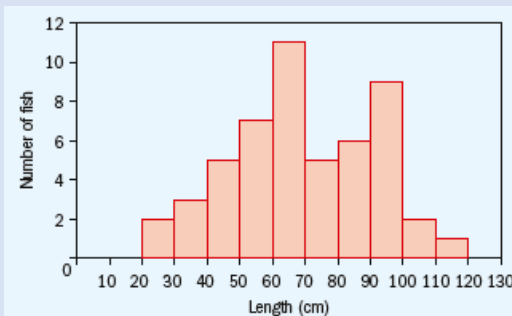


Chapter 5 / Example 5

Calculating measures of central tendency and dispersion

Later in this chapter, in 5.3, you are told to make sure you know how to use your GDC to find summary statistics and construct a box plot. In this example you will see how to do this.

Consider the following frequency histogram showing the length (x cm) of 51 fish caught in the River Avon.



- 1 State the median class.
- 2 State the range.
- 3 Comment on the distribution of the data.

Press **MENU** 2 **DATA** to display the List Editor screen.

Type the numbers 25, 35, 45, 55, etc. in the first column.

These are the values of the midpoints of each bar in the frequency histogram.

Press **EXE** after each number to move to the next cell.

Note: If the list contains other numbers, you can clear it by pressing **F4** DEL-ALL.

	List 1	List 2	List 3	List 4
SUB				
1	22			
2	35			
3	45			
4	55			
				55
GRAPH CALC TEST INTR DIST >				

Press **▶** to move to the next column.

Enter the frequencies of each of the lengths in the second column.

	List 1	List 2	List 3	List 4
SUB				
1	25	2		
2	35	3		
3	45	5		
4	55	7		
				7
GRAPH CALC TEST INTR DIST >				

To find the summary statistics

Press **F2** CALC.

Press **F1** 1-VAR.

The GDC displays a list of statistics for the data.

1-Variable	
\bar{x}	=69.5098039
Σx	=3545
Σx^2	=270675
σx	=21.8114671
sx	=22.028502
n	=51

Chapter 5 / **Example 5**

Calculating measures of central tendency and dispersion

Scroll down to see the median, lower quartile, Q_1X and the upper quartile Q_3X using \blacktriangledown .

The median is 65 and the quartiles are 55 and 85.

The range is $MaxX - MinX$.

The interquartile range is $Q_3X - Q_1X$.

1-Variable

```
minX =25
Q1  =55
Med  =65
Q3  =85
maxX =115
Mod  =65
```

Press **EXIT** **EXIT**.

Press **F1** GRAPH.

Press **F6** .SET

Choose Graph Type: **F6** \triangleright **F1** Hist, XList: List1 and Frequency: List2 (press **F2** type 2 and press **EXE**).

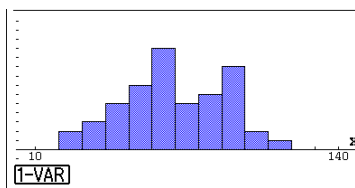
```
StatGraph1
Graph Type :Hist
XList      :List1
Frequency  :List2
Color Link :Off
Hist Area  :Blue/L
HistBorder :Black
1 LIST
```

Press **EXIT**.

Press **F1** GRAPH1.

Set Start to 20 and Width to 10 and press **EXE**.

The GDC displays a bar chart with the test score on the x-axis, and the frequency (that is, the number of students who attained each score) on the y-axis.



Press **EXIT** \square .

Press **F6** SET.

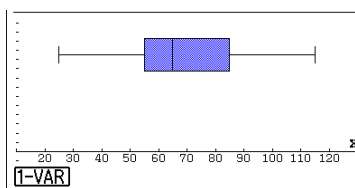
Choose Graph Type: **F6** \triangleright **F2** MedBox, leaving XList and Frequency as they are.

```
Graph Type :MedBox
XList      :List1
Frequency  :List2
Outliers   :Off
Box        :Black
Whisker    :Black
OutlierColor:Red
LIST
```

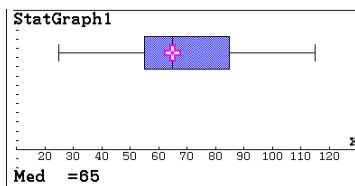
Press **EXIT** and then press **F1** GRAPH1.

The GDC displays a box plot of the data.

Since the plot type was with outliers shown, and there are none in the display, you can conclude that there are no outliers.



Press **SHIFT** **F1** TRACE and use \blacktriangleright \blacktriangleleft to move the cursor across the box plot with the touchpad. The display will change to show the maximum and minimum values, the quartiles and the median.



Chapter 5 / Example 5

Calculating measures of central tendency and dispersion

Press **MENU** 1 **RUN-MAT** to display the Run-Matrix screen for arithmetical calculations.

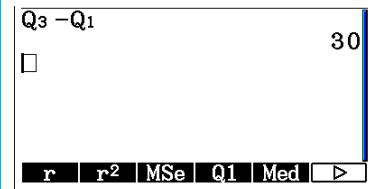
The statistics that you calculated earlier are all stored as variables.

To calculate the interquartile range Use $IQR = Q_3 - Q_1$.

Press **VAR** **F3** **STAT** **F3** **GRAPH** **F6** \triangleright **F6** \triangleright **F1** **Q3**.

Select Q3 and Q1 from the list to enter the calculation.

The inter quartile range is 30.



To calculate the range Use $\text{Range} = \text{maxX} - \text{minX}$.

Press **EXIT** and then press **F1** \times **F6** \triangleright .

Select maxX and minx from to list to enter the calculation.

The range is 90.

