

Math 142: Monday, September 9th, Day 7 Notes

Agenda for Monday, Sep 9th 2024

Section 2.3 Quantitative Graphs	1
Section 3.1 Measures of Central Tendencies	2

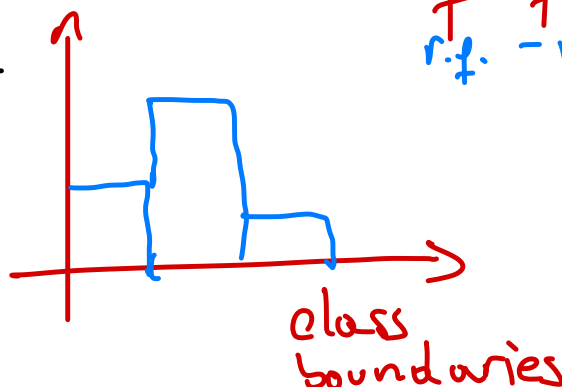
Reminders

- ! Group Quiz 2 on Wednesday on Chapter 2 (you can use your won notes)
- ! Exam 1 on Wednesday Sept 18th
- Office Hour **Tuesday 1pm in C162**
- First **Excel Homework** due Wednesday in Canvas (Excel file upload)
- **Study Abroad and Global Engagement Fair** all day on Monday September 9th and Tuesday September 10th

Recall:

Histograms

f
or
r.f.

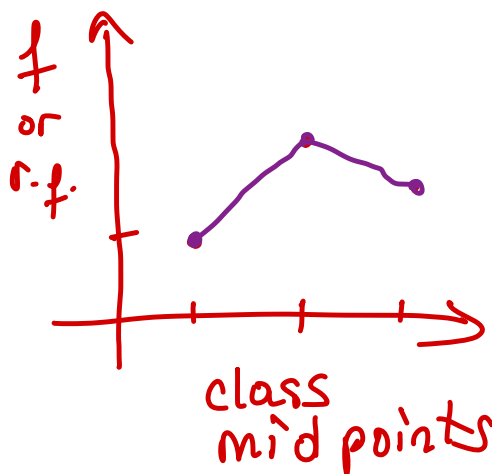


f - frequency
r.f. - relative frequency

Frequency Polygons

Note: Excel - select Scatter

Midpoints	Frequency
59	2
69	3
⋮	⋮



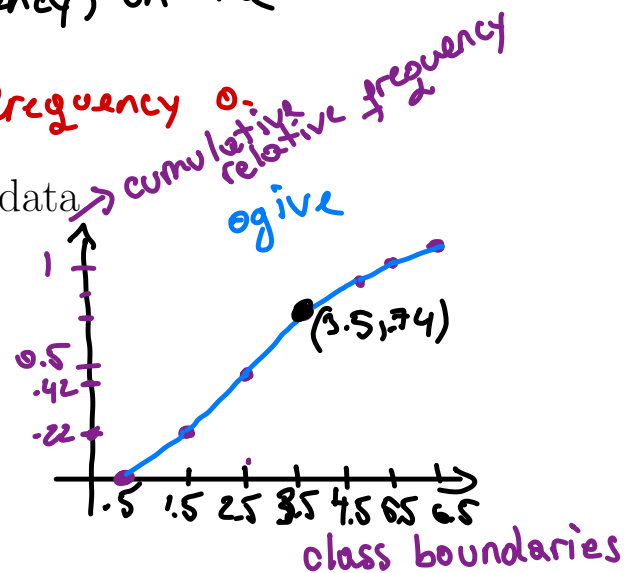
Ogive - is a line graph with class boundaries on the x-axis and cumulative frequency (or cumulative relative frequency) on the y-axis.

Note: first class boundary has frequency 0.

Example 4. Create an ogive for example 2 data

BOUNDARIES	FREQUENCY	relative frequency	Cumulative rel. freq.
.5 - 1.5	11	$11/50 = 22\%$	.22
1.5 - 2.5	10	$10/50 = 20\%$	$.22 + .2 = .42$
2.5 - 3.5	16	$16/50 = 32\%$	$.42 + .32 = .74$
3.5 - 4.5	6	$6/50 = 12\%$	$.74 + .12 = .86$
4.5 - 5.5	5	$5/50 = 10\%$	$.86 + .1 = .96$
5.5 - 6.5	2	$2/50 = 4\%$	$.96 + .04 = 1$

