

Statistics

Lecture 2



Feb 19-8:47 AM

Class QZ 1

1) what kind of calculator do we use
for this class?

TI-83 OR TI-84 ✓

2) Find y when $x=8$ for $y=-5x+40$.

$$y = -5(8) + 40$$

$$= -40 + 40 \Rightarrow y = 0$$

Do not
use \emptyset
for 0.

Oct 23-9:42 AM

SG 3 & 4

Organize data & graph

I randomly selected 20 students and here are their ages:

→ Sample → Statistic

18	19	20	20	23
25	25	25	27	28
30	32	32	32	35
35	38	40	42	48

- 1) Sample Size $n=20$
- 2) Min. = 18, Max = 48
- 3) Range = Max - Min
= 48 - 18 = 30 ✓
- 4) Midrange = $\frac{\text{Max} + \text{Min}}{2} = \frac{48 + 18}{2} = \frac{66}{2} = 33$
- 5) Mode: 25 & 32 Bimodal

one way to organize this data is to make a frequency table.

To make a freq. table, we need to know how many classes to have. For each class → class width

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

If decimal → Round up

If whole # → Add 1

Suppose we wish to have 3 classes,
 class width = $\frac{\text{Range}}{3} = \frac{30}{3} = 10$

CW = 11 ✓

Oct 24-7:26 AM

class limits	class BNDRS	class MP	class F	Cum. F	Rel. F	% F
18 - 28	17.5 - 28.5	23	10	10	.50	50%
29 - 39	28.5 - 39.5	34	7	17	.35	35%
40 - 50	39.5 - 50.5	45	3	20	.15	15%

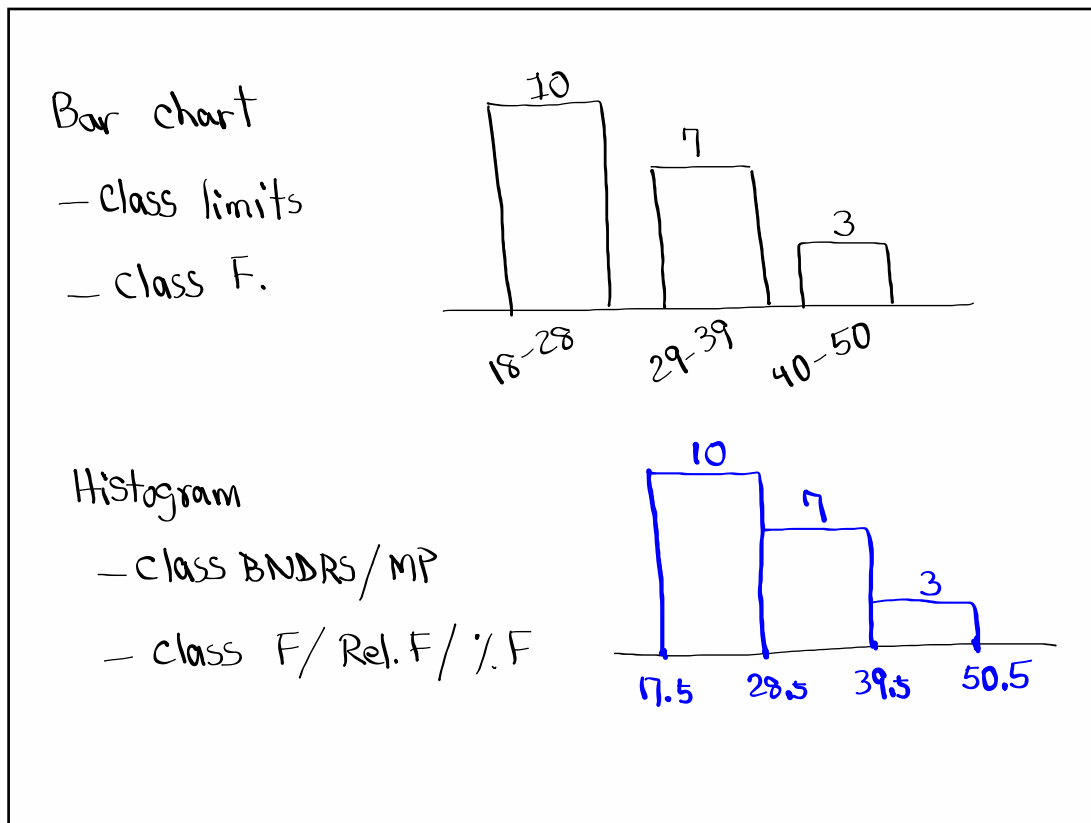
$\frac{28.5}{29}$, class MP = $\frac{\text{+class limits}}{2} = \frac{\text{+class BNDRS}}{2}$

