Nam: Mohamed Azim bin Mohamed Nazlan A19EC0089
LOH YEW CHONG A19EC0076
Section: 02

No.
Date

Assignment 1

Question 1

a) Ratio scale
b) Ordinal scale
c) Interval scale
d) Nominal scale
e) Ordinal scale
f) ratio scale
g) ratio scale
h) interval scale
i) ratio scale
j) Ratio scale

Question 2

a) i. Freshmen Class at Lincoln High School
ii. 100 Students=Freshmen Class at Lincoln High School

b) i. Nominal Scale
ii. ratio scale
iii. ratio scale

c) i.

$Q_1 = \frac{25}{100} \times 20 = 5$
$= \frac{5th + 6th}{2}$
$= \frac{530 + 540}{2}$
$= 530$

Q_2 = median
$= \frac{50}{100} \times 20$
$= \frac{10th + 11th}{2}$
$= \frac{580 + 600}{2}$
$= 590$

$Q_3 = \frac{75}{100} \times 20$
$= 15$
$= \frac{15th + 16th}{2}$
$= \frac{660 + 680}{2}$
$= 670$

mean $= \frac{11640}{20} = 582$

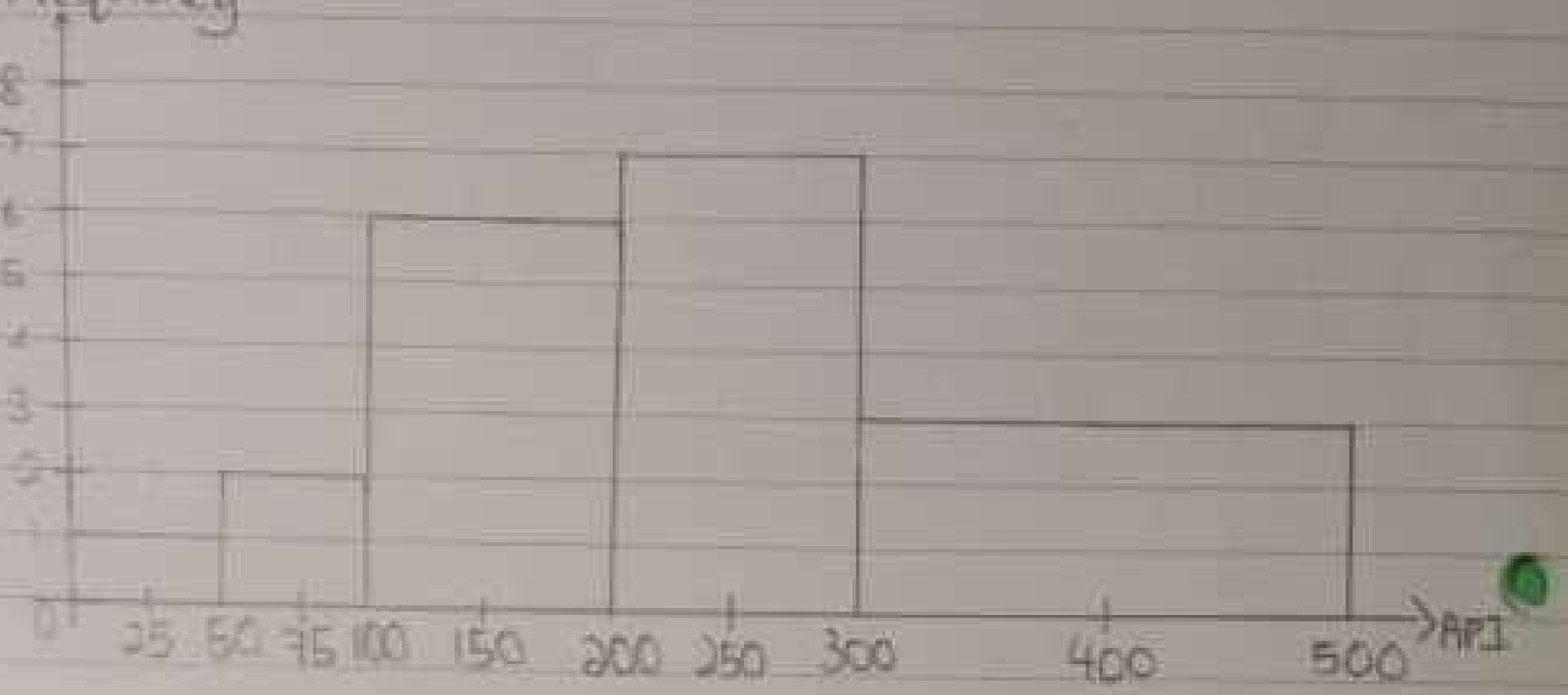
Interquartile range $= Q_3 - Q_1$
$= 670 - 530$
$= 140$

lower limit $= Q_1 - 1.5 \times IQR$
$= 530 - (1.5 \times 140)$
$= 320$

upper limit $= Q_3 + (1.5 \times IQR)$
$= 670 + (1.5 \times 140)$
$= 880$

Question 3

a)



b)

0-50	5.26
50-100	10.63
100-200	31.84
200-300	36.84
300-500	15.79
API >100	84.21

c) The value does effect the mean value.
This is because we will divide a different ~~tota~~ of data with the same total number of data.