$n=50$

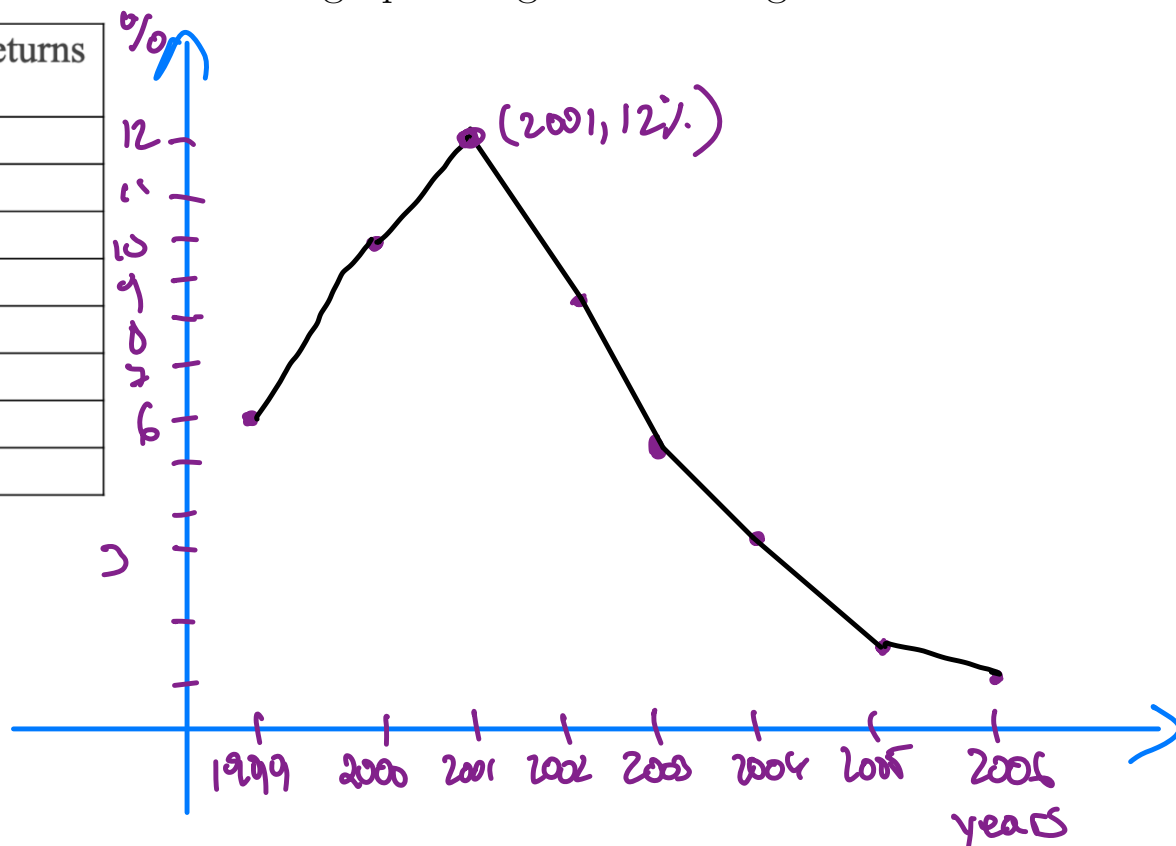


Time Series Graph

It is a line graph where time is on x-axis and data on y-axis. The time can be years, minutes, seconds, etc.

Example 5. Create a time series graph using the following information:

Year	Portfolio Returns
1999	6%
2000	10%
2001	12%
2002	8%
2003	5%
2004	3%
2005	1.5%
2006	1%



Stem and Leaf Plot

It is a good choice when the **data sets are small**. Separates each data member into two parts: a **stem** part and a **leaf** part. Place the stem on one column and the leaf in a second column with a comma separating each leaf.

Stem	Leaf
#s that represent one, tens or hundreds	#s that represent ones, tenths hundredths

Key
 Stem : tens
 Leaf : ones

Example 6. For the Park City basketball team, scores for the last 30 games were as follows (smallest to largest):

32; 32; 33; 34; 38; 40; 42; 42; 43; 44; 46; 47; 47; 48; 48; 48; 49; 50; 50; 51; 52;
~~52; 52; 53; 54; 56; 57; 57; 60; 61~~

Construct a stem plot for the data.

