MATH1001 Homework Solution

Chapter 2

2.1.2

(a) i) Height and weight; ii) Continuous variables; iii) A child; iv) 37

(b) i) Blood type and cholesterol level; ii) Blood type is categorical, cholesterol level is continuous; iii) A person; iv) 129
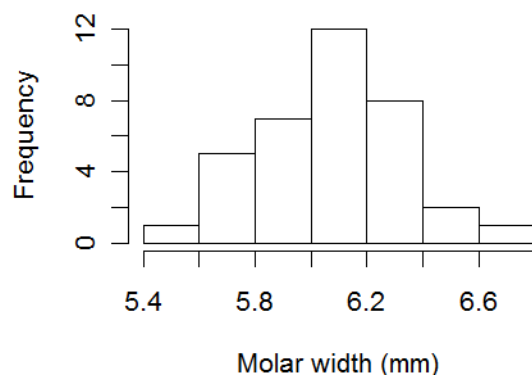
2.1.3

(a) i) Number of leaves; ii) Discrete variable; iii) A plant; iv) 25

(b) i) Number of seizures; ii) Discrete variable; iii) A patient; iv) 20

2.2.1

(a)There is no single correct answer. One possibility is:

Molar width	Frequency (no. specimens)
[5.4, 5.6)	1
[5.6, 5.8)	5
[5.8, 6.0)	7
[6.0, 6.2)	12
[6.2, 6.4)	8
[6.4, 6.6)	2
[6.6, 6.8)	1
Total	36

(b) The distribution is fairly symmetric.

2.3.3

Mean $\bar{y} = \Sigma y_i /n = (6.3+5.9+7.0+6.9+5.9)/5 = 6.40$ nmol/gm.

The median is the 3rd largest value (i.e., the third observation in the *ordered* array of 5.9 5.9 6.3 6.9 7.0),

so the median $\tilde{y} = 6.3$ nmol/gm.

2.3.13

The distribution is fairly symmetric so the mean and median are roughly equal. It appears that half of the distribution is below 50 and half is above 50. Thus, mean ≈ median ≈ 50.

2.3.14 Mean ≈ 35, median ≈ 40.

2.4.2

(a) The median is the average of the 9th and 10th largest observations. The ordered list of the data is

   4.1 5.2 6.8 7.3 7.4 7.8 7.8 8.4 8.7 9.7 9.9 10.6 10.7 11.9 12.7 14.2 14.5 18.8

   Thus, the median is $\dfrac{8.7+9.7}{2} = 9.2$.

   To find Q_1 we consider only the lower half of the data set:

   4.1 5.2 6.8 7.3 7.4 7.8 7.8 8.4 8.7 9.7

   Q_1 is the median of this half (i.e., the 5th largest value), which is 7.4.

   To find Q_3 we consider only the upper half of the data set:
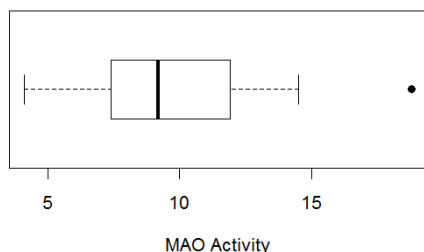
   9.7 9.9 10.6 10.7 11.9 12.7 14.2 14.5 18.8.

   Q_3 is the median of this half (i.e., the 5th largest value in this list), which is 11.9.

(b) IQR = Q_3 - Q_1 = 11.9 - 7.4 = 4.5.

(c) Upper fence = Q_3 + $1.5 \times IQR$ = 11.9 + 6.75 = 18.65.

(d)

MAO Activity

2.6.4 $\bar{y}$ = 33.10 lb; s = 3.444 lb.