Statistics

Lecture 2

Feb 19-8:47 AM

Organizing Data Set

We can do this in a table called

Frequency table.

Class limits	Class BNDRS	Class MP	Class F	Cum. F	Rel. F	%F

In order to make the table,

1) How many classes (will be given)

2) Range of data Set. Range = Max − Min

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

If decimal → Round-up

If whole → Add 1

Feb 12-1:48 PM

A data set has a min. value of 50 and max. value of 90.

1) Range = Max − Min = 90 − 50 = 40

2) Class width if we wish to have 4 classes.

Class width = $\frac{\text{Range}}{4} = \frac{40}{4} = 10$ ↑ whole # CW = 11

3) Class width if we wish to have 3 classes.

Class width = $\frac{\text{Range}}{3} = \frac{40}{3} = 13.\overline{3}$ ↑ Decimal CW = 14

Feb 12-1:55 PM

I randomly selected 20 students and here are their ages.

18 19 20 20 24
25 25 25 28 28
29 30 31 32 32
32 35 36 39 40

1) Sample Size $n = 20$

2) Max = 40 Min = 18

3) Range = Max − Min
= 40 − 18 = 22

4) Find class width if we wish to have a freq. table with 3 classes.

Class width = $\frac{\text{Range}}{\#\text{ classes}} = \frac{22}{3} = 7.\overline{3}$ ↑ Decimal CW = 8

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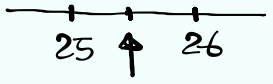
Class limits	Class BNDRS	Class MP	Class F	Cum. F	Rel. F	%F
18 – 25	17.5 – 25.5	21.5	8	8	.40	40%
26 – 33	25.5 – 33.5	29.5	8	16	.40	40%
34 – 41	33.5 – 41.5	37.5	4	20	.20	20%



Class MP = $\frac{\text{class limits}}{2} = \frac{18+25}{2}$

$n = 20$

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

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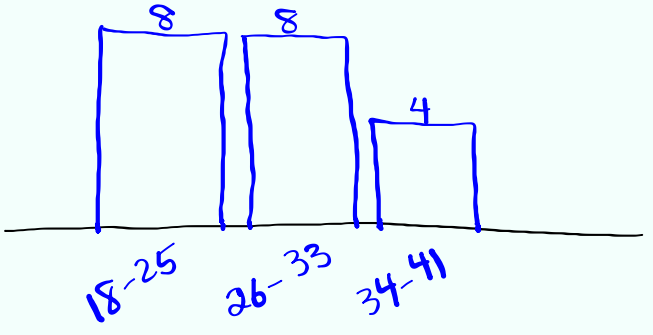
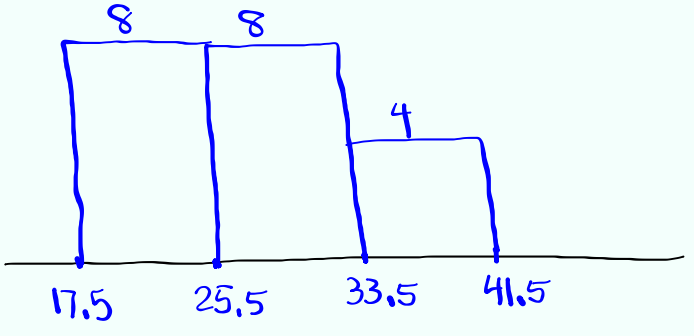
Bar chart

- Class limits
- Class F



Histogram

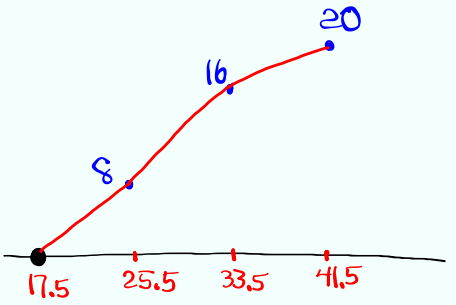
- Class BNDRS
- Class F



Feb 12-2:17 PM

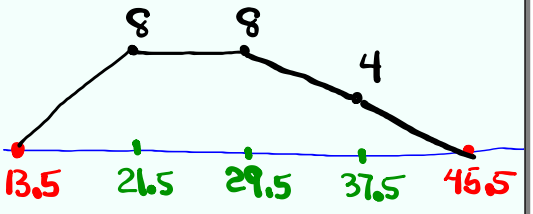
Ogive

- Class BNDRS
- Cum. F
- Start at 0 level.