Question 4

a) mean = $\frac{92+98+112+98+134+36+35+92+215+236+257}{11}$

= $\frac{1475}{11}$ = 134.09

mode = 92

35, 36, 88, 92, 92, 98, 112, 134, 215, 237, 336

median = $\frac{1}{2} \times 11$

= 5.5 = 6th = 98

$\sigma^2 = \frac{\sum(x-\bar{x})^2}{N-1}$ = $(35-134.09)^2+(36-134.09)^2+(88-134.09)^2$
$+2(92-134.09)^2+(98-134.09)^2+(112-134.09)^2$
$+(134-134.09)^2+(215-134.09)^2+(336-134.09)^2$
$+(237-134.09)^2$
$\frac{}{11-1}$

= $\frac{84802.9091}{10}$ = 8480.29091

$\sigma = \sqrt{8480.29091}$
= 92.0885

b) Percentile of death 215 = $\frac{\text{Number of values before 215}}{\text{total number of value}} \times 100$

= $\frac{8}{11} \times 100$

= 72.73%

(c) Mean,
This is because mean can show the average of people die because the dengue fever. Thus, people will have the idea of how much people had died and this shows the danger to people

Question 5

a) $\text{mean} = \frac{14+14+14+12+11+13+11+11+14+10+13+8}{12}$

$= \frac{141}{12} = 11.75$

mode = 11, 14

8, 10, 10, 11, 11, 11, 12, 13, 13, 14, 14, 14

$\text{median} = \frac{11+12}{2} = 11.5$

range = 14 - 8 = 6

b) The mean and median has slightly different only. The mean is greater than median. Hence the data is skewed to the right or positively skewed.

c) $\sigma^2 = \frac{(8-11.75)^2+(10-11.75)^2+(10-11.75)^2+(11-11.75)^2+(11-11.75)^2+(11-11.75)^2+(12-11.75)^2+(13-11.75)^2+(13-11.75)^2+(14-11.75)^2+(14-11.75)^2+(14-11.75)^2}{12-1}$

$\sigma^2 = \frac{40.25}{11}$

$\sigma = \sqrt{3.659} = 1.9129$

d) 7, 10, 10, 11, 11, 11, 12, 13, 13, 13, 14, 14, 14

$Q_1 = \frac{25}{100} \times 13$

$= 3$

$= \frac{3\text{th}+4\text{th}}{2}$

$= \frac{10+11}{2} = 10.5$

$Q_3 = \frac{75}{100} \times 13$

$= 9$

$= \frac{9\text{th}+10\text{th}}{2}$

$= \frac{13+14}{2} = 13.5$

$IQR = Q_3 - Q_1$

$= 13.5 - 10.5$

$= 3$

lower limit $= Q_1 - 1.5 \times IQR$

$= 10.5 - (1.5 \times 3)$

$= 6$

upper limit $= Q_3 + 1.5 \times IQR$

$= 13.5 + (1.5 \times 3)$

$= 18$

5.) (d) The value 7 is not consider as outlier because outliers are value smaller than 6 and greater than 12.

Question 6

a) mean $= \frac{14+12+21+28+30}{5} = \frac{105}{5} = 21$

$$\sigma = \sqrt{\frac{\sum(x-\bar{x})^2}{5-1}} = \sqrt{\frac{(14-21)^2+(12-21)^2+(21-21)^2+(28-21)^2+(30-21)^2}{4}}$$

$$= \sqrt{\frac{260}{4}}$$

$$= \sqrt{65}$$

$$= 8.062$$

$$\text{Skewness} = \frac{\sum(x-\bar{x})^3}{(N-1)(8.062)^3}$$

$$= \frac{(14-21)^3+(12-21)^3+(21-21)^3+(28-21)^3+(30-21)^3}{(5-1)(8.06}$$

$$= \frac{0}{(4)(3.06)^3} = 0$$

b) The sample is neither positively skewed nor negatively skewed. This is because the value of skewness is equal to zero. The sample is symmetrically distributed. It is normal distribution.