Math 110

Winter 2021

Lecture 2

Ch. 2   SG 3 & 4.

1) Collecting data

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

18   19   21   25   25
25   28   30   30   30
32   34   35   37   39
40   42   45   47   48

2) Organize data

3) Graph them

1) Sample Size $n = 20$

2) Min = 18 , Max = 48

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

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

5) Mode = 25 & 30 — AND
   Bimodal

6) Make a freq. dist. table with 3 classes.

Class width = $\dfrac{Range}{\#classes} = \dfrac{30}{3} = 10$

when decimal → Round-up
when whole → 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	7 → 7	.35	35%
29 — 39	28.5 – 39.5	34	8	15	.40	40%
40 — 50	39.5 – 50.5	45	5	20	.25	25%

$$\text{Class MP} = \frac{+ \text{ Class limit}}{2}$$

28 • 29

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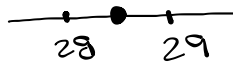
$$\text{Rel. F} = \frac{F}{n} = \frac{F}{20}$$

① Bar chart
- Class limits
- Class F.

7   8   5
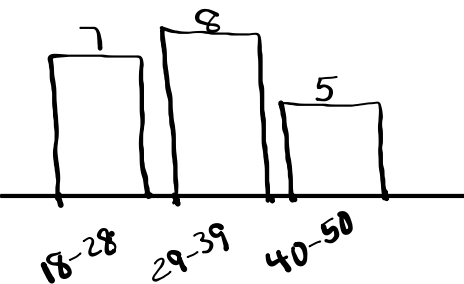
18-28   29-39   40-50

Histogram
- Class BNDRS
- Class F

7   8   5

17.5   28.5   39.5   50.5

Ogive
- Class BNDRS
- Cum. F

7   15   20

17.5   28.5   39.5   50.5
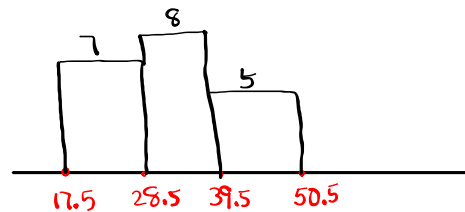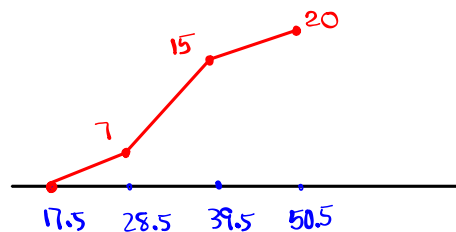
Freq. Polygon
- Class MP
- Extra MP, one on each side
- Class F

7   8   5

12   23   34   45   56
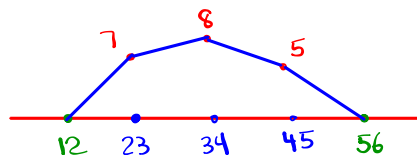
Pie chart
- Circle
- % F
  - Class MP or
  class limits to label slices.

Pie chart slices: 18-28 (35%), 29-39 (40%), 40-50 (25%)
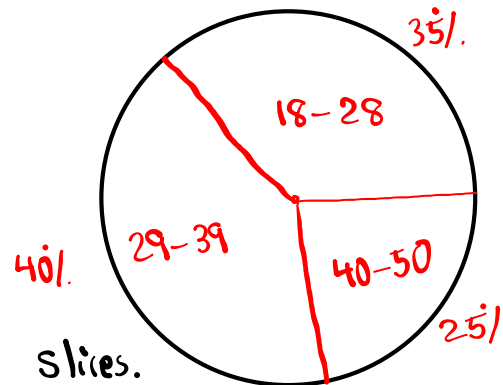
Complete the chart below

Class limits	Class BNDRS	Class MP	Class F	Cum. F	Rel. F	%.F
20 - 28	19.5 - 28.5	24	6 →	6	.150	15.0%
29 - 37	28.5 - 37.5	33	13	19	.325	32.5%
38 - 46	37.5 - 46.5	42	16	35	.400	40.0%
47 - 55	46.5 - 55.5	51	5	40	.125	12.5%

4 Classes, $n = 6 + 13 + 16 + 5 = 40$

$CW = 29 - 20 = 9$

$Rel. F = \dfrac{F}{n} = \dfrac{F}{40}$

$Class\ MP = \dfrac{+ Class\ limits}{2}$

Bar Chart
- Class limits
- Class F

Bar chart: 20-28 (6), 29-37 (13), 38-46 (16), 47-55 (5)

Histogram
- Class MP
- Rel. F.

.400

.325

.150

.125

24   33   42   51

Ogive
- Class BNDRS
- Cum. F.