Freq. Polygon

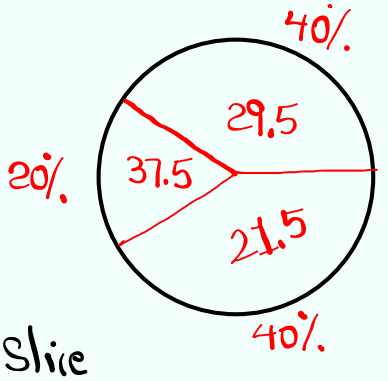
- Class MP
- Class F
- Extra MP, one on each side
- Start & Finish at 0 level



Feb 12-2:21 PM

Pie chart

- Circle
- % F for size of each slice
- class MP to name each slice



Feb 12-2:26 PM

I randomly selected 25 exams, here are the Scores:

54	58	60	62	68
68	70	72	75	75
75	78	79	80	82
84	84	84	88	89
90	92	94	96	98

1) $n = 25$

2) Min. = 54 Max. = 98

3) Range = Max − Min.
$= 98 - 54 = \boxed{44}$

4) Midrange $= \frac{\text{Max} + \text{Min}}{2} = \frac{98+54}{2} = \boxed{76}$

5) Find class width if we wish to have 4 classes.

Class width $= \frac{\text{Range}}{\#\text{classes}} = \frac{44}{4} = 11$ ↑ whole #

CW = 12

Feb 12-2:29 PM

Class limits	Class BNDRS	class MP	class F	Cum. F	Rel. F	% F
54 – 65	53.5–65.5	59.5	4	4	.16	16%
66 – 77	65.5–77.5	71.5	7	11	.28	28%
78 – 89	77.5–89.5	83.5	9	20	.36	36%
90 – 101	89.5–101.5	95.5	5	25	.20	20%

↑ $n = 25$

Class MP $= \frac{\text{class limits}}{2} = \frac{54+65}{2}$

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

what % of Scores were below 90? 36% + 28% + 16%
$= 80\%$

what % of Scores were above 65?

28% + 36% + 20% = 84%

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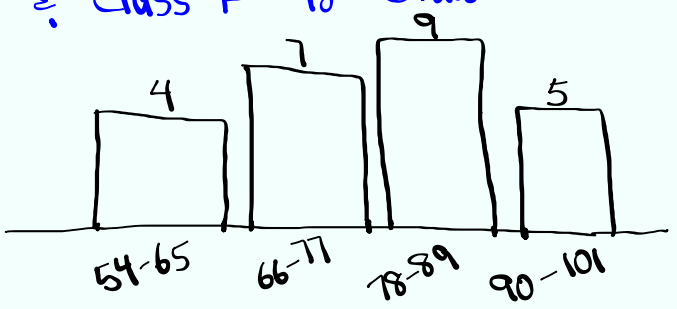
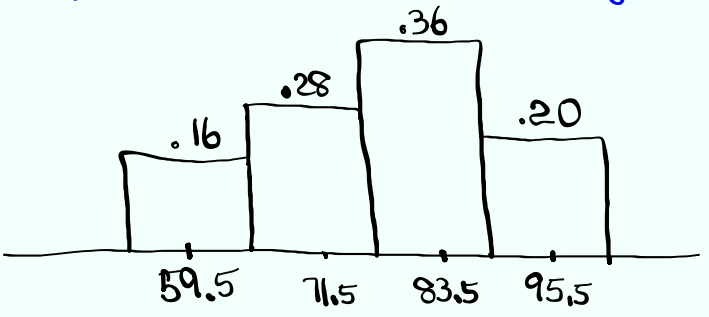
Use class limits & class F to draw Bar chart.



