Statistics
Lecture 3

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

I randomly Selected 32 nurses, and here are their ages:

25	28	30	30	32
36	36	36	39	40
42	42	42	45	48
48	49	50	50	50
52	53	54	54	55
58	58	60	62	64
64	65			

1) $n = 32$

2) Min. = 25 , Max = 65

3) Range = Max − Min = 40

4) Midrange = $\frac{\text{Max} + \text{Min}}{2} = 45$

5) Mode : 36, 42, 50
Trimodal

Suppose we wish to make a freq. table, find class width for

6) 3 classes
Class width = $\frac{\text{Range}}{3}$
$= \frac{40}{3} = 13.\overline{3}$
Round-up
CW = 14

7) 5 classes
Class width = $\frac{\text{Range}}{5}$
$= \frac{40}{5} = 8$
Add 1
CW = 9

25	28	30	30	32
36	36	36	39	40
42	42	42	45	48
48	49	50	50	50
52	53	54	54	55
58	58	60	62	64
64	65			

Make STEM Plot
"Data must be Sorted"

2	58
3	0026669
4	02225889
5	0002344588
6	02445

How many data elements are below 50?
17

What percent of data elements are below 50?
17 is what percent of 32?

$\frac{P}{100} = \frac{17}{32}$

Cross-multiply
$32P = 1700$

$P = \frac{1700}{32} = 53.125$

about 53%

25	28	30	30	32
36	36	36	39	40
42	42	42	45	48
48	49	50	50	50
52	53	54	54	55
58	58	60	62	64
64	65			

Make a freq. table with 4 classes

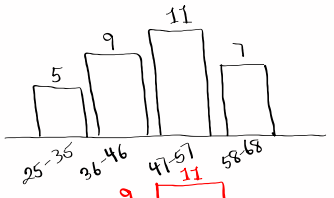
Class width = $\frac{\text{Range}}{4} = \frac{40}{4} = 10$

CW = 11 ← +1 whole

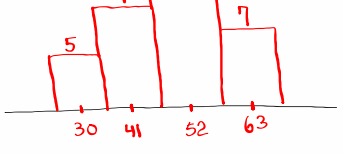
Rel.F = $\frac{f}{n} = \frac{f}{32}$

Class limits	Class BNDRS	Class MP	Class F	Cum. F	Rel.F	%F
25 - 35	24.5 – 35.5	30	5	5	.156	15.6%
36 - 46	35.5 - 46.5	41	9	14	.281	28.1%
47 - 57	46.5 – 57.5	52	11	25	.344	34.4%
58 - 68	57.5 – 68.5	63	7	32	.219	21.9%

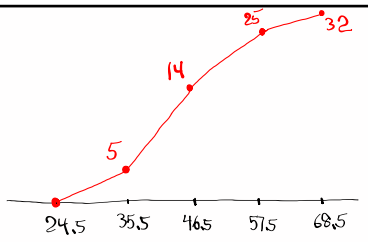
Bar chart
- class limits
- class F



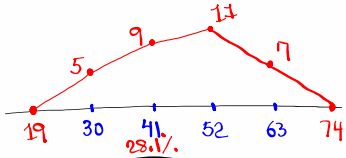
Histogram
- class MP
- class F



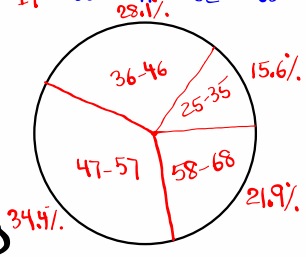
Ogive
- Class BNDRS
- Cum. F.



Freq. Polygon
- Class MP
- Extra MP
- Class F



Pie Chart
- Circle
- class limits
- % F



SG 3 & SG 4

Basic Statistical Computations

Consider the Sample below

2, 3, 3, 4, 8

1) $n = 5$

2) Range $= 8 - 2 = 6$

3) Midrange $= \frac{8+2}{2} = \frac{10}{2} = 5$

4) Mode $= 3$

5) $\sum x = 2 + 3 + 3 + 4 + 8 = \boxed{20}$

↑ Summation of x

6) $\sum x^2 = 2^2 + 3^2 + 3^2 + 4^2 + 8^2 = 4 + 9 + 9 + 16 + 64 = \boxed{102}$

↑ Summation of x^2

7) $\frac{\sum x}{n} = \frac{20}{5} = \boxed{4}$

8) $\frac{n\sum x^2 - (\sum x)^2}{n(n-1)} = \frac{5 \cdot 102 - 20^2}{5(5-1)} = \frac{110}{20}$

