Statistics

Spring 2023

Lecture 4

Feb 19-8:47 AM

Collecting data, organize, and graph: $\boxed{SG\ 3\ \&\ 4}$

I randomly selected 20 exams, and here are the scores:

58 60 62 68 70
70 73 75 75 75
78 82 84 84 88
90 95 98 100 100

1) Sample Size $\boxed{n=20}$

2) Range = Max. $-$ Min.
$= 100 - 58 = \boxed{42}$

3) Midrange $= \dfrac{Max. + Min.}{2} = \dfrac{100 + 58}{2} = \dfrac{158}{2} = \boxed{79}$

4) Mode = 75

We wish to organize this sample into a frequency table with 4 classes.

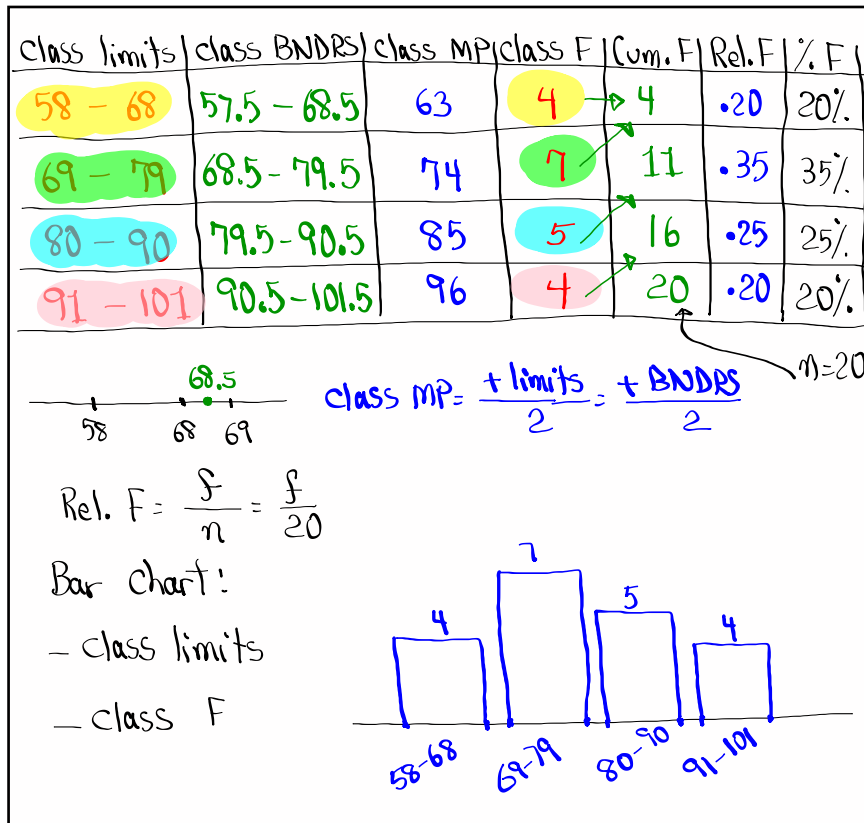$\boxed{\text{Class width} = \dfrac{Range}{\#\ of\ classes}}$

If decimal $\Rightarrow$ Round-up

If whole # $\Rightarrow$ Add 1

Class width $= \dfrac{42}{4} = 10.5$

$\boxed{CW = 11}$

Feb 9-7:19 AM

Class limits	class BNDRS	class MP	class F	Cum. F	Rel. F	% F
58 – 68	57.5 – 68.5	63	4 → 4		.20	20%
69 – 79	68.5 – 79.5	74	7 → 11		.35	35%
80 – 90	79.5 – 90.5	85	5 → 16		.25	25%
91 – 101	90.5 – 101.5	96	4 → 20		.20	20%

$n = 20$

$$\text{Class MP} = \frac{+\text{ limits}}{2} = \frac{+\text{ BNDRS}}{2}$$

$$\text{Rel. F} = \frac{f}{n} = \frac{f}{20}$$

Bar chart:
- class limits
- class F

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Histogram:

- class BNDRS

- class F

Ogive:

- class BNDRS

- Cum. F.
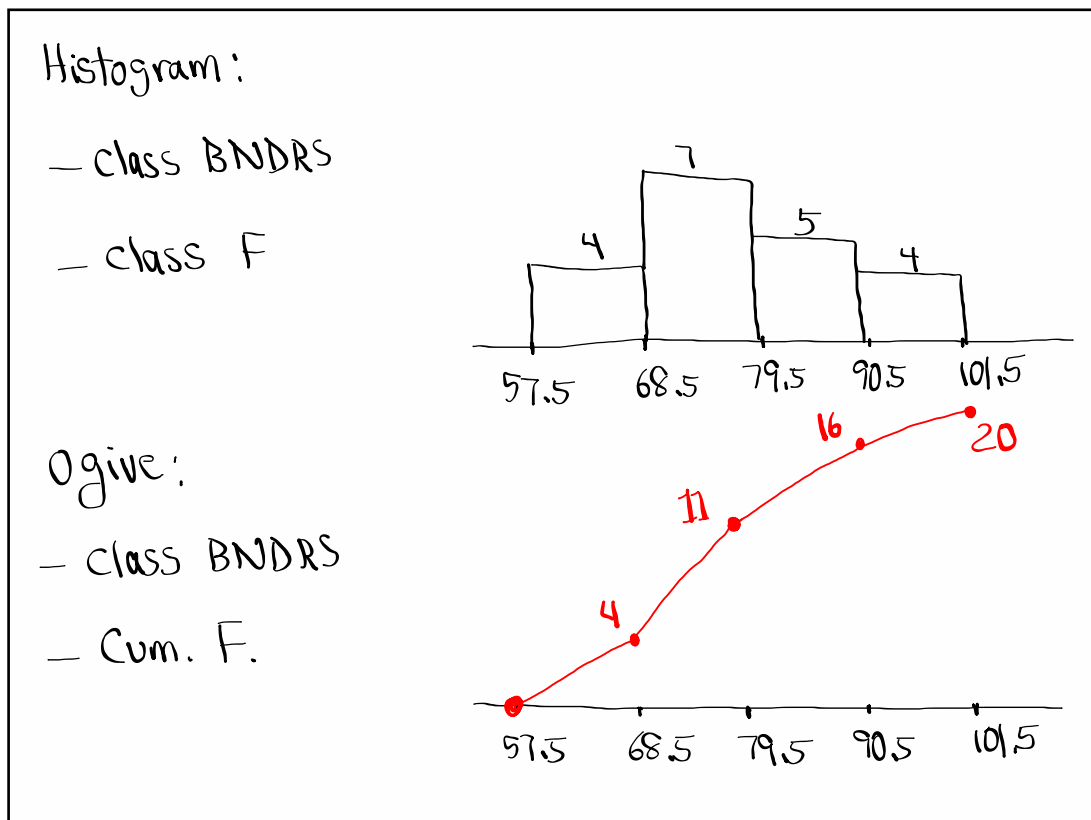
Feb 9-7:44 AM

Freq. Polygon

— class MP ✓

— extra MP on each side

— class F

52   63   74   85   96   107
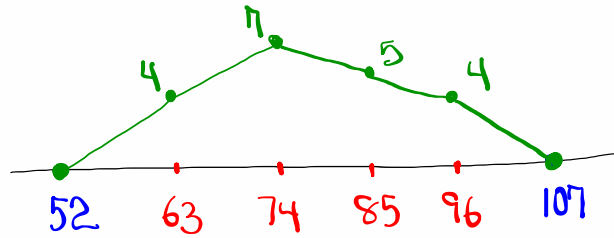
Pie chart

— class limits

— % F

— Circle

35%. 69-79

20%. 58-68

25%. 80-90

91-101 20%.
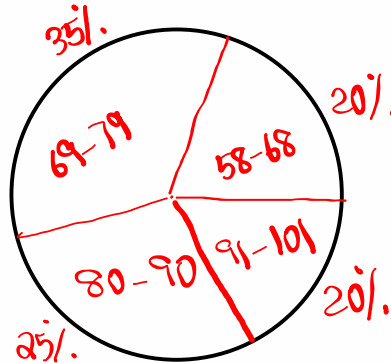
STEM Plot

(Data must be Sorted)

58   60   62   68   70

70   73   75   75   75

78   82   84   84   88

90   95   98   100   100

5	8
6	0 2 8
7	0 0 3 5 5 5 8
8	2 4 4 8
9	5 8
10	0 0

Consider the Bar chart below

1) How many classes?