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

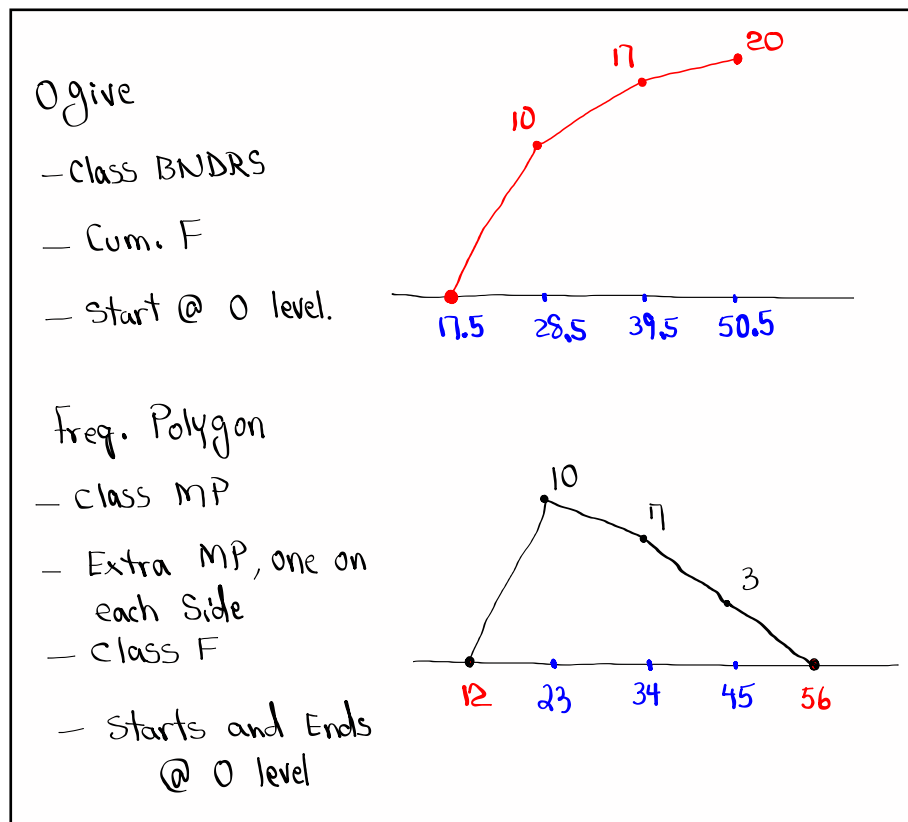
Here are some of graphs:

- 1) Bar chart
- 4) Freq. Polygon
- 2) Histogram
- 5) Pie chart
- 3) ogive
- 6) STEM Plot
- 7) Box Plot (TBDL)

Oct 24-7:38 AM



Oct 24-7:53 AM



Oct 24-7:57 AM

Pie chart

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

STEM Plot

"Data must be Sorted"

18	19	20	20	23
25	25	25	27	28
30	32	32	32	35
35	38	40	42	48

1	89
2	00355578
3	0222558
4	028

Oct 24-8:03 AM

Let's complete the following freq. table.

Class limits	Class BNDs	class MP	Class F	Cum. F	Rel. F	% F
52 - 64	51.5 - 64.5	58	3	3	.12	12%
65 - 77	64.5 - 77.5	71	7	10	.28	28%
78 - 90	77.5 - 90.5	84	10	20	.40	40%
91 - 103	90.5 - 103.5	97	5	25	.20	20%

