

# Math 110

## Winter 2021

### Lecture 2



Ch. 2 SE 3 & 4

- 1) Collect data
- 2) organize them
- 3) Graph them

I randomly selected 20 students, and here are their ages:

18 19 19 21 23

25 25 28 29 30

30 31 32 35 38

40 41 43 45 48

1) Sample Size  $n = 20$

2) Min = 18, Max = 48

3) Range = Max - Min  
 $= 48 - 18 = \boxed{30}$

4) Midrange =  $\frac{\text{Max} + \text{Min}}{2}$   
 $= \frac{48 + 18}{2} = \boxed{33}$

5) Mode = 19, 25, 30  
 Trimodal

6) Construct a Freq. table  
 with 3 classes.  
 Class width =  $\frac{\text{Range}}{\# \text{ of classes}} = \frac{30}{3}$   
 $= 10$

If decimal  $\Rightarrow$  Round-up

If whole  $\Rightarrow$  Add 1  $\Rightarrow \boxed{CW = 11}$

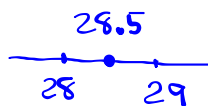
CW= 11

Class limits	Class BNDRS	Class MP	class F	Cum. F	Rel. F	%F
18 - 28	17.5 - 28.5	23	8	8	.40	40%
29 - 39	28.5 - 39.5	34	7	15	.35	35%
40 - 50	39.5 - 50.5	45	5	20	.25	25%

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

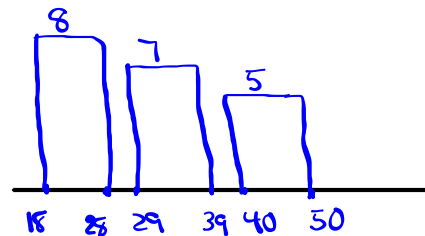
$n=20$

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



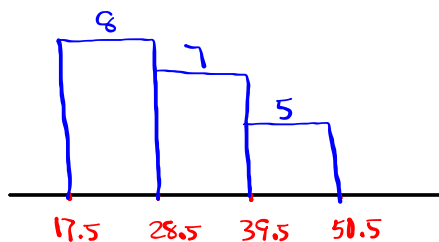
① Bar chart

- class limits
- class F.



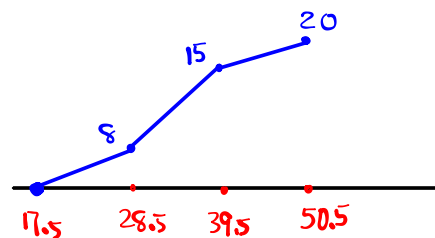
Histogram

- class BNDRS or class MP
- class F or Rel. F



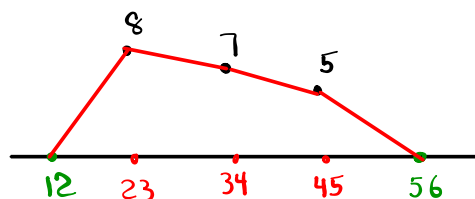
Ogive

- class BNDRS
- Cum. F.



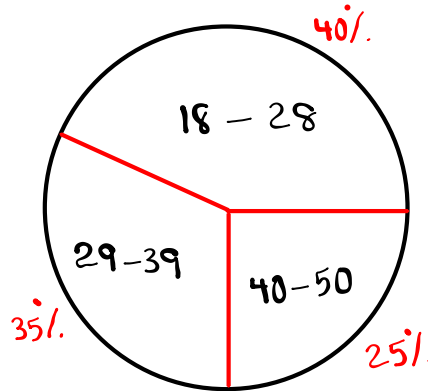
Freq. Polygon

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



Pie chart

- Circle
- % F
- Class limits



Complete the table below

CW=10

$62 - 52 = 10$

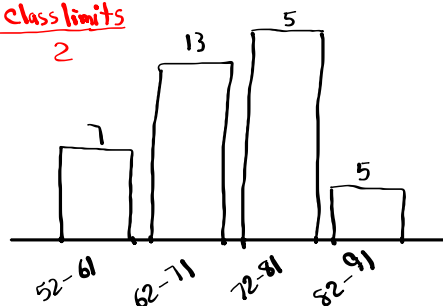
$72 - 62 = 10$

Class limits	Class BNDPS	Class MP	Class F	Cum.F	Rel.F	% F
52 - 61	51.5 - 61.5	56.5	7	7	.175	17.5%
62 - 71	61.5 - 71.5	66.5	13	20	.325	32.5%
72 - 81	71.5 - 81.5	76.5	15	35	.375	37.5%
82 - 91	81.5 - 91.5	86.5	5	40	.125	12.5%

4 classes,  $n = 7 + 13 + 15 + 5 = 40$ ,  $Rel.F = \frac{F}{n} = \frac{F}{40}$

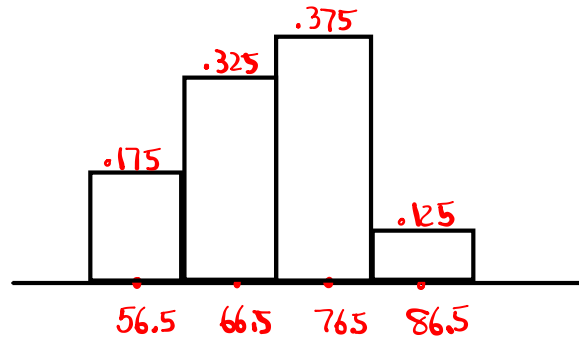
Class mp:  $\frac{\text{+class limits}}{2}$