Stem	Leaf
3	2, 2, 3, 4, 8
4	0, 2, 2, 3, 4, 6, 7, 7, 8, 8, 8, 9
5	0, 0, 1, 2, 2, 2, 3, 4, 5, 7, 7
6	0, 1

Key
 Stem : tens
 Leaf : ones

$$3 | 2 = 32$$

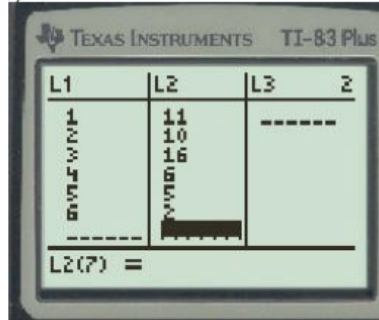
What if?
 Stem : hundred
 Leaf : tens

$$3 | 2 = 320$$

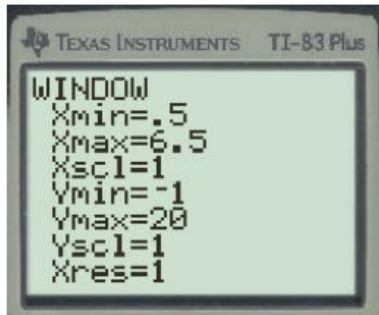
Calculator Instruction to create a histogram for Example 2 from Day 6 Notes

There are calculator instructions for entering data and for creating a customized histogram. Create the histogram for **Example 2.5**.

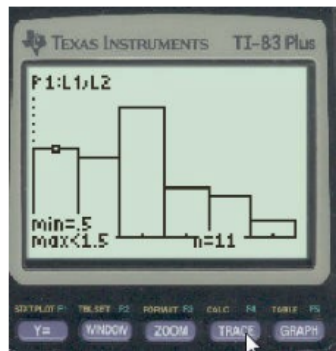
- Press **Y=**. Press **CLEAR** to delete any equations.
- Press **STAT 1:EDIT**. If L1 has data in it, arrow up into the name L1, press **CLEAR** and then arrow down. If necessary, do the same for L2.
- Into L1, enter 1, 2, 3, 4, 5, 6.
- Into L2, enter 11, 10, 16, 6, 5, 2.



- Press **WINDOW**. Set Xmin = .5, Xscl = (6.5 - .5)/6, Ymin = -1, Ymax = 20, Yscl = 1, Xres = 1.



- Press 2nd Y=. Start by pressing 4: Plotsoff ENTER.
- Press 2nd Y=. Press 1:Plot1. Press ENTER. Arrow down to TYPE. Arrow to the 3rd picture (histogram). Press ENTER.



- Arrow down to Xlist: Enter L1 (2nd 1). Arrow down to Freq. Enter L2 (2nd 2). Press Graph. Use TRACE key and the arrow keys to examine the histogram.

3.1 Measures of Central Tendencies

The center of a data set is a way of describing data. The most common measures of central tendency are the mean and the median.

Mean - is your regular average.

$$\text{mean} = \frac{\text{add all values up}}{\# \text{ of values}}$$

Example 1. Find the mean of the sample data set: 52; 52; 57; 60; 61 representing amount of time in minutes 5 students ran over the last week.

sample : $\bar{x}$ (read x bar)

mean

$$\bar{x} = \frac{52 + 52 + 57 + 60 + 61}{5} = \underline{\underline{56.4}}$$

Example 2. Find the mean of the population data set: 52; 52; 57; 60; 61; 63; 63; 64; 65; 75 representing amount of time in minutes 10 students ran over the last week.

population : μ (read mew)

mean

$$\mu = \frac{52 + 52 + 57 + \dots + 65 + 75}{10} = 61.2$$

Median

→ is the middle value in a ordered data set.

ex: 23, 25, 29, 30, 35

median = 29

ex: 52, 52, 57, 60, 61, 63, 63, 64, 65, 75

$$\text{median} = \frac{61 + 63}{2} = 62$$

Example 3. Find the median of the data set:

**Grade Point Averages of
Students in a Class**

0	8
1	5 6 8
2	1 3 4 5
3	0 9
4	0 0

Key: $0|8 = 0.8$

this means the stem represents ones and
the leaf represents tenths.

Data: 0.8, 1.5, 1.6, 1.8, 2.1, 2.3, 2.4, 2.5, 3.0, 3.9, 4.0, 4.0

Median: $\frac{2.3 + 2.4}{2} = \frac{4.7}{2} = 2.35$

next class

Another measure of central tendency is mode.

Example 4. Find the mode(s).

**Weights (in pounds) of
Carry-On Luggage on a Plane**

0	6 7	Key: $3 2 = 32$
1	2 5 8 9	
2	0 4 4 4 5 8 9	
3	2 2 3 5 5 5 6 8 9	
4	0 1 2 7 8	
5	1	