40

35

19

6

19.5   28.5   37.5   46.5   55.5
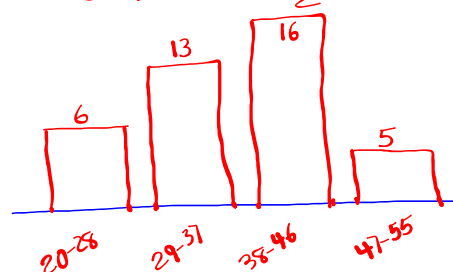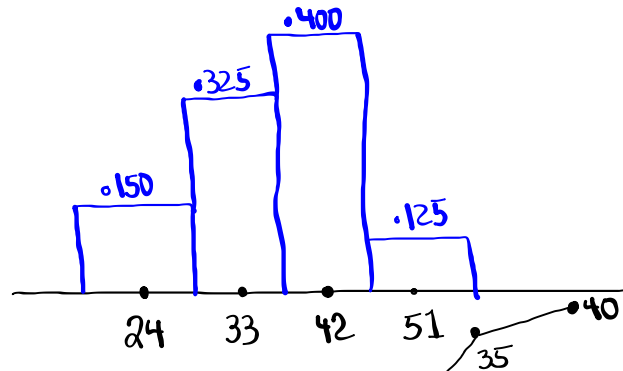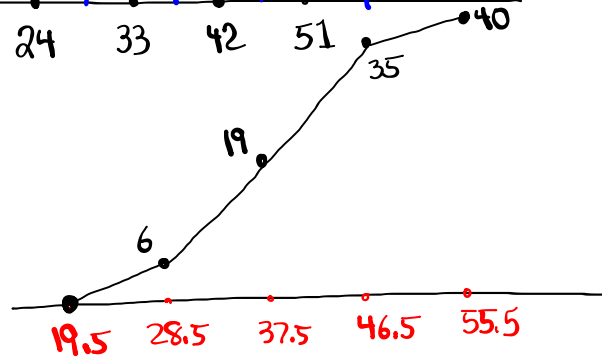
Freq. Polygon
- Class MP
- Extra MP
- Class F

16

13

6

5

15   24   33   42   51   60
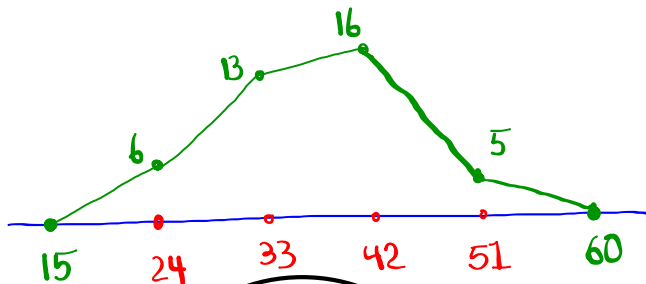
Pie chart
- Circle
- % F
  - Class MP to
    label each slice

32.5%

33

15%

24

51

42

12.5%

40%
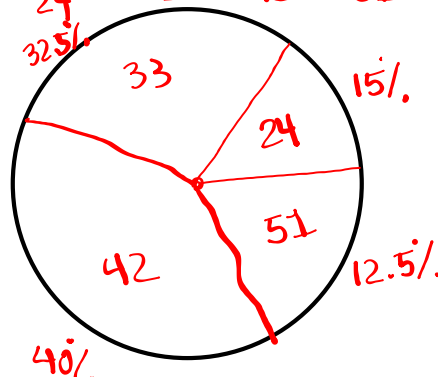
Display below is called **Stem Plot**

Data must be Sorted

```
1 | 8 8 9
2 | 0 3 5 5 8 8 8
3 | 0 2 4 7 8
4 | 2 3 5 6 8 8 9
5 | 0 2 5
```

1) $n = 25$

2) Range $= 55 - 18 = 37$

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

4) Mode $= 28$

5) Find Class width for 4 classes.

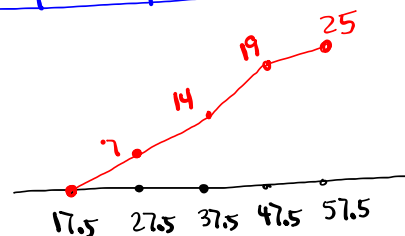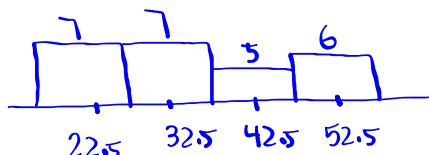$$CW = \dfrac{Range}{4} = \dfrac{37}{4} = 9.25$$

$$\boxed{CW = 10}$$

CW = 10

Class limits	Class BNDRS	Class MP	Class F	Cum. F	Rel. F	% F
18 – 27	17.5 – 27.5	22.5	7 → 7	7	.28	28%
28 – 37	27.5 – 37.5	32.5	7	14	.28	28%
38 – 47	37.5 – 47.5	42.5	5	19	.20	20%
48 – 57	47.5 – 57.5	52.5	6	25	.24	24%

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

Ogive

Histogram

SG 3 & 4

Class QZ 1

1) Simplify $\dfrac{10 \cdot 150 - 30^2}{10 \cdot 11}$ 3-decimals

2) Simplify $\dfrac{8!}{5!}$ 3) Draw $y = \dfrac{3}{5}x - 3$