Bar chart



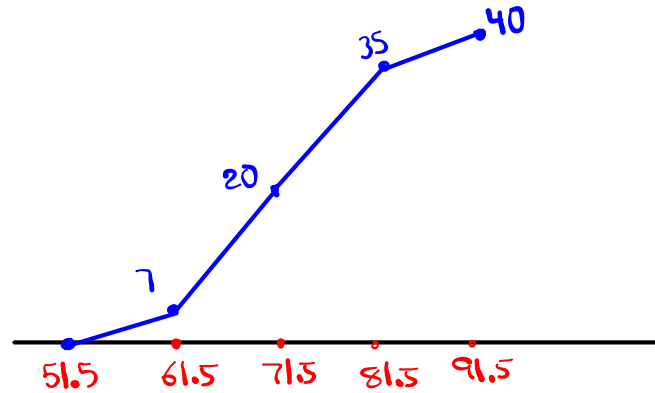
### Histogram

Class MP & Rel.F.



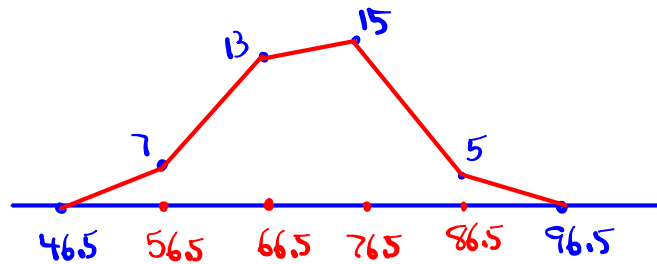
### Ogive

- Class BNDRS
- Cum. F



### Freq. Polygon

- Class MP
- Extra MP
- Class F

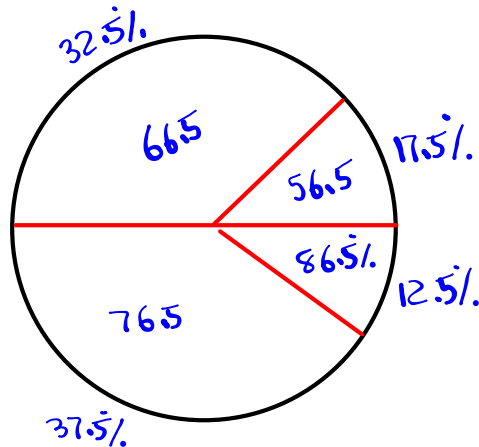


### Pie chart

Circle

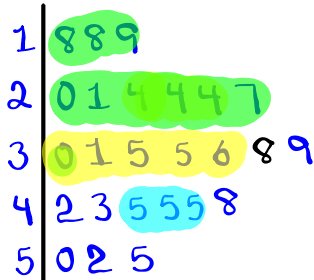
% F

class MP  
to label  
slice



The following display is called Stem Plot.

Always sorted



1)  $n = 25$

2) Range =  $55 - 18 = 37$

3) Midrange =  $\frac{55 + 18}{2} = 36.5$

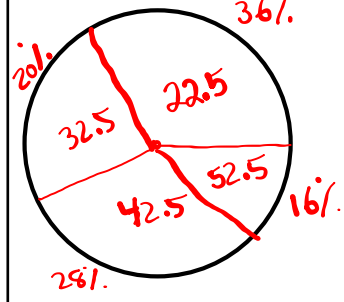
4) Mode: 24 & 45 Bimodal

5) Class width for 4 classes.  $CW = \frac{\text{Range}}{4} = \frac{37}{4} = 9.25$

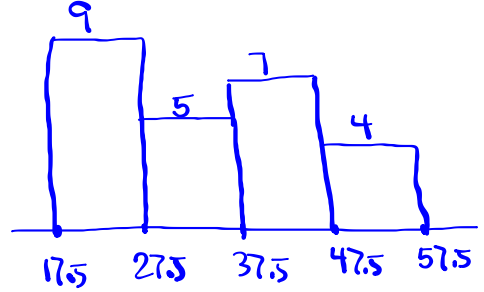
$CW = 10$

Class limits	Class BNDRS	Class MP	Class F	Cum. F	Rel. F	% F
18 - 27	17.5 - 27.5	22.5	9	9	.36	36%
28 - 37	27.5 - 37.5	32.5	5	14	.20	20%
38 - 47	37.5 - 47.5	42.5	7	21	.28	28%
48 - 57	47.5 - 57.5	52.5	4	25	.16	16%

Pie chart



Histogram



Class QZ 1

① Simplify:  $\frac{8 \cdot 150 - 30^2}{8 \cdot 7}$

② Find  $8! - 5!$

③ Draw  $y = \frac{2}{5}x - 2$