

Statistics

Lecture 9



Feb 19-8:47 AM

Class Quiz 2

Consider the Sample below

2 3 3 7 10

$$1) \text{Range} = 10 - 2 = \boxed{8}$$

$$2) \text{Midrange} = \frac{10+2}{2} = \boxed{6}$$

$$3) \text{Mode} = \boxed{3}$$

$$4) \sum x = 2 + 3 + 3 + 7 + 10 = \boxed{25}$$

$$5) \sum x^2 = 2^2 + 3^2 + 3^2 + 7^2 + 10^2$$

$$= 4 + 9 + 9 + 49 + 100$$

$$= \boxed{171}$$

Sep 10-8:44 AM

Consider the Sample below

12 18 5 20 28
32 10 8 35 25

Store it in L1

1) clear all lists 2nd + 4:clearAllLists Enter

2) Reset all lists STAT edit Enter
5:SetUpEditor

3) Enter data in L1 STAT Edit
1:Edit

quit & clear screen

2nd Mode clear

L1	
12	Enter
18	"
⋮	"
25	"

Sep 10-8:57 AM

Let's sort L1, then view it

STAT edit 2nd 11 Enter
2:SortA

2nd 1 Enter { 5 8 10 12 ... 35 }

find \bar{x} & S.

STAT → CALC
1:1-Var Stat

with Menu List: L1 NO Menu L1
FreqList: clear Enter
Calculate

$\bar{x} = 19.3$

$S: S_x = 10.489$

5-Number Summary
 Min = 5
 $Q_1 = 10$
 Med = 19
 $Q_3 = 28$
 Max = 35

Find S^2

VARS 5:Statistics 3:Sx
x² Enter

110.01
Convert to a reduced fraction.

MATH 1: Frac Enter

$\frac{1101}{10}$

Sep 10-9:04 AM

Store the following in L1

75	82	93	100	54	Clear all lists. [2nd] [+] [4:ClearAllLists] [Enter] [STAT] Edit [1:Edit]
70	80	78	88	95	
58	62	100	90	85	
75	68	69	73	84	

quit & Clear Screen

view L1 [2nd] [1] [Enter]

{ 75 82 93 100 → → →
 ↓ ↓ ↓

Sep 10-9:17 AM

Sort L1, and view it again

[STAT] Edit [2nd] [1] [Enter]

[2:SortA(]

[2nd] [1] [Enter]

{ 54	58	62	68	69	5 48 6 289 7 03558 8 02458 9 035 10 00

→ → →

Sep 10-9:23 AM

Find \bar{x} & s .

STAT \rightarrow **CALC**

1:1-Var Stats

With Menu } NO Menu
 List: L1 } L1
 FreqList: **clear** } **Enter**
Calculate

5-Number Summary
 Find S^2 in reduced fraction

Min = 54
 Q_1 = 69.5
Med. = 79
 Q_3 = 89
Max = 100

VARS **Statistics** **Sx**

χ^2 **Math** **1: \rightarrow Frac** **Enter**

$\frac{66659}{380}$

Sep 10-9:28 AM

Consider the following 5-Number Summary

20 60 75 80 500

1) Draw Box Plot

2) Range = **480** 3) Midrange = **260**

4) IQR = $80 - 60 =$ **20** 5) Estimate $S \approx \frac{\text{Range}}{4}$
 $\frac{480}{4} =$ **120**

6) Upper Fence = $Q_3 + 1.5(\text{IQR})$
 $= 80 + 1.5(20) =$ **110**

7) Lower Fence = $Q_1 - 1.5(\text{IQR})$
 $= 60 - 1.5(20) =$ **30**

8) Discuss outliers

20-30 and 110-500

Sep 10-9:38 AM

A sample has a symmetric dist. with

$$\bar{x} = 120 \text{ and } S = 20$$

$$\rightarrow \boxed{80 \text{ to } 160}$$

1) Usual Range = $\bar{x} \pm 2S$

95% Range = $120 \pm 2(20) = 120 \pm 40$

2) 68% Range = $\bar{x} \pm S = 120 \pm 20$

$$\hookrightarrow \boxed{100 \text{ to } 140}$$

3) What % of the sample are at least 100?



$$68\% + 16\% \Rightarrow \boxed{84\%}$$

Sep 10-9:54 AM