3

2) class width

9

3) Sample Size

$n = 25$ ✓

4) Complete the table below:

Class limits	Class BNDRS	Class MP	Class F	Cum. F	Rel. F	%. F
20 – 28	19.5 – 28.5	24	7	7	.28	28%
29 – 37	28.5 – 37.5	33	13	20	.52	52%
38 – 46	37.5 – 46.5	42	5	25	.20	20%

Rel. $F = \dfrac{f}{n} = \dfrac{f}{25}$

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Histogram

— Class MP

— Rel. F.

Ogive

— Class BNDRS

— Cum. F.
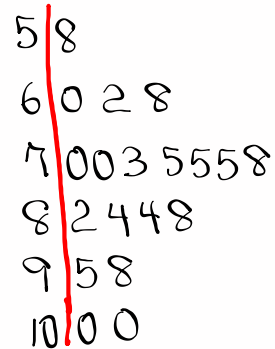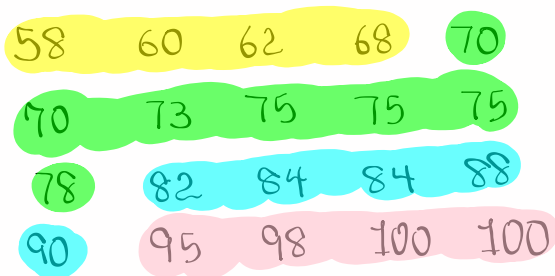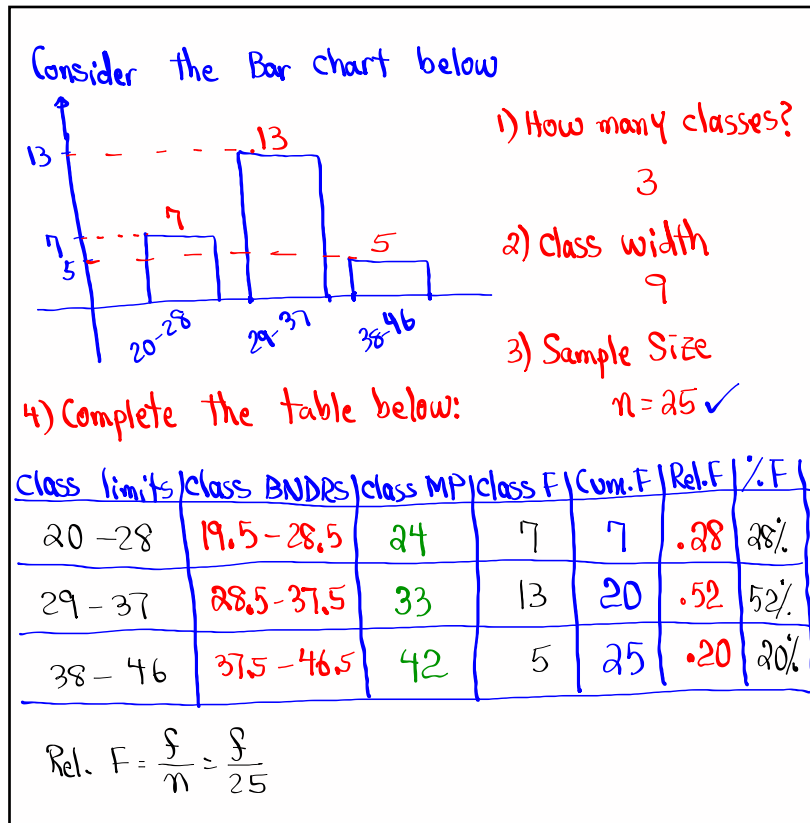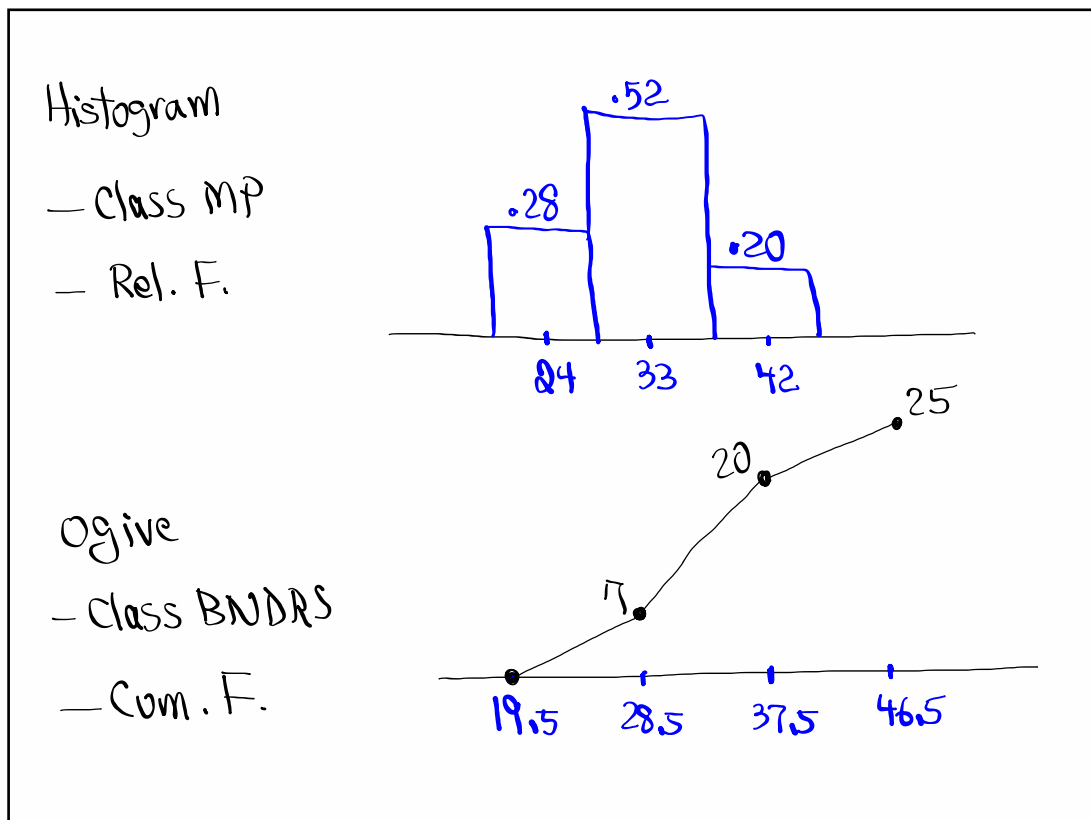
Feb 9-8:11 AM

Freq. Polygon
- class MP
- extra MP on each side
- class F

13

7

5

15   24   33   42   51
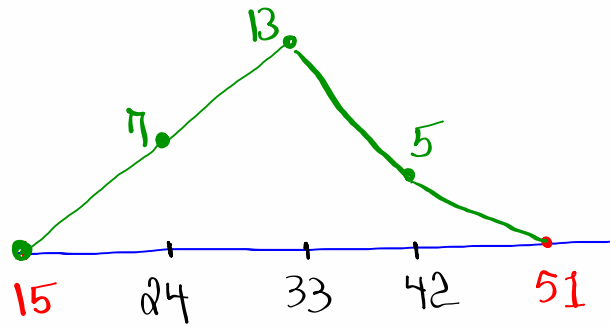
Pie chart
- Circle
- class MP
- % F

28%

7

33   42

52%   20%

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