1) 4 classes 2) CW = 65 - 52 = 78 - 65 = 91 - 78 = 13

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

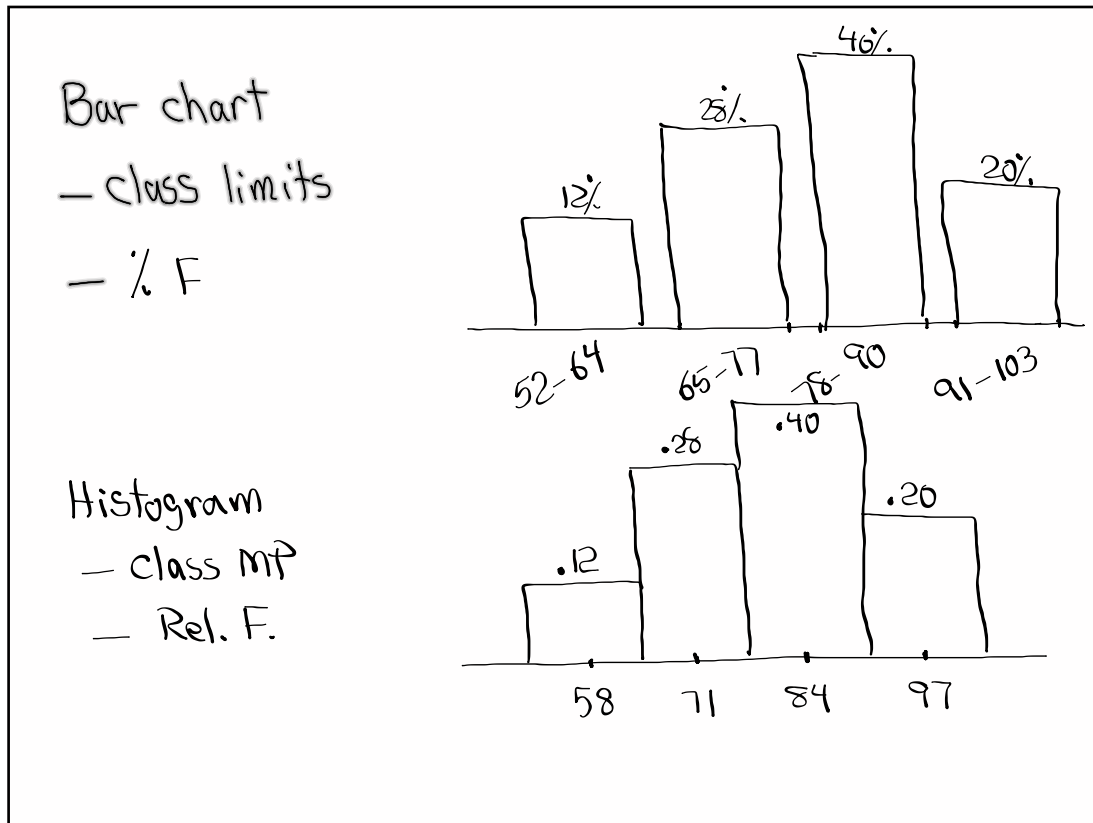
$$= \frac{52 + 64}{2} = 58$$

$$\text{Rel. F} = \frac{S}{n} = \frac{S}{25}$$

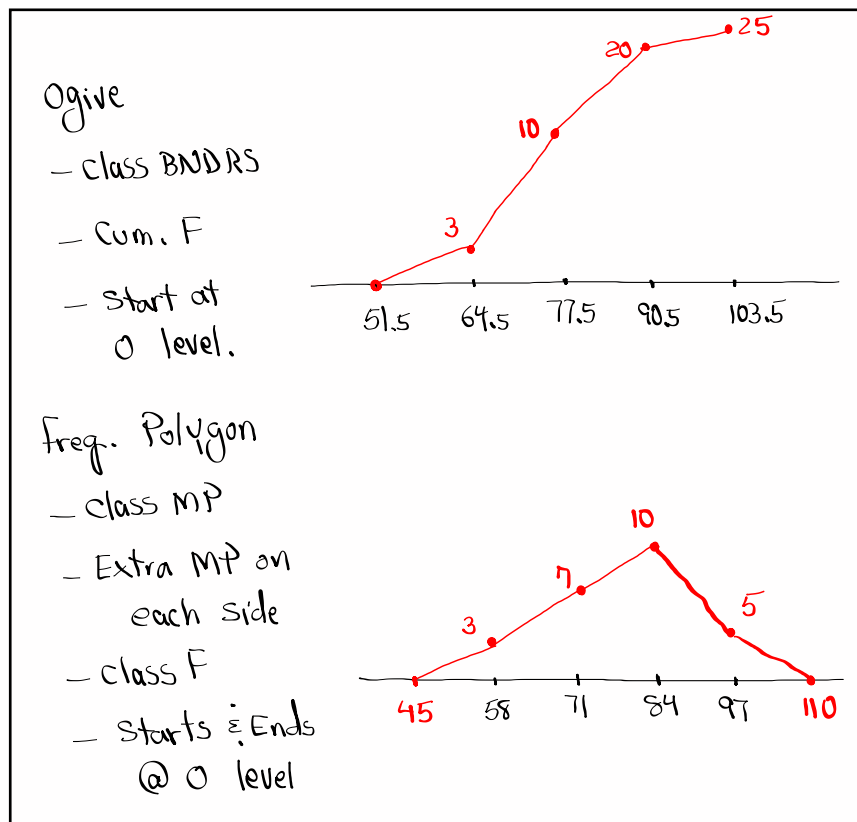
what % of data elements are between 65 and 90?

