

Agenda for Wednesday, Sep 4th 2024

Section 2.3 Quantitative Graphs	1
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Reminders

! Canvas Homeworks: *HW 3, 4, 5 due all by 11:59pm today.*

- Office Hour **today 3:45-5pm** in C162
- First Excel Homework will be posted soon

Recall: *Excel : Bar, Pareto & Pie Charts*

Section 2.3 Quantitative Graphs

The three most common graphs for Quantitative Data are: **Histograms**, **Frequency Polygons** and **Ogive**.

Histograms

A histogram *consists of adjoining bars with class boundaries on the x-axis and frequency or relative frequency on the y axis.*

- *used for larger data sets*

Example 1. The following data are the heights (in inches to the nearest half inch) of 100 male semiprofessional soccer players. The heights are continuous data, since height is measured.

60; 60.5; 61; 61; 61.5; 63.5; 63.5; 63.5; 64; 64; 64; 64; 64; 64; 64; 64.5; 64.5; 64.5; 64.5; 64.5; 64.5; 64.5; 66; 66; 66; 66; 66; 66; 66; 66; 66.5; 66.5; 66.5; 66.5; 66.5; 66.5; 66.5; 66.5; 66.5; 67; 67; 67; 67; 67; 67; 67; 67; 67; 67.5; 67.5; 67.5; 67.5; 67.5; 67.5; 68; 68; 69; 69; 69; 69; 69; 69; 69; 69; 69.5; 69.5; 69.5; 69.5; 69.5; 70; 70; 70; 70; 70.5; 70.5; 70.5; 71; 71; 71; 72; 72; 72; 72.5; 72.5; 73; 73.5; 74

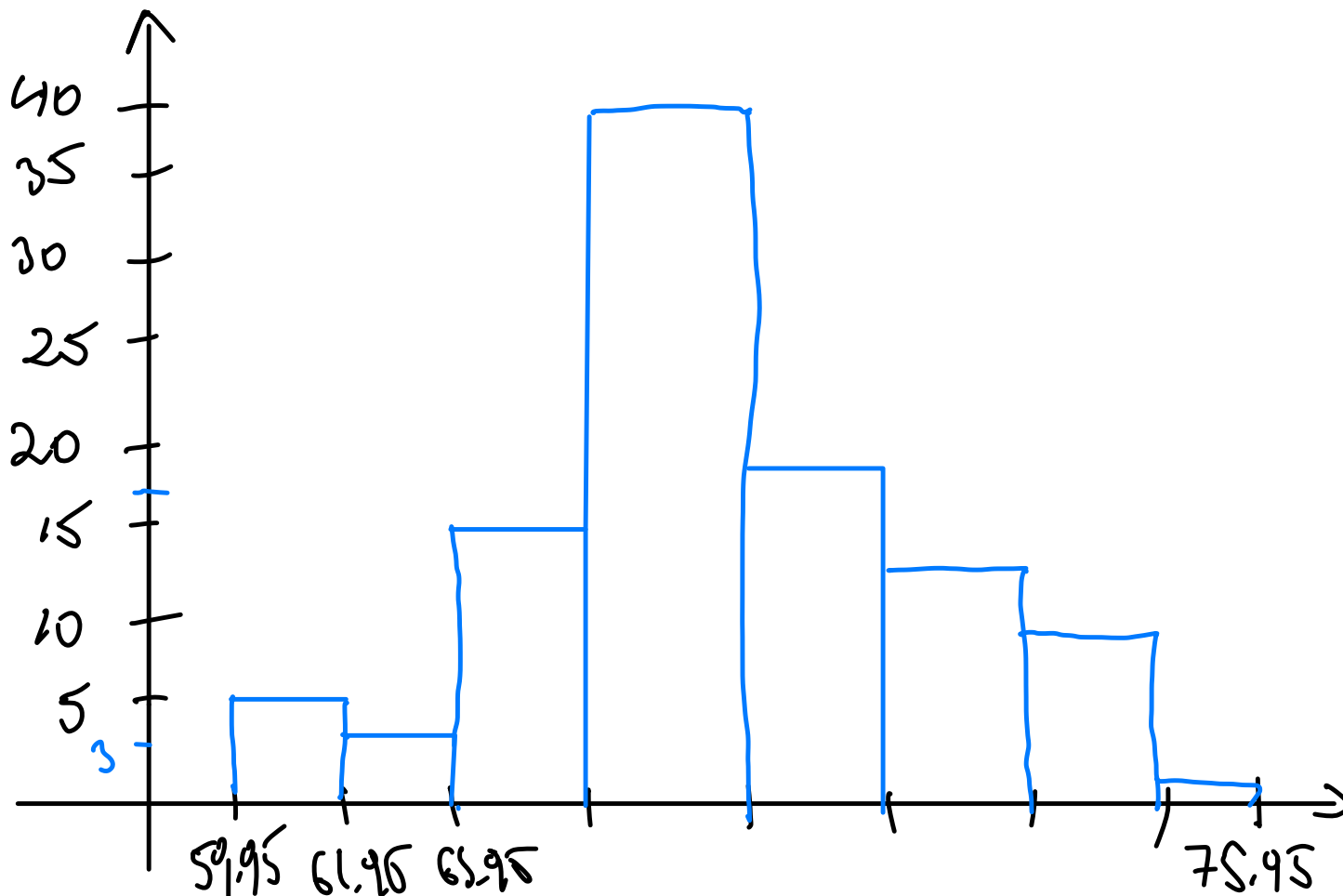
CLASSES	FREQUENCY (f)	BOUNDARIES	RELATIVE FREQUENCY
60.0 – 61.9	5	59.95 – 61.95	.05
62.0 – 63.9	3	61.95 – 63.95	.03
64.0 – 65.9	15	63.95 – 65.95	.15
66.0 – 67.9	40	65.95 – 67.95	.4
68.0 – 69.9	17	67.95 – 69.95	.17
70.0 – 71.9	12	69.95 – 71.95	.12
72.0 – 73.9	7	71.95 – 73.95	.07
74.0 – 75.9	1	73.95 – 75.95	.01

