$$E[X] = \sum_x x \cdot P(X = x)$$

$$E[X_k] = \theta \cdot \frac{k}{n+1}$$

$$\text{Var}[X_k] = \theta^2 \frac{k(n+1-k)}{(n+1)^2(n+2)}$$

$(k = n - 13)$

$$E(X_{n-13}) \longrightarrow \theta$$

$$\text{Var}[X_{n-13}] \longrightarrow 0$$

as $n \to \infty$

$$Pr(Y \geq a) \leq \frac{E[Y]}{a}$$

$$Y = (X - E[X])^2 \qquad a = \varepsilon^2$$

$$Pr\left((X - E(X))^2 \geq \varepsilon^2\right) \leq \frac{E[\quad]}{\varepsilon^2}$$

$$\equiv (X - E(X)) > \varepsilon$$

$$Pr\left(|x - E[x]| \geq \varepsilon\right) \leq \frac{var(x)}{\varepsilon^2} \to 0$$

$$\downarrow$$

$$0$$

$$as\ n \to \infty$$

$$\bar{x}_{n-13} \to \theta$$