

DESCRIPTIVE STATISTICS

3.2.2 Graphical summary of continuous data

You can summarize continuous data using the following:

1. Stem and leaf
2. Histogram
3. Frequency tables
4. Frequency polygons
5. Frequency curve

Example 1. The time (seconds) taken by 15 students, to read a given passage is as follows:

47, 61, 53, 43, 46, 46, 68, 48, 72, 57, 48, 54, 41, 63, 49

Summarize the above continuous data graphically.

Stem and Leaf

Refer to you tube link and fill in blank below (https://youtu.be/7m0Q_m2ppg)

Summary: Most students took between 40 and 50 seconds to read the passage. Only one student took more than 70 seconds.

Histogram

To come up with a histogram, one needs to determine the required interval using the formular:

$$\text{Interval} = \text{range} / \sqrt{n}$$

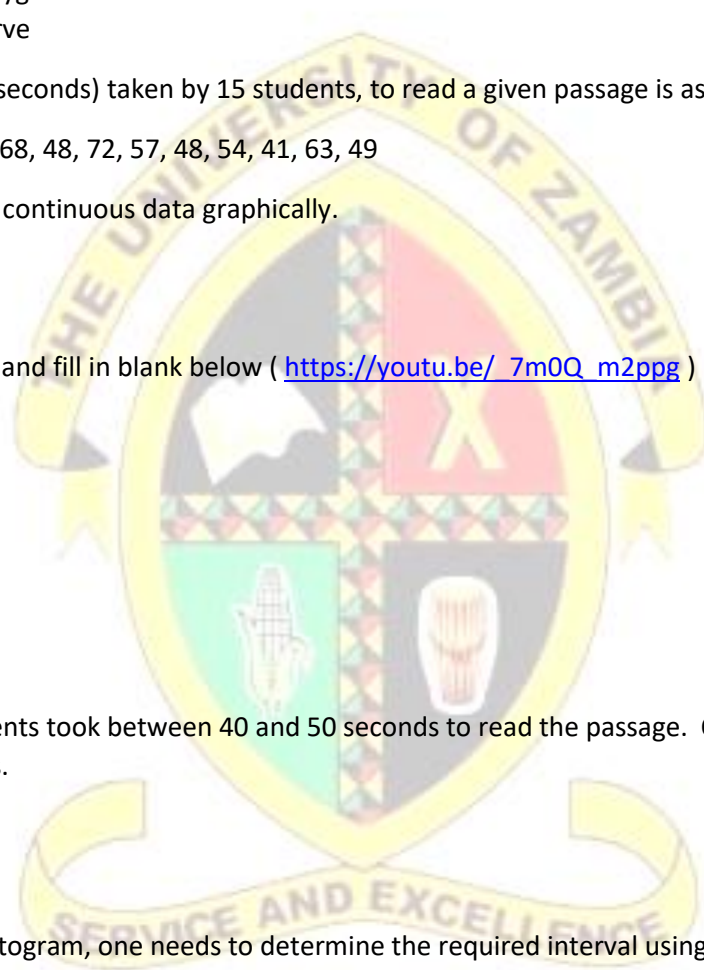
Where:

Range = the difference between the highest and lowest values and n = the number of observations.

In the example; range is $72 - 41 = 31$ and n is 15

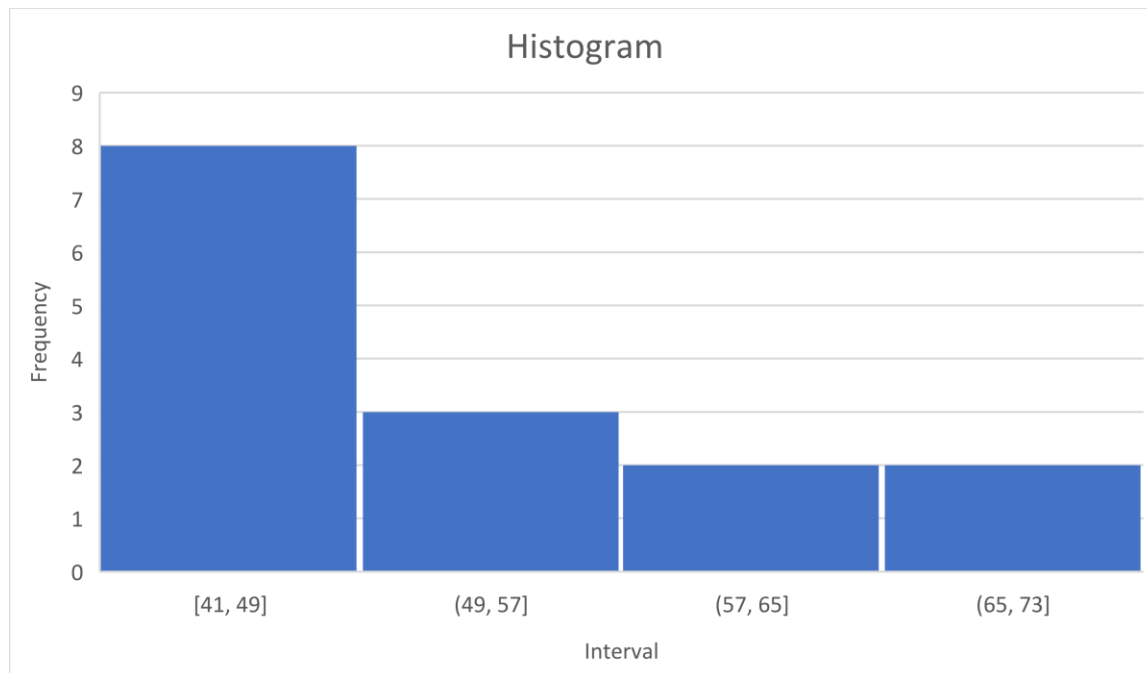
Interval is therefore $31 / \sqrt{15} = 8$

The value "8" will then be used to partition the intervals starting from the smallest value of observations



Interval	41 - 49	50 - 58	59 - 67	68 - 76
Frequency	8	3	2	2

You then plot interval (on x-axis) against frequency (on y-axis)



Summary: Most students took between 40 and 50 seconds to read the passage. Only one student took more than 70 seconds.

This is not the only way to calculate intervals. There are several other ways. However, the smaller the interval, the more the pillars you have and vice versa.

Cumulative frequency table

You use the frequency table used to create your histogram.

Interval	41 - 49	50 - 58	59 - 67	68 - 76
Frequency	8	3	2	2
Cumulative frequency	8	(8 + 3) 11	(11+2) 13	(13+2) 15

Example summary: There are 13 observations that fall in the interval up to 67 seconds.

Frequency polygon

These plot interval mid-points against frequencies. You then connect the plotted points with straight lines. The heights of the points represent the frequencies. In the below example, plot the corresponding frequency polygon:

Interval	26-30	31-35	36-40	41-45	46-50	51-55	56-60
Frequency	4	5	23	58	61	30	3
Mid-point of interval	28	33	38	43	48	53	58

To get your frequency polygon. Plot mid-point of interval (x-axis) against frequency below: (plot it)



Summary: (give summary)

Frequency curve

This curve is obtained by drawing a smooth curve connecting the frequency polygon mid-points. Using the above frequency polygon example, plot a frequency curve below and give summary:

