

Reminder: You have until tomorrow to finish Parts 1 and 3 of Assignment #1



Grouping Symbols

Your homework grade will consist of two components:

A self reported HW Proficiency grade (using the rubric below) recorded on the other side of this sheet AND

a random homework quality grade given by Mr. Cedarlund.

How to evaluate and score your HW.

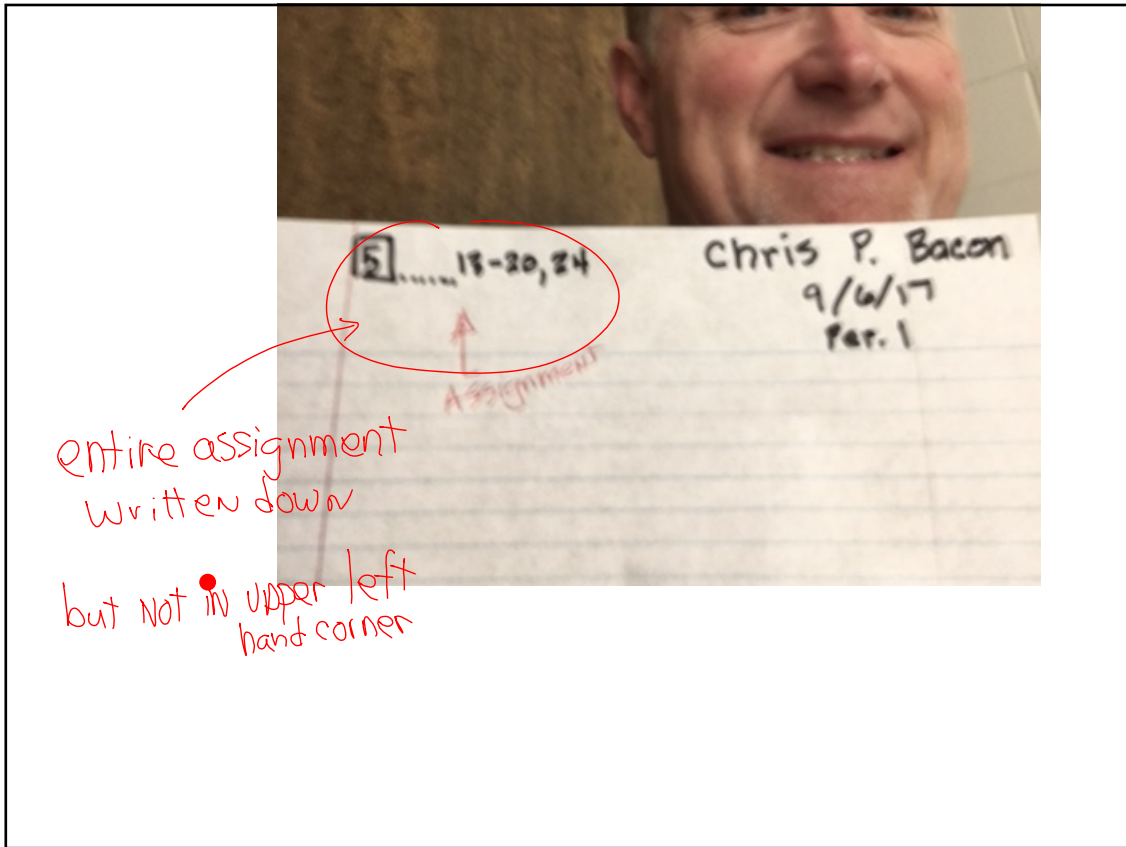
Homework Proficiency Rubric

Homework recording sheet

period _____ first/last name _____ Descriptive Statistics
HW Recording Sheet ----- for

- ✓ When you arrive in class, your name should already be in ink on the top of your paper, in ink. The assignment and your period should also be written down.
- ✓ Once class starts, you can only add to your homework in ink (in a color that stands out from your main work.)
- ✓ Before the conclusion of HW checking, your score must be written in INK in two places:
 - 1) In the upper right hand corner on your actual HW.
 - 2) and below in the *HW Proficiency* column below. (Write "0" if you did not do your HW).
- ✓ This sheet and all completed assignments for a chapter must be brought to class everyday and kept next to this sheet. If a random HW Quality check is done and this sheet is not in class, then the assumption is that you have not done any assignments up to that point.

Day (Mon, Tu, etc)	Date Assigned	● HW Description	HW Proficiency Score from 0 to 10	Explain Special situations "absent on ____"
		Reminder: If you are absent, you are required to check the class website for details before you return.		
W	9/5	p.60-61 la to g, etc....		
F	9/7			



9 or 10

Completed on time, before class starts.

Required Qualities

- A. The "starting" expression or information is written down before you work on a problem. *(unless the problem is lengthy or in paragraph form. Ideally you should skip a line before the next problem.*
- B. Appropriate, detailed steps, are shown in all problems (when there is a process). In general you should skip a line after your work, before starting the next problem.
- C. Good notation is used.
- D. Work is neat and organized.
- E. You skip a line before the next problem.

Note: *Not all answers have to be correct to get this score but it is obvious, when looking at your paper as class starts, that your paper generally has all of the qualities above.*

Note: *You can still get this score if you have a question you need help with (maybe two) provided you use the HW Tally and all problems have the same*

<p>7 or 8</p> <p>Completed on time, before class starts and about...</p> <p>80% of the assigned work is done with the required qualities</p>	<p>5 or 6</p> <p>Completed on time, before class starts and about...</p> <p>60% of the assigned work is done with the required qualities</p>
--	--

<p>3 or 4</p> <p>Completed on time, before class starts and about...</p> <p>40% of the assigned work is done with the required qualities</p>	<p>1 or 2</p> <p>Completed on time, before class starts and about...</p> <p>20% of the assigned work is done with the required qualities</p>
--	--

0

If the assignment is not completed, the write "0" on the recording sheet at the time of checking.

BUT you eventually do it before the end of the chapter, then subtract 4 from what would have been your HW score. Write this reduced score adjacent to the "0". Cross out the "0" recorded earlier but not erase the "0".

You may do this on one assignment per unit/chapter

Today:

1. Classify data

2. Create and/or interpret Histograms

What, exactly, is a histogram ?

Categorical Variable

assigns labels that place each individual into a particular group, called a category.

↙
Values are usually words
(but not always)

zipcodes 94563
37214

area codes 541
503

Quantitative Variable

takes number values that are quantities—counts or measurements.

↳ discrete (countable)
↳ continuous

category.

Values are usually words (but not always)

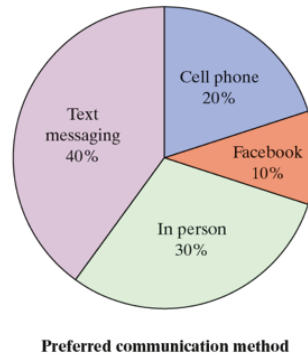
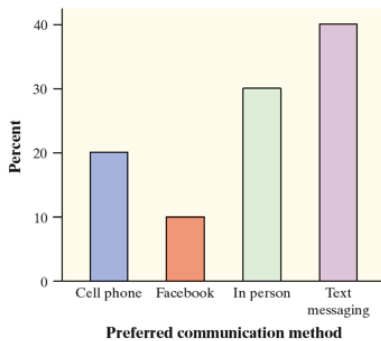
zipcodes 94563
37214

area codes 541
503

quantitative variables like age, weight, etc can be divided into categories

Displaying Categorical Data

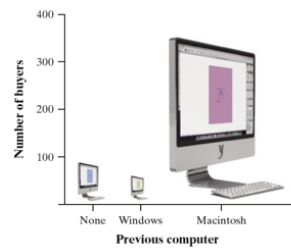
To display the distribution of categorical data, make a **bar graph** or a **pie chart**.



Graphs: Good and Bad

Bar graphs are a bit dull to look at. It is tempting to replace the bars with pictures or to use special 3-D effects to make the graphs seem more interesting.

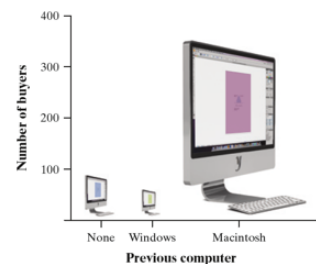
Don't do it!



Graphs: Good and Bad

Bar graphs are a bit dull to look at. It is tempting to replace the bars with pictures or to use special 3-D effects to make the graphs seem more interesting.

Don't do it!



CAUTION:

- 1) beware the pictograph
- 2) watch those scales

HH

Chapter 6

Descriptive statistics


Syllabus reference: 2.1, 2.2, 2.3, 2.4, 2.5, 2.6

Contents: **A** Types of data
B Simple quantitative discrete data
C Grouped quantitative discrete data

Number of peas in a pod	Tally	Frequency	Relative frequency
1		0	0
2		2	0.013
3		11	0.073
4		19	0.127
5		29	0.193
6		51	0.34
7		25	0.167
8		12	0.08
9		1	0.007
	Total	150	

$\frac{11}{150} =$

A tally column is not essential for a frequency table, but is useful in the counting process for large data sets.



DISPLAY OF DATA

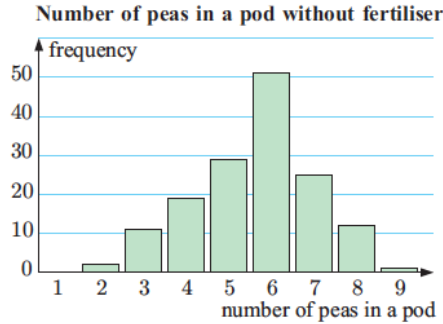
DISPLAY OF DATA



Quantitative discrete data is displayed using a **column graph**. For this graph:

- the range of data values is on the horizontal axis
- the frequency of data values is on the vertical axis
- the column widths are equal and the column height represents frequency
- there are gaps between columns to indicate the data is discrete.

A column graph for *the number of peas in a pod without fertiliser* is shown alongside.



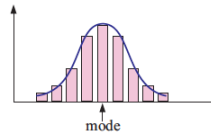
The **mode** of a data set is the most frequently occurring value. On a column graph the mode will have the highest column. In this case the mode is 6 peas in a pod.

DESCRIBING THE DISTRIBUTION OF A DATA SET

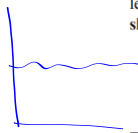
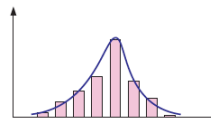
pol63

Many data sets show symmetry or partial symmetry about the mode.

If we place a curve over the column graph we see that this curve shows symmetry. We have a **symmetrical distribution** of the data.



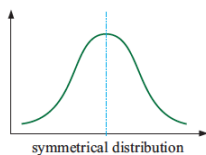
Comparing the *peas in a pod without fertiliser* data with the symmetrical distribution, we can see it has been 'stretched' on the left or negative side of the mode. We say the data is **negatively skewed**.



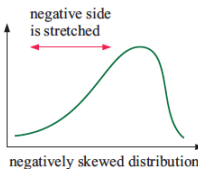
The descriptions we use are:



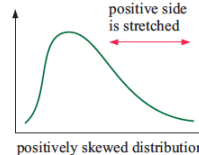
UNIFORM DISTRIBUTION



skewed left



skewed right



C **GROUPED QUANTITATIVE DISCRETE DATA**

A local kindergarten is concerned about the number of vehicles passing by between 8:45 am and 9:00 am. Over 30 consecutive week days they recorded data:

27, 30, 17, 13, 46, 23, 40, 28, 38, 24, 23, 22, 18, 29, 16,
35, 24, 18, 24, 44, 32, 52, 31, 39, 32, 9, 41, 38, 24, 32

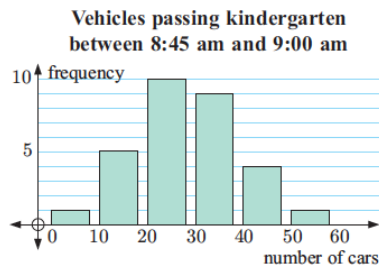
In situations like this there are many different data values with very low frequencies. This makes it difficult to study the data distribution. It is more statistically meaningful to group the data into **class intervals** and then compare the frequency for each class.

For the data given we use class intervals of width 10. The frequency table is shown opposite.

We see the **modal class**, or class with the highest frequency, is from 20 to 29 cars.

Number of cars	Tally	Frequency
0 to 9		1
10 to 19		5
20 to 29		10
30 to 39		9
40 to 49		4
50 to 59		1
<i>Total</i>		30

We can construct a **column graph** for grouped discrete data in the same way as before.



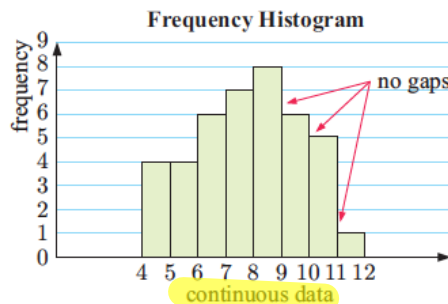
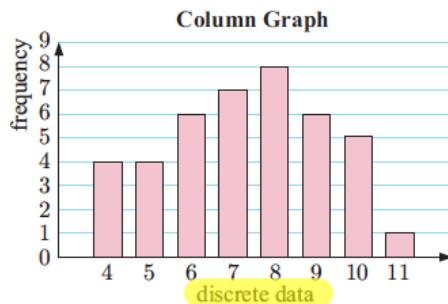
D **QUANTITATIVE CONTINUOUS DATA**

When we measure data that is **continuous**, we cannot write down an exact value. Instead we write down an approximation which is only as accurate as the measuring device.

Since no two data values will be *exactly* the same, it does not make sense to talk about the frequency of particular values. Instead we group the data into **class intervals of equal width**. We can then talk about the frequency of each class interval.

A special type of graph called a **frequency histogram** or just **histogram** is used to display grouped continuous data. This is similar to a column graph, but the 'columns' are joined together and the values at the edges of the column indicate the boundaries of each class interval.

The **modal class**, or class of values that appears most often, is easy to identify from a frequency histogram.



The building of a histogram

Day 2: Freq tables and histograms
FrequencyHistogramsandPolygonsSample.pps

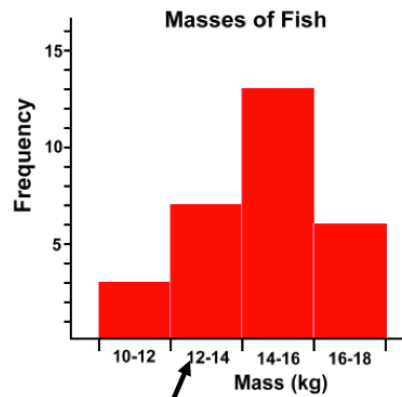
But they are *different* too:

Bar graph



Bar graphs use categorical data

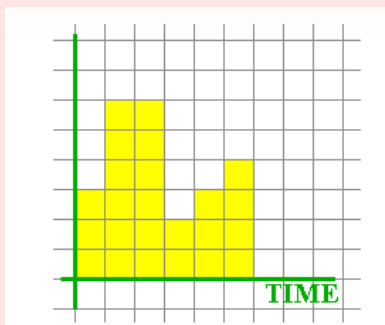
Histogram



Histograms use groups or intervals of data. More data can be covered in the same amount of space.

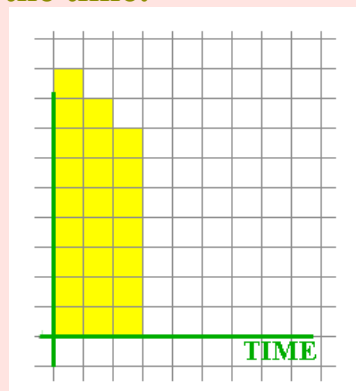
The size of the Interval is critical

Yearly crime reports for the last six years: 3, 6, 6, 2, 3 and 4 crimes a year, with class interval sizes of **one** year the bar graph looks this way:



we can see that the crime rate was going up for the last three years

if we choose class intervals of **two** years, the impression from the bar graph is that the crime rate was going down all the time:



smaller class interval sizes show more exact picture

Eric measured the heights of 23
of his friends to the nearest cm.

Here are the results:

191 182 123 118 138 138 140 156
159 159 162 133 154 170 182 129
122 148 135 127 160 149 134



On Assignment #1 , it is nice to be able to
enter the data and quickly plot a histogram.

Graphing Calc.
Basics for
IB math

Create a
Histogram

Create a Histogram using a TI-83 or TI-84

June collected the distances she drove each weekend for 30 weekends. The distances, stored in the list L_1 , are listed below.

31, 8, 93, 69, 75, 2, 33, 194, 83, 17, 2, 207, 99, 32, 8,
2, 75, 126, 30, 9, 211, 93, 8, 75, 198, 25, 32, 71, 9, 98

1. Enter the data

2. Adjust the window to match the data.
You could use.....

```
WINDOW
Xmin=0
Xmax=220
Xscl=20
Ymin=0
Ymax=15
Yscl=1
Xres=1
```

Download

3. Create a histogram of the distances.

Press **2nd** [STAT PLOT] and select Plot1. Press **ENTER** to turn the plot off.

Press **2nd** [STAT PLOT] and select Plot2. Press **ENTER** to turn the plot on. Select the histogram icon. Arrow down to Xlist and select **L1**.

[Download](#)



4. Set the interval width to 50 for now by pressing **WINDOW** and changing the x-scale to 50.

5. Press **Graph**. Press **Trace** to view frequency per bar. You can toggle left/right to see frequencies.

Before you continue, change the interval width to 20. Using this new setting, continue with the remaining questions.

Guidelines for Drawing a Histogram

- 5 to 10 classes

Intervals

- Intervals go on x-axis

- Frequency always goes on y-axis

- No horizontal space between bars.

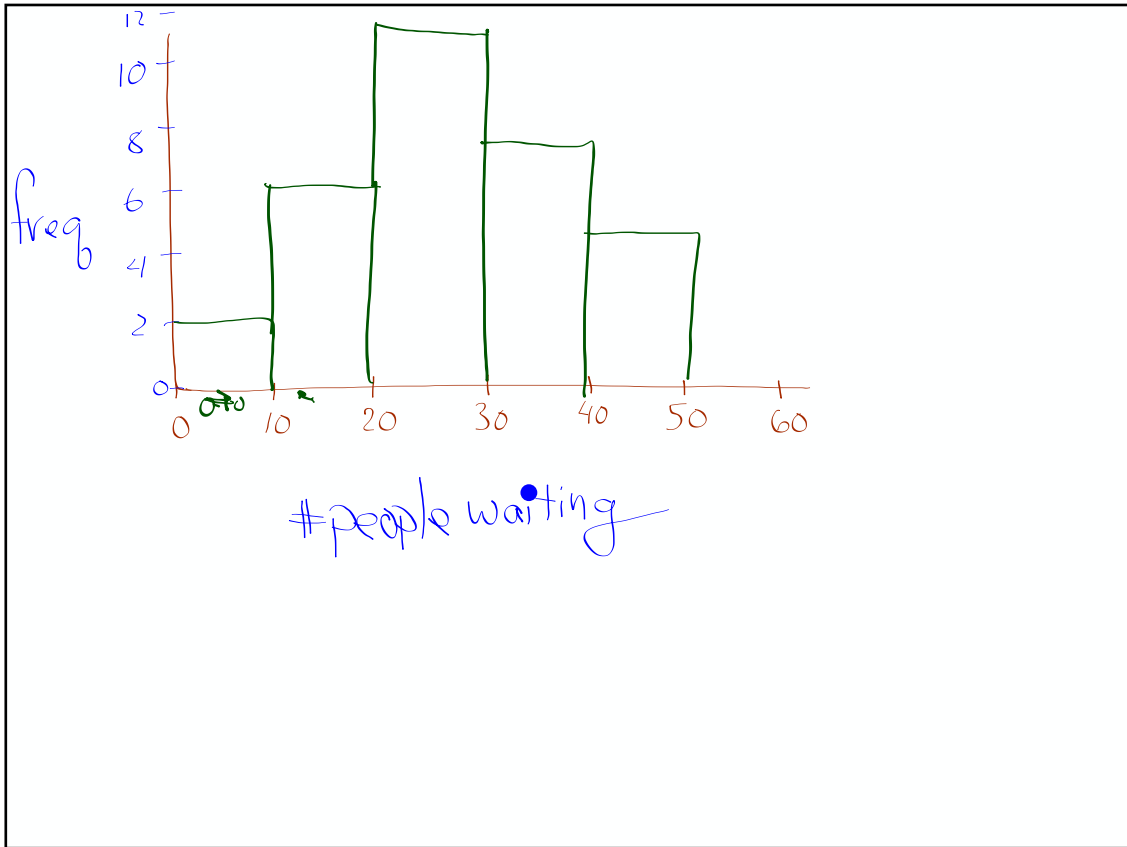
Next:

Use the data on p. 166 ^{question 1 at the bottom.} to make an appropriate histogram on your

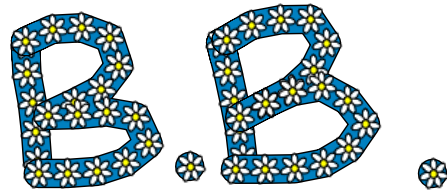
GDC

means graphing display calculator.

Then use it to create an appropriate
• in your notes.



Any questions on
the Syllabus ?



Increase your addition
to cell phones!!!

Work on Assignment # 1

Part 3 is due tomorrow

You can do Part 2 over the
weekend if needed

