

Section C

1. a) systematic

b) in the large data set there are some days with no data recorded

c) $n=20$, $\Sigma t = 374$, $\Sigma t^2 = 7600$

$$\sigma = \sqrt{\frac{7600}{20} - \left(\frac{374}{20}\right)^2}$$

$$= \sqrt{30.31}$$

$$= ~~30.31~~ 5.5054...$$

$$= \underline{5.51} \quad (3sf)$$

2. a) $IQR = Q_3 - Q_1 = 2.4 - 0.1 = 2.3$

$$Q_3 + 1.5(2.3) = 2.4 + 2.3 \\ = 4.7$$

$20.6 > 4.7 \therefore$ ~~20.6~~ 20.6 is an outlier

b) i) we should consider all the pieces of data

ii) it could be a mistake

c) positive correlation - as humidity increases, rainfall increases

d) each extra percentage of humidity gives an extra 0.15 mm of rainfall.

e) i) not good - only one month & one location

ii) use more months & more locations

$$3. a) \quad \frac{\sum t}{n} = 10$$

$$\sum t = 10n$$

$$\sum t - \sum 5 = 55$$

$$\sum t - 5n = 55$$

$$\sum t = 5n + 55$$

$$\therefore 10n = 5n + 55$$

$$\therefore 5n = 55$$

$$\therefore \underline{\underline{n = 11}}$$

b) ~~11 ÷ 1.151~~

$$11 \div 1.151 = 9.5569 \dots$$

$$= 9.56 \text{ knots}$$

c) Hum had a lower average daily mean windspeed in 1987 than in 2015

d) the LDS only covers May - October

e) i) use a larger data set

ii) also consider the standard deviation of the data

4. a) Perth is in the southern hemisphere, so August is in their winter

b) the lowest UK temperatures are in coastal locations (Cambridge & Leuchars), & the highest temperature is inland (Beijing). Some evidence - though need more data at different locations. to back this up.

5. a)

S	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
$P(S=s)$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$

S	17	18	19	20	21	22	23	24
$P(S=s)$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$	$\frac{1}{25}$

b) $P(S < 10) = \frac{10}{25} = \frac{2}{5}$ c) ^{none of these places in} Artiz circle $\therefore S \neq 24$.

d) the number of hours of sunshine will vary from month to month + place to place
 \therefore use non-uniform distribution

6. a) Beijing

b) rainfall of less than 0.05mm

c) i) easier + faster to process + analyse

ii) LOS has many more than 8 data points - 8 is not representative & could lead to unreliable conclusions.

d) see m/s

e) Heathrow had less rainfall on average than city X as the median is lower; Heathrow had less variation in the amount of rainfall, as the IQR & range are both smaller.