# Statistics

# Lecture 3

Feb 19-8:47 AM

I Surveyed 20 students. Here are their ages:

17 18 18 20 24
25 25 28 30 32
33 35 35 38 40
42 45 46 47 50

1) Sample Size
$n = 20$

2) Min = 17 , Max = 50

3) Range = Max − Min = 50 − 17 = 33

4) Midrange = $\frac{\text{Max} + \text{Min}}{2} = \frac{50+17}{2} = \frac{67}{2} = 33.5$

5) Mode = 18, 25, 35 Trimodal

I want to organize this data in a freq. table with 3 classes (groups)

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

If decimal → Round-up
If whole # → Add 1

$CW = \frac{33}{3} = 11$

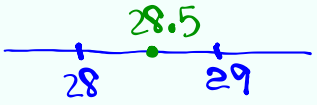
CW = 12

Mar 2-10:00 AM

| class limits | class BNDRS | class MP | class F | Cum. F | Rel. F | % F |
|---|---|---|---|---|---|---|
| 17 – 28 | 16.5 – 28.5 | 22.5 | 8 | 8 | .40 | 40% |
| 29 – 40 | 28.5 – 40.5 | 34.5 | 7 | 15 | .35 | 35% |
| 41 – 52 | 40.5 – 52.5 | 46.5 | 5 | 20 | .25 | 25% |

$n = 20$

CW = 12

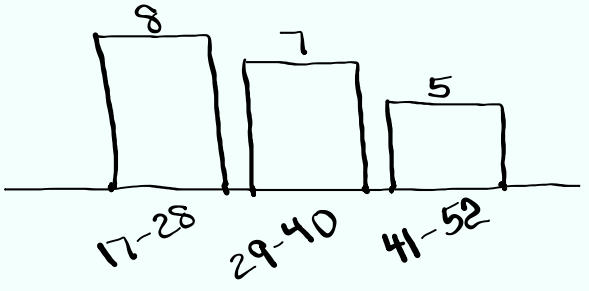



$$\text{class MP} = \frac{\text{+class limits}}{2}$$

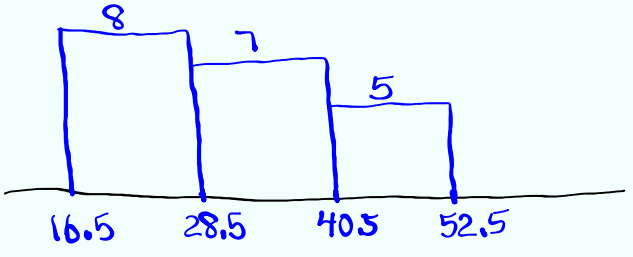
$$\text{Rel. F} = \frac{f}{n} = \frac{f}{20}$$

Mar 2-10:12 AM

Bar Chart
- class limits
- class F

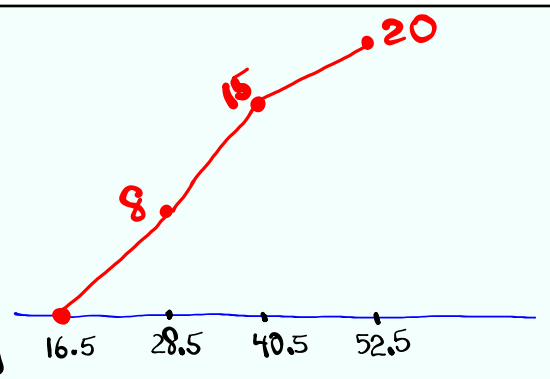



Histogram
- class BNDRS
- class F

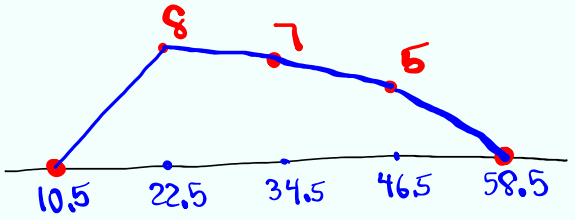



Mar 2-10:29 AM

Ogive
- class BNDRS
- Cum. F
- Start at 0 level.
- Always increasing



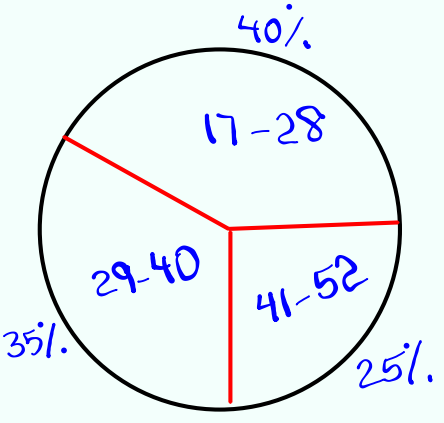

Freq. Polygon
- class MP
- class F
- one extra MP on each side
- Start & Stop at 0 level.




