March 24, 2025

# STAT REVIEW

1.5 pages = Mult. choice/Matching ← #6-8 Journal

Central Tend. = *Mean, Median, Mode

Variation = St. Dev., *Range (Hi-Lo), IQR ($Q_3 - Q_1$)

Median - IQR  Mean / St. Dev.

Random | Convenience | System | Stratified | Cluster

#15 Types of Sampling

Interview every 5th person in lunch system = Systematic

Picker wheel - Random

Randomly select 10 flights into KC & interview every passenger Cluster

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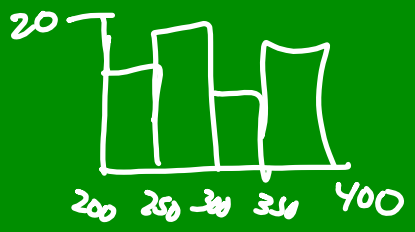
## Calculator problems

* Create histogram or box plot.




## L-VAR STATS

Mean = $\bar{x}$

Median =

Mode = Sort column in order

1) Highlight column
2) Menu-Actions-Sort

Range =

IQR =

St. Deviation =

# By Hand

Mean = $\frac{\text{Sum of data}}{\text{\# Items}}$

Median = 35 items

$\frac{35}{2} = 17.5 \rightarrow 18^{th}$

$\frac{250}{2} = 125^{th} + 126^{th}$

| | | |
|---|---|---|
| 4 | · 70 | = 280 |
| 6 | · 80 | = 480 |
| 2 | · 90 | = 180 |
| 12 | | 940 |

Mean = $\frac{940}{12} = 78.33$

Median = $\frac{12}{2} = 6^{th} + 7^{th}$

Make sure data is in order

= 80

# St. Deviation

{22, 38, 77, 83}

1) Mean = $\frac{220}{4} = 55$

2) Data - Mean

22-55 38-55 77-55 83-55

$(-33)^2 + (-17)^2 + (22)^2 + (28)^2$

$= \frac{2646}{4} = \sqrt{661.5}$

$\approx 25.72$

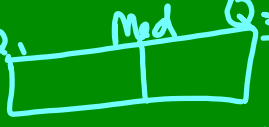
## Outliers

1) IQR * 1.5 = #

2) lower boundary: $Q_1 - \#$

3) upper boundary: $Q_3 + \#$

Range = 102 − 33 = 69




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

3|3 = 33

38 scores

$Med = \frac{38}{2} = 19^{th}, 20^{th}$

$= \frac{85+88}{2} = 86.5$

Quartiles: $\frac{19}{2} = 9.5 = 10^{th}$

$Q_1 = 57$

$Q_3 = 94$

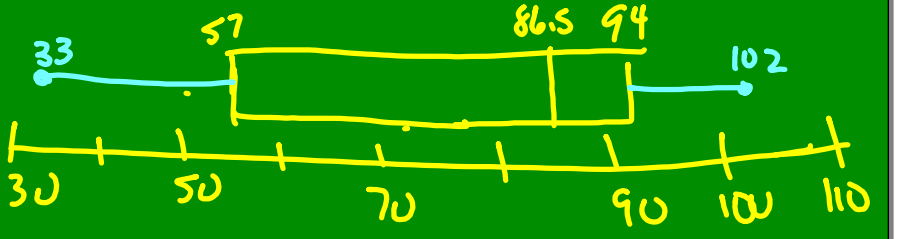
$IQR = 94 - 57 = 37$

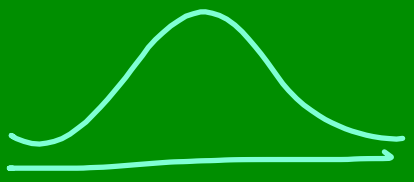
## Outliers

1) 37 * 1.5 = 55.5

2) lower bound:
57 − 55.5 = 1.5

3) upper bound:
94 + 55.5 = 149.5





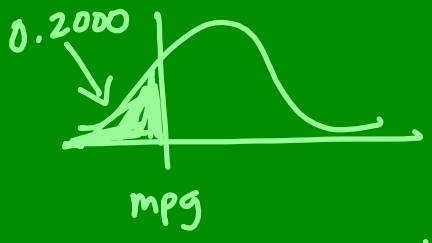
# Normal Distribution

$$Z = \frac{\text{Raw score} - \text{Mean}}{\text{St. Dev.}} = \frac{x - \mu}{\sigma}$$

$\bar{x} = 24$ mpg

$\sigma = 4$ mpg

What is cutoff for lowest 20%

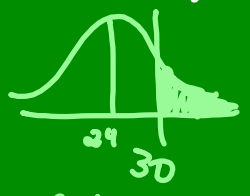



$$-0.84 = \frac{x - 24}{4}$$

$$-3.36 = x - 24$$

$$20.64 \text{ mpg} = x$$

How many are above 30 mpg?




$$Z = \frac{30 - 24}{4} = 1.5$$

Col. C

% = 0.0668

or 6.68%

Have 2000 cars?

2000 * 0.0668

≈ 13 cars