Recall:

$$\frac{62 - 61.9}{2} = \frac{0.1}{2}$$

0.05

Construct a histogram for the above data.



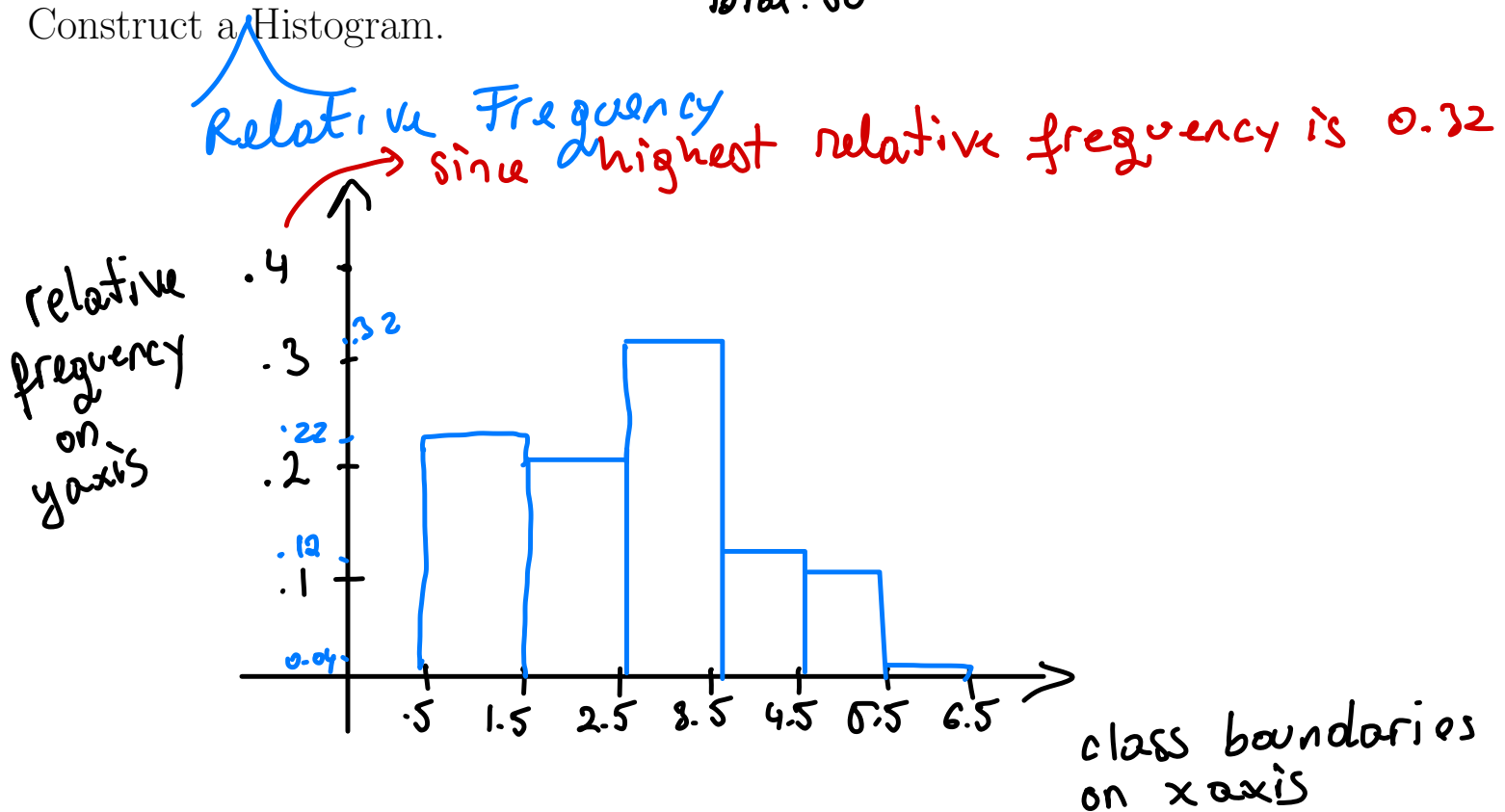
Example 2. Histograms for ungrouped frequency distribution. The following data are the number of books bought by 50 part-time college students at the College of Lake County. The number of books is discrete data, since books are counted.

