Revision Chapter Statistics

<table>
<tr><th></th><th>Ungrouped Data</th><th colspan="2">Grouped Data</th></tr>
<tr><th></th><th></th><th>Without Class Interval</th><th>With Class Interval</th></tr>
<tr><td>M
E
A
N</td><td>$\bar{x} = \frac{\Sigma x}{N}$
<u>Eg 1:</u>
(a) Find the mean of the set of data below.
2, 4, 7, 10, 13, 16, and 18 [10]
(b) A number of x is added to the set of data of (a) above, the mean becomes 9.5. Find the value of x. [6]</td><td>$\bar{x} = \frac{\Sigma fx}{\Sigma f}$ f = Frequency
x = value of the data
<u>Eg 2:</u>
The table shows the number of magazines read by students in a month.
<table><tr><td>Magazines</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>Frequency</td><td>8</td><td>11</td><td>9</td><td>7</td><td>5</td></tr></table>Find the mean of the data. [1.75]</td><td>$\bar{x} = \frac{\Sigma fx}{\Sigma f}$ f = Frequency
x = Mid-point of the class
<u>Eg 3;</u>
Table shows the length of the fish in a pond.
<table><tr><td>Length(cm)</td><td>Number of fish</td></tr><tr><td>5 – 9</td><td>8</td></tr><tr><td>10 – 14</td><td>17</td></tr><tr><td>15 – 19</td><td>20</td></tr><tr><td>20 – 24</td><td>20</td></tr><tr><td>25 – 29</td><td>18</td></tr><tr><td>30 – 34</td><td>11</td></tr><tr><td>35 – 39</td><td>6</td></tr></table>Calculate the mean of the length of the fish.</td></tr>
<tr><td>M
O
D
E</td><td><u>Eg 4:</u>
Find the mode of the sets of data below.
(a) 15, 18, 21, 25, 20, 18
(b) 3, 6, 9, 11, 17
(c) 0, 1, 2, 7, 3, 2, 1, 1, 2, 1, 2</td><td><u>Eg 5:</u>
Using Eg 2, find the mode of the data. [1]</td><td><u>Eg 6:</u>
Using Eg 3. Find
(a) Modal class
(b) mode (must use histogram)</td></tr>
<tr><td>M
E
D
I
A
N</td><td><u>Eg 7:</u>(arrange data in ascending or descending order)
Using Eg 4 (a) dan (b), find the median.
[19], [9]</td><td><u>Eg 8:</u>
Using Eg 2, find the median. [2]</td><td>$m = L + \left(\frac{\frac{N}{2} - F}{f_m} \right) c$
L =l ower boundary of the median class
N = sum of frequencies
F = cumulative frequency immediately before the median class
f_m = frequency of the median class
c = upper boundary – lower boundary
<u>Eg 9; (using formula or ogive)</u>
Using Eg 3, find the median.</td></tr>
<tr><td>R
A
N
G
E</td><td>Range = maximum value –minimum value
<u>Eg 10:</u>
Using Eg 1, find the range of the set of data. [16]</td><td>Range = maximum value –minimum value
<u>Eg 11:</u>
Using Eg 2, find the range of the set of data. [4]</td><td>Range = midpoint of the highest class - midpoint of the lowest class
<u>Eg 12:</u>
Using Eg 3, find the range of the data.</td></tr>
</table>

I. Q. R

Interquartile Range = Third Quartile – First Quartile

Eg 13:
Find the IQR of each of the following data.
(a) 9, 13, 15, 19, 22, 25, 29, 31, 35, 38, 41 [20]
(b) 1, 2, 3, 4, 5, 6, 7, 8, 9. [5]
(c) 2, 4, 6, 8, 10, 12, 14, 16. [8]

Eg 14:
Using Eg 2, find the IQR of the set of data.

$$Q_3 = L_3 + \left(\frac{\frac{3N}{4} - F}{f_m}\right)c \qquad Q_1 = L_1 + \left(\frac{\frac{N}{4} - F}{f_m}\right)c$$

Eg 15: (using formula atau ogive)
Using Eg 3, find the IQR of the data.

[IQR. =12.5]

VAR. @ S. DEV.

$$\text{Variance, } \sigma^2 = \frac{\sum x^2}{n} - (\bar{x})^2$$

$$\text{Standard Deviation, } \sigma = \sqrt{\text{variance}}$$

Eg 16:
Find the variance and standard deviation of the data below:

15, 17, 21, 24 and 31

[$\sum x^2 = 2492$, $\sum x = 108$, 31.84 ; 5.64]

$$\text{Variance, } \sigma^2 = \frac{\sum fx^2}{\sum f} - (\bar{x})^2$$

$$\text{Standard Deviation, } \sigma = \sqrt{\text{variance}}$$

Eg 17:

Number of days	2	3	4	5	6	7	8
Frequency	6	8	5	3	3	3	2

Find the variance and standard deviation of the above data.

[$\sum f = 30$, $\sum fx = 126$, $\sum fx^2 = 634$, 3.49; 1.87]

$$\text{Variance, } \sigma^2 = \frac{\sum fx^2}{\sum f} - (\bar{x})^2$$

$$\text{Standard Deviation, } \sigma = \sqrt{\text{variance}}$$

Eg 18:

Daily Salary (RM)	Number of Workers
10 – 14	40
15 – 19	25
20 – 24	15
25 – 29	12
30 – 34	8

Find the mean and standard deviation of the above data.
[$\sum f = 100$, $\sum fx = 1815$, $\sum fx^2 = 37185$,RM18.15; 6.51]

Effects of uniform changes in data on

	+ *k*	**– *k***	**x *k***	**÷ *k***
Mean , Median, Mode	+ *k*	– *k*	x *k*	÷ *k*
Range, Interquartile Range	No Changes		x *k*	÷ *k*
Standard deviation	No Changes		x *k*	÷ *k*
Variance	No Changes		$\times k^2$	$\div k^2$