the mean and the standard deviation of the daily mean air temperatures from the large data set, for the month of June 2015 in Jacksonville.

Give each of your answers to 3 significant figures.

(2)

The mean and standard deviation for the daily mean air temperatures from the large data set for Perth in June 2015 are 14.8 °C and 2.37 °C respectively.

The minimum daily mean air temperature in Perth in June 2015 was 8.8 °C and the maximum daily mean air temperature was 18.5 °C

(b) Using limits for outliers of

$$\text{mean} - 3 \times \text{standard deviation}$$
$$\text{mean} + 3 \times \text{standard deviation}$$

show that there are no outliers in the data for Perth in June 2015.

(2)

(c) (i) Assuming each location is typical of the hemisphere it is in, suggest what these means and standard deviations imply about the relative daily mean air temperature in June 2015 in each hemisphere.

Give reasons for your answers.

(2)

(ii) Comment on the validity of the assumption in (i)

(1)

Amy models the daily mean air temperature in summer in Jacksonville by $N(27, 2.1^2)$
A survey found that the typical British person says that 29 °C or above is 'too hot'.
A random sample of 30 summer days in Jacksonville is taken.

(d) Use Amy's model to predict the number of these days when the mean air temperature would be considered 'too hot' for a typical British person visiting Jacksonville.

(2)