

How Do we Organize Data Into Tables And Frequency Histograms?

- Data is often collected in an unorganized and random manner. In order to answer questions about a group of data it is desirable to arrange the data in a table.
- The first column of the table will group the data into intervals which will be of equal length.
- The second column will contain vertical marks called tallies that are used to count each piece of data. To simplify counting, every fifth tally is written as ||||.
- The third column contains the number of scores that will fall into each interval which is also known as the frequency. The number is determined by counting the tally marks in each interval.
- The sum of all the frequencies is called the total frequency. (It is wise to check the total frequency to see that a score was not overlooked in tallying)

Example:

Class interval	Tally	Frequency
0 - 39		1
40 - 79		5
80 - 119		12
120 - 159		8
160 - 199		4
200 - 239		1
	Sum =	31

Rules for Grouping Data

When unorganized data is grouped into intervals, we must follow certain rules in setting up the intervals:

- 1) The intervals must cover the complete range of values.
- 2) The intervals must be equal in size.
- 3) The number of intervals should be between 5 and 15.
- 4) Every score to be tallied, from the highest to the lowest, must fall into one + only one interval. Thus, the intervals should not overlap each other.

(Note: These rules tell us that there are many ways to set up tables, all of them correct for the same set of data.)

1) Answer the following questions according to the table below.

Interval	Frequency
55-64	3
45-54	8
35-44	7
25-34	6
15-24	+ 2
	<u>26</u>

a) What is the total frequency?

(26)

b) Find the modal interval

↳ interval that occurs the most (has the highest frequency)

(45-54)

2) On the last math test, the scores were as follows:

~~89, 75, 63, 98, 96, 60, 78, 80, 67, 95, 55, 77, 69, 72, 70, 92~~

a) Make a table to group this data:

Interval	Tallies	Frequencies
91-100		4
81-90		1
71-80		5
61-70		4
51-60		+ 2

T.F. = 16

modal interval

b) Based on the grouped data, which interval contains the greatest number of students?

(71-80)

highest frequency ↓

c) Which interval contains the least number of students?

(81-90)

d) How many students scored less than 71 on the test?

61-70
51-60 (6)

e) What percent of students scored from 61-70?

$\frac{4}{16} = .25 = 25\%$

f) Find the modal interval

(71-80)

Data from a table can be displayed graphically using a histogram. Since the histogram displays the frequency or number of scores falling into each interval, we sometimes call this graph a frequency histogram. A histogram is simply a bar graph, in which the bars are placed next to each other.

no spaces

Method of Constructing Frequency Histogram:

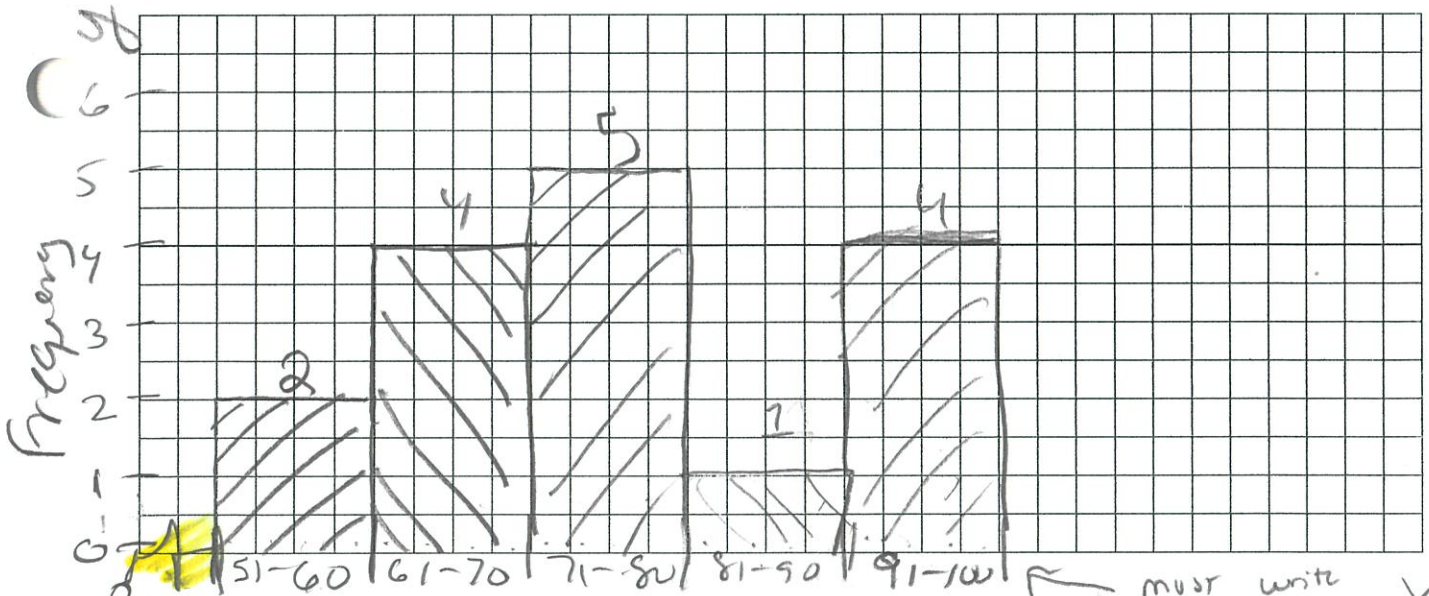
- 1) Draw and label the vertical scale to show frequencies. (The scale starts at 0 and increases to include the highest frequency) ^(y-axis)
- 2) Draw and label intervals of equal length on a horizontal scale (in numerical order). Give a title to the horizontal scale, telling what the numbers represent. ^(x-axis)
- 3) Draw the bars vertically, leaving no gaps between the intervals.