BOOKS	FREQUENCY (f)
1	11
2	10
3	16
4	6
5	5
6	2

BOUNDARIES	FREQUENCY	Relative Frequency
.5 – 1.5	11 / 50	.22
1.5 – 2.5	10 / 50	.2
2.5 – 3.5	16 / 50	.32
3.5 – 4.5	6 / 50	.12
4.5 – 5.5	5 / 50	.1
5.5 – 6.5	2 / 50	.04

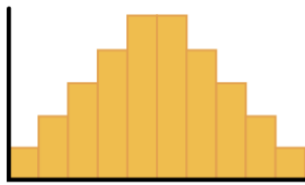
Total: 50

Construct a Histogram.

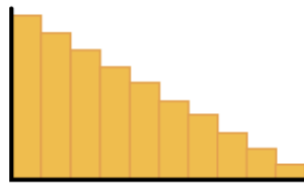


Description of graphs

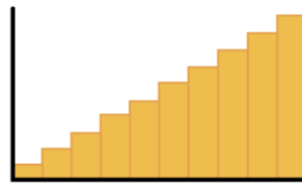
- **Symmetric:** Majority of data in the center, the data tapers off on each side.
- **Skewed Left:** Majority of data on right, tail on left.
- **Skewed Right:** Majority of data on left, tail on right.
- **Uniform:** Data spread out evenly



Normal distribution
(unimodal, symmetric,
the "bell curve")



Right-skewed distribution
(Positively-skewed)



Left-skewed distribution
(Negatively-skewed)



Uniform distribution
(equal spread,
no peaks)

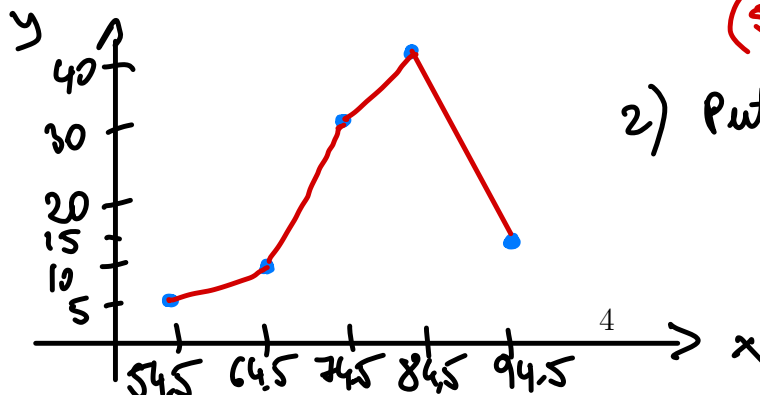
Frequency Polygon

A frequency polygon is a line graph with midpoints of each class on the x-axis and frequency or relative frequency on y-axis.

Example 3. Construct a frequency polygon using the distribution of some

Statistic Final Test Scores.

CLASSES	FREQUENCY (f)
50 - 59	5
60 - 69	10
70 - 79	30
80 - 89	40
90 - 99	15



Steps to build a frequency polygon

1) Find the midpoint of each class and put them

on the x-axis

$$(50+59)/2 = 54.5$$

2) Put the frequencies on y-axis

3) Plot a dot for each midpoint and its corresponding frequency

4) Connect the dots to get the polygon