Statistics and Probability Review

Recitation highlights:

- Know basic statistic calculations (mean, variance, standard deviation)
- Know how to find mean for a population (μ)
- Matrix multiplication (the right way)
- Sum of residuals is always 0. If given a mean where the sum is not 0, it is not center.

The quiz will be heavily computation based.

- Sample **mean**($\bar{s}$):

$$\bar{x} = \frac{\sum_i x_i}{n}$$

- Sample **variance** (s^2)

$$s^2 = \frac{\sum_i (x_i - \bar{x})^2}{n-1}$$

- **Standard deviation**(s_a)

$$s_a = \sqrt{s^2}$$

- **Population mean**

$$\mu = E(x) = \sum_{x \in X} x \cdot Pr(x)$$

Know how to find the **residuals** and the **square of the residuals**.

- **Residual**

$$\sum_i (x_i - \bar{x})$$

- **Square of residuals**

$$\sum_i (x_i - \bar{x})^2$$

  If you get a probability distribution graph like this:

x	1	2	4
$P(x)$	0.20	0.40	0.40

Know that $P(x)$ = 1.
To calculate μ : $1(0.20) + 2(0.40) + 4(0.40)$

- Josh is a poo poo head