28% + 40% = 68%

Oct 24-8:26 AM



Oct 24-8:38 AM



Oct 24-8:42 AM

Pie chart

- Class MP
- % F

we cannot do
STEM Plot since
we don't have the actual raw data.

Oct 24-8:47 AM

Exam Scores of randomly selected students are given below:

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

- $n = 30$
- Min. = 50 Max = 105
- Range = Max - Min = 55
- Midrange = $\frac{\text{Max} + \text{Min}}{2} = 77.5$
- mode 75
- How many data elements are below 70? 8
- What % of data elements are below 70?
8 is what % of 30?
 $\frac{8}{30} \cdot 100 = 26.\bar{6} \rightarrow \approx \text{27\%}$
- Find class width if we wish to have 4 classes
class width = $\frac{\text{Range}}{4} = \frac{55}{4} = 13.75 \rightarrow \text{CW} = \text{14}$
Decimal

Oct 24-8:51 AM

class limits	class BNDRS	class MP	class F	Cum. F	Rel. F	% F
50 - 63	49.5 - 63.5	56.5	4	4	.133	13.3%
64 - 77	63.5 - 77.5	70.5	9	13	.300	30.0%
78 - 91	77.5 - 91.5	84.5	7	20	.233	23.3%
92 - 105	91.5 - 105.5	98.5	10	30	.333	33.3%

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

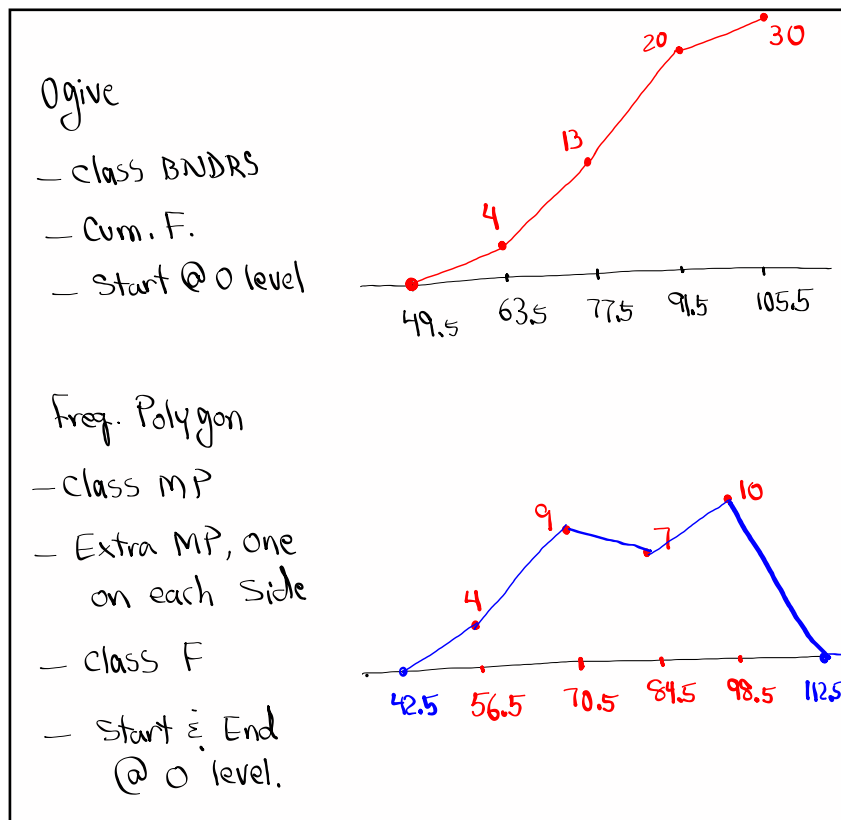
$$\text{Rel. F} = \frac{f}{n} = \frac{f}{30}$$

what % of Scores were at least 78?

$$23.3\% + 33.3\% = 56.6\%$$

$$\approx \boxed{57\%}$$

Oct 24-9:04 AM



Oct 24-9:33 AM

Class QZ 2

Box Your
Final Ans.

1) Compute $\frac{6 \cdot 294 - 42^2}{6(6-1)}$

$$= \frac{1764 - 1764}{6(5)} = \frac{0}{30} = \boxed{0}$$

2) Given : Min. = 10, Max = 90 Find

a) Range = Max - Min = $\boxed{80}$

b) Midrange = $\frac{\text{Max} + \text{Min}}{2} = \boxed{50}$

Oct 24-9:39 AM