*Don't forget to title the graph *

Example:

- 1) Construct a frequency histogram using the information from Example #2

Math test scores



Interval (Test scores)

must write in numerical order

used Break B/c interval don't start at 0.

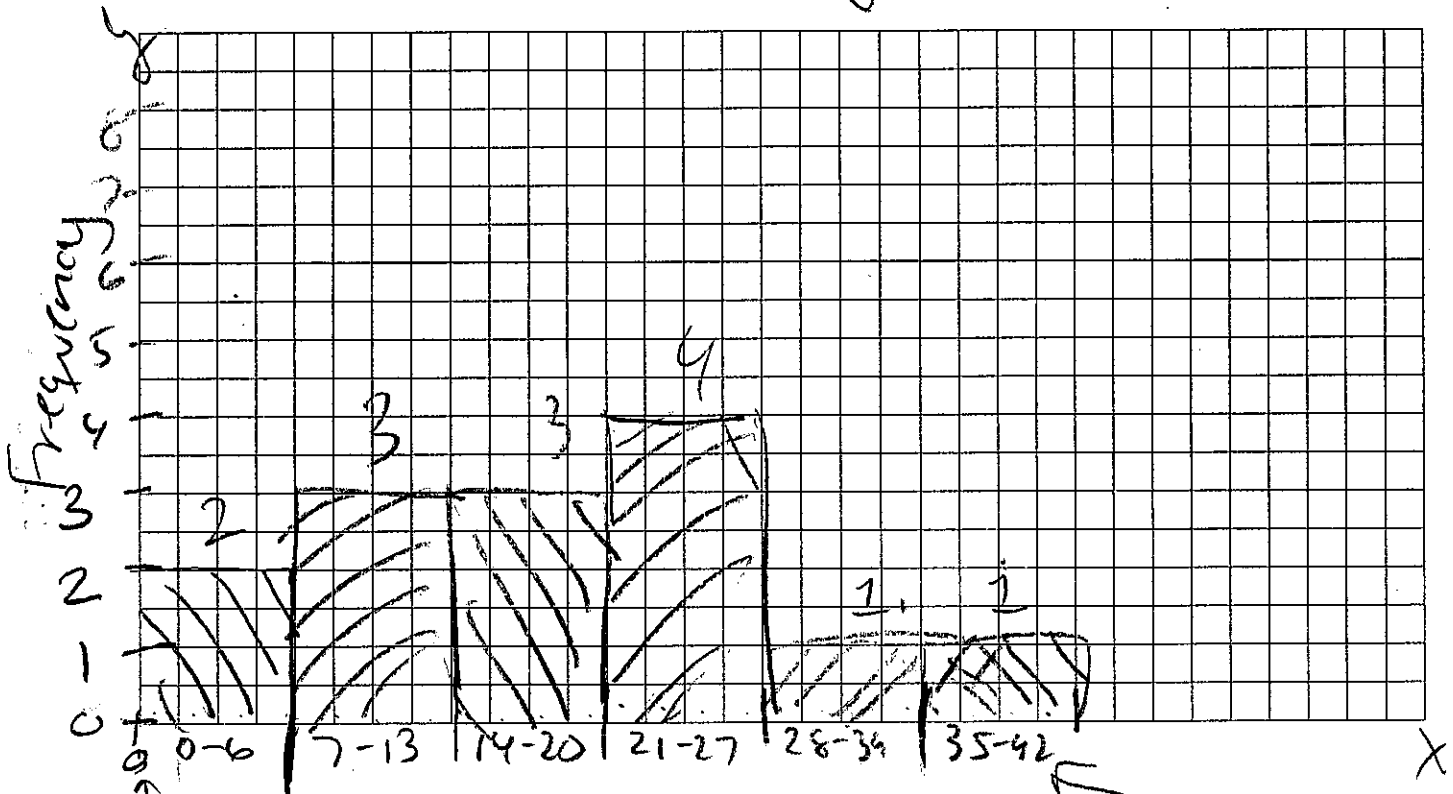
2) The following data represents the number of points scored by the Merrick Football team in their last two seasons: 20, 21, 23, 14, 0, 6, 10, 7, 35, 28, 21, 24, 14, 10

a) Complete the following chart and graph the frequency histogram.

Interval	# of points	Tally	Frequency
	0-6		2
	7-13		3
	14-20		3
	21-27		4
	28-34		1
	35-42		1

No Break
B/c interval starts at 0

Points scored by Merrick Football Team



No Break
B/c interval starts at 0

Interval (points scored)

Interval must be in numerical order