Use class MP & Rel. F to draw histogram.



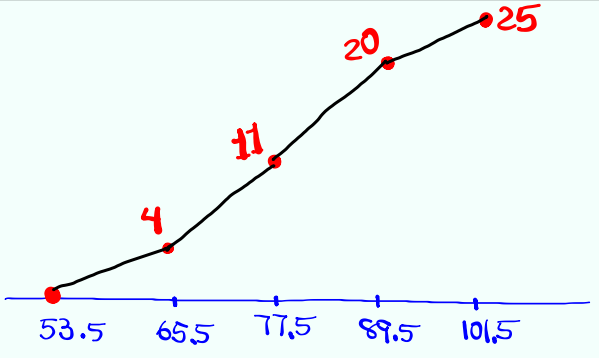
Feb 12-2:50 PM

Ogive

Class BNDRS

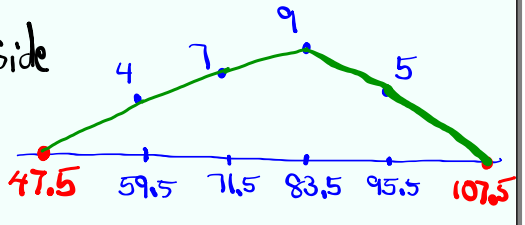
Cum. F

Start at 0.



Freq. Polygon

- class MP
- class F
- additional MP one on each side
- Start & finish @ 0 level.



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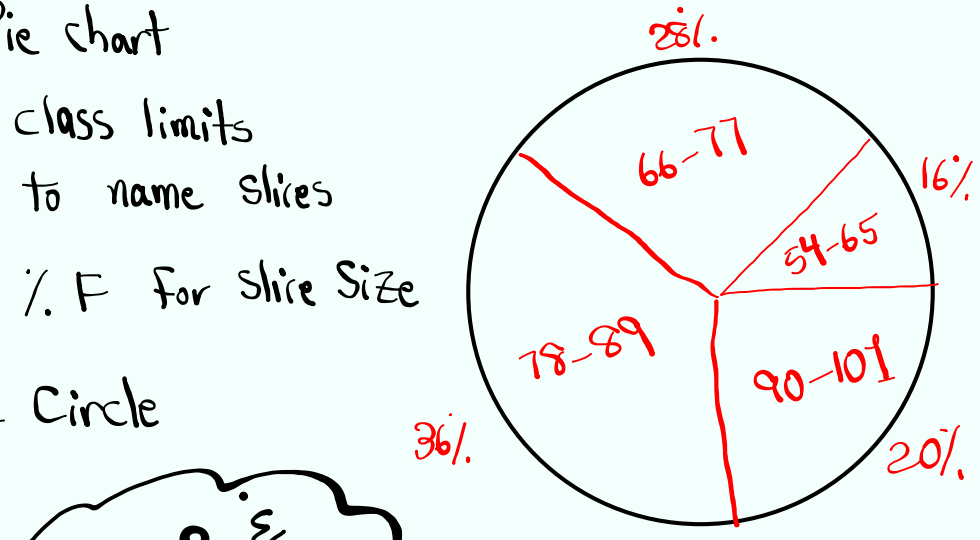
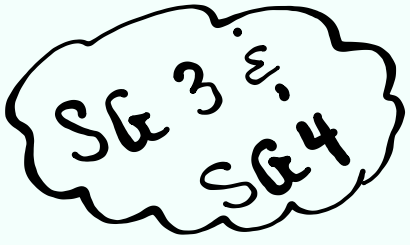
Pie chart

- class limits to name slices
- % F for slice size
- Circle





Feb 12-3:03 PM