$= \boxed{5.5}$

9) $\sqrt{\text{Last answer}} = \sqrt{5.5} = 2.345$

Round to 1-decimal

$\approx \boxed{2.3}$

Consider the Sample below

1, 3, 3, 6, 6, 9

1) $n = \boxed{6}$ 2) Range $= 9-1 = \boxed{8}$ 3) Midrange: $\frac{9+1}{2} = \boxed{5}$

4) Mode $= \boxed{3 \text{ & } 6}$

5) $\Sigma x = 1+3+3+6+6+9 = \boxed{28}$

6) $\Sigma x^2 = 1^2+3^2+3^2+6^2+6^2+9^2 = \boxed{172}$

7) Compute $\frac{\Sigma x}{n}$, Round to a whole #

$\frac{\Sigma x}{n} = \frac{28}{6} = 4.\overline{6} \approx \boxed{5}$

8) Compute $\frac{n\Sigma x^2-(\Sigma x)^2}{n(n-1)}$, Round to 3-decimal

$\frac{n\Sigma x^2-(\Sigma x)^2}{n(n-1)} = \frac{6\cdot 172-28^2}{6(6-1)} = \frac{248}{30} = \frac{\cancel{2}\cdot 124}{\cancel{2}\cdot 15}$

$= \frac{124}{15} = 8.2\overline{6}$

$\approx \boxed{8.267}$

9) $\sqrt{\text{Last Ans}}$, Round up to a whole

$\sqrt{8.267} = 2.875 \approx \boxed{3}$

Consider the Sample below

5 5 5 5 5 5

1) $n = \boxed{6}$

2) $\Sigma x = 5+5+5+5+5+5 = \boxed{30}$

3) $\Sigma x^2 = 5^2+5^2+5^2+5^2+5^2+5^2 = \boxed{150}$

4) Compute $\frac{\Sigma x}{n} = \frac{30}{6} = \boxed{5}$

5) Compute $\frac{n\Sigma x^2-(\Sigma x)^2}{n(n-1)} = \frac{6\cdot 150-30^2}{6(6-1)}$

$= \frac{900-900}{30} = \frac{0}{30} = \boxed{0}$

6) $\sqrt{\text{Last number}} = \sqrt{0} = \boxed{0}$

Some TI Instructions:

1) To clear the Screen [Clear]

2) To quit [2nd] [MODE]

3) To clear all lists

[2nd] [+] [4: Clear All Lists] [Enter]

4) To reset all lists

[STAT] [5: Set Up Editor] [Enter]

Let's clear the Screen

[Clear]

How to store data elements:

Store the following Sample in a list

2 3 5 5 10

[STAT] Edit

[1: Edit]

L1
2 [Enter]
3 "
5 "
5 "
10 "

Let's quit

[2nd] [MODE]

How to find Σx & Σx^2 using TI:

[STAT] [→] CALC

[1: 1-Var Stats]

With Menu

[Clear]

List: L1

FreqList: Blank

Calculate

[Enter]

Without Menu

[2nd] [1]

1-Var Stats

L1 [Enter]

$\Sigma x = 25$

$\Sigma x^2 = 163$

$n = 5$

Clear the Screen

[Clear]

Clear all lists [2nd] [+] [4:ClearAll Lists] [Enter]

Store the following in L1

12	8	5	10
8	15	10	20

[STAT] Edit
[1:Edit]

L1
12 [enter]
8 "
5 "
⋮
20 "

Let's quit [2nd] [MODE]

Now find Σx, Σx^2, and n.

[STAT] [→] CALC
[1:1-Var Stats]
Menu
List: L1
FreqList: blank
[Calculate]

[2nd] [1]
No Menu
1-Var Stats
L1
[Enter]

$\Sigma x = 88$

$\Sigma x^2 = 1122$

$n = 8$

Class QZ 3

Use the chart below to draw histogram

class BNDRS	Class F
9.5 - 19.5	3
19.5 - 29.5	5
29.5 - 39.5	7
39.5 - 49.5	5