Mar 2-10:33 AM

Pie Chart
- Circle
- class limits (Name Slice)
- % F (Slice Size)

Sec 3.4




Mar 2-10:40 AM

I randomly selected 25 exams. Here are the Scores:

| | | | | |
|---|---|---|---|---|
| 50 | 58 | 60 | 63 | 67 |
| 70 | 72 | 75 | 75 | 75 |
| 78 | 80 | 82 | 85 | 85 |
| 85 | 88 | 90 | 92 | 93 |
| 95 | 95 | 98 | 100 | 100 |

1) $n = 25$

2) Min. = 50 Max = 100

3) Range = Max − Min = 50

4) Midrange = $\frac{\text{Max} + \text{Min}}{2}$ = $\frac{100+50}{2}$ = 75

5) Mode 75 & 85 Bimodal

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

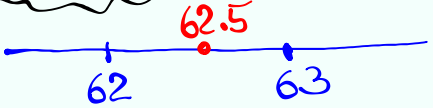
$CW = \frac{\text{Range}}{4} = \frac{50}{4} = 12.5$ → CW = 13

Mar 2-10:44 AM

| class limits | class BNDRS | class MP | class F | Cum. F | Rel. F | % F |
|---|---|---|---|---|---|---|
| 50 – 62 | 49.5 – 62.5 | 56 | 3 | 3 | .12 | 12% |
| 63 – 75 | 62.5 – 75.5 | 69 | 7 | 10 | .28 | 28% |
| 76 – 88 | 75.5 – 88.5 | 82 | 7 | 17 | .28 | 28% |
| 89 – 101 | 88.5 – 101.5 | 95 | 8 | 25 | .32 | 32% |

25 = n

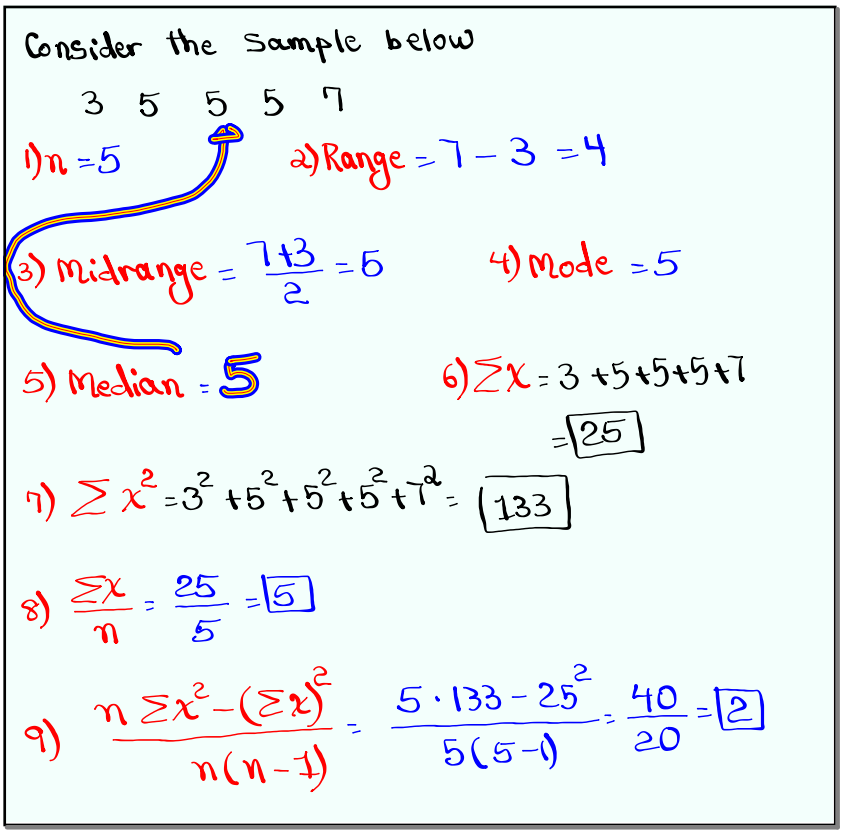
CW = 13




Class MP = $\frac{\text{class limits}}{2}$ Rel. F = $\frac{f}{n}$ = $\frac{f}{25}$

Do all the graph & we go over them next time.

Mar 2-10:52 AM


Consider the sample below
3 5 5 5 7
1) n = 5
2) Range = 7 − 3 = 4
3) Midrange = 7+3/2 = 5
4) Mode = 5
5) Median = 5
6) Σx = 3+5+5+5+7 = 25
7) Σx² = 3² + 5² + 5² + 5² + 7² = 133
8) Σx/n = 25/5 = 5
9) (n Σx² − (Σx)²) / (n(n−1)) = (5·133 − 25²)/(5(5−1)) = 40/20 = 2

Mar 2-11:05 AM