

Central Limit Theorem

Coin flips

X_1, X_2, \dots are IID Bern(1/4) random variables, where X_i is indicator of Heads. Then \bar{X}_n is the proportion of Heads in our n tosses.

We will see the CLT approximation to \bar{X}_n and $\sum_{i=1}^n X_i$ as n increases from 5 through 500. Remember, CLT tells us that

$$\bar{X}_n \sim N\left(0.25, \frac{0.25(0.75)}{n}\right) \quad \text{and} \quad \sum_{i=1}^n X_i \sim N(0.25n, 0.25(0.75)n)$$

