Statistics

Spring 2023

Lecture 11

Feb 19-8:47 AM

Exam 1 Results

52	55	57	60	62	65	69	70	70	72
73	74	75	77	78	79	80	81	82	83
85	85	85	85	86	86	88	90	90	92
92	93	94	96	98	99	99	100	100	100

$n = 40$

$Range = 100 - 52 = 48$

$Midrange = \dfrac{100 + 52}{2} = 76$

$Mode = 85$

Class width for

a) 3 Classes

$CW = \dfrac{Range}{3} = \dfrac{48}{3} = 16 \quad \boxed{CW = 17}$

b) 5 classes

$CW = \dfrac{48}{5} = 9.6 \quad \boxed{CW = 10}$

Estimate S

$S \approx \dfrac{Range}{4} = \dfrac{48}{4} = \boxed{12}$

Stem Plot

```
5 | 257
6 | 0259
7 | 002345789
8 | 01235555668
9 | 0022346899
10 | 000
```

Feb 23-6:57 AM

Stem Plot

```
 5 | 2 5 7
 6 | 0 2 5 9
 7 | 0 0 2 3 4 5 7 8 9
 8 | 0 1 2 3 5 5 5 5 6 6 8
 9 | 0 0 2 2 3 4 6 8 9 9
10 | 0 0 0
```

$n = 40$

find P_{20}

$L = \dfrac{k}{100} \cdot n = \dfrac{20}{100} \cdot 40 = 8$ ⟵ whole #

$P_{20} = \dfrac{\text{8th element} + \text{Next element}}{2}$

$= \dfrac{70 + 70}{2} = 70$

20% | 80%
$P_{20} = 70$

find P_{68} ⟵ Decimal

$L = \dfrac{68}{100} \cdot 40 = 27.2 \rightarrow L = 28$

$P_{68} = $ 28th element $= \boxed{90}$

68% | 32%
P_{68}

find P_{50} ⟵ Median

$L = \dfrac{50}{100} \cdot 40 = 20$ ⟵ whole #

$P_{50} = \dfrac{\text{20th element} + \text{Next element}}{2} = \dfrac{83 + 85}{2} = 84$

50% | 50%
$P_{50} = 84$

Feb 23-7:26 AM

Stem Plot

```
 5 | 2 5 7
 6 | 0 2 5 9
 7 | 0 0 2 3 4 5 7 8 9
 8 | 0 1 2 3 5 5 5 5 6 6 8
 9 | 0 0 2 2 3 4 6 8 9 9
10 | 0 0 0
```

find K such that

1) $P_K = 65$ ↑ Below

$K = \dfrac{B}{n} \cdot 100$, Round to whole%

$K = \dfrac{5}{40} \cdot 100 = 12.5 \approx 13$

$P_{13} = 65$

100% - 13%

13% | 87%
$P_{13} = 65$

2) $P_K = 80$ ↑ Below

$K = \dfrac{B}{n} \cdot 100 = \dfrac{16}{40} \cdot 100 = 40$

$P_{40} = 80$

40% | 60%
$P_{40} = 80$

Feb 23-7:34 AM

Working with ordered-Pairs:
$$(x, y)$$

$$(2,3) \ , \ (3,5) \ , \ (4,8) \ , \ (5,10) \Rightarrow n = 4$$

4 ordered-Pairs

x	y	x^2	y^2	xy
2	3	4	9	6
3	5	9	25	15
4	8	16	64	32
5	10	25	100	50

$\sum x = 14$

$\sum x^2 = 54$

$\sum y = 26$

$\sum y^2 = 198$

$\sum xy = 103$

Clear All lists.

Reset All lists.

$x \to L1, \ y \to L2$

L1	L2
2	3
3	5
4	8
5	10

[STAT] $\to$ [CALC]

[2: 2-Var Stats]

With Menu:

xlist: L1

Ylist: L2

FreqList: [clear]

[Calculate]

Without Menu:

2-Var stats

L1, L2 [enter]

[7]

$\sum x = 14$ $\sum y = 26$

$\sum x^2 = 54$ $\sum y^2 = 198$

$n = 4$ $\sum xy = 103$

Feb 23-7:41 AM

Consider the following ordered-Pairs:

$$(4,6) \ , \ (5,8) \ , \ (5,10), \ (6,10), \ (8,15)$$

clear all lists.

$x \to L1,$

$y \to L2,$

$\sum x = 28$ $\sum y = 49$

$\sum x^2 = 166$ $\sum y^2 = 525$

$n = 5$ $\sum xy = 294$

Use 2-Var Stats with L1 & L2 to find

Regression line

Scatter Plot

let's Plot these Points

Feb 23-7:58 AM

Class QZ 1

Consider the Sample below find

15 17 20   28 32

25 30 20   18 10

1) $\bar{x} =$ 21.5

2) $S =$ 7.059 Round to 3-decimal

3) $n =$ 10

4) $S^2 = \dfrac{299}{6}$ Reduced fraction

Feb 23-8:07 AM