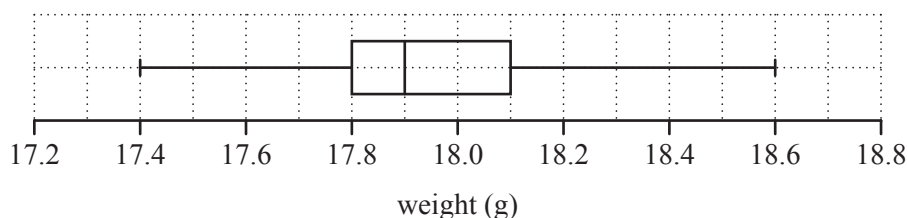


- 1 At a tourist information office the numbers of people seeking information each hour over the course of a 12-hour day are shown below.

6 25 38 39 31 18 35 31 33 15 21 28

- (i) Construct a sorted stem and leaf diagram to represent these data. [3]
- (ii) State the type of skewness suggested by your stem and leaf diagram. [1]
- (iii) For these data find the median, the mean and the mode. Comment on the usefulness of the mode in this case. [4]

- 2 The box and whisker plot below summarises the weights in grams of the 20 chocolates in a box.



- (i) Find the interquartile range of the data and hence determine whether there are any outliers at either end of the distribution. [5]

Ben buys a box of these chocolates each weekend. The chocolates all look the same on the outside, but 7 of them have orange centres, 6 have cherry centres, 4 have coffee centres and 3 have lemon centres.

One weekend, each of Ben's 3 children eats one of the chocolates, chosen at random.

- (ii) Calculate the probabilities of the following events.

A : all 3 chocolates have orange centres

B : all 3 chocolates have the same centres

- (iii) Find $P(A|B)$ and $P(B|A)$.

The following weekend, Ben buys an identical box of chocolates and again each of his 3 children eats one of the chocolates, chosen at random.

- (iv) Find the probability that, on both weekends, the 3 chocolates that they eat all have orange centres. [2]
- (v) Ben likes all of the chocolates except those with cherry centres. On another weekend he is the first of his family to eat some of the chocolates. Find the probability that he has to select more than 2 chocolates before he finds one that he likes. [3]

3 The ages, x years, of the senior members of a running club are summarised in the table below.

Age (x)	$20 \leq x < 30$	$30 \leq x < 40$	$40 \leq x < 50$	$50 \leq x < 60$	$60 \leq x < 70$	$70 \leq x < 80$	$80 \leq x < 90$
Frequency	10	30	42	23	9	5	1

(i) Draw a cumulative frequency diagram to illustrate the data. [5]

(ii) Use your diagram to estimate the median and interquartile range of the data. [3]

4 The weights, w grams, of a random sample of 60 carrots of variety A are summarised in the table below.

Weight	$30 \leq w < 50$	$50 \leq w < 60$	$60 \leq w < 70$	$70 \leq w < 80$	$80 \leq w < 90$
Frequency	11	10	18	14	7

(i) Draw a histogram to illustrate these data. [5]

(ii) Calculate estimates of the mean and standard deviation of w . [4]

(iii) Use your answers to part (ii) to investigate whether there are any outliers. [3]

The weights, x grams, of a random sample of 50 carrots of variety B are summarised as follows.

$$n = 50 \quad \Sigma x = 3624.5 \quad \Sigma x^2 = 265\,416$$

(iv) Calculate the mean and standard deviation of x . [3]

(v) Compare the central tendency and variation of the weights of varieties A and B. [2]