Consider i.i.d. (independent, identically distributed) random vars $X_1, X_2, X_3, \ldots$ could be discrete.

X_i has $\mu = E[X_i]$ and $\sigma^2 = \text{Var}[X_i]$ Unif(10, 11, 12, ..., 140)

As $n \to \infty$,

$$\frac{X_1 + X_2 + \cdots + X_n - n\mu}{\sigma\sqrt{n}} \longrightarrow N(0,1)$$

Restated: As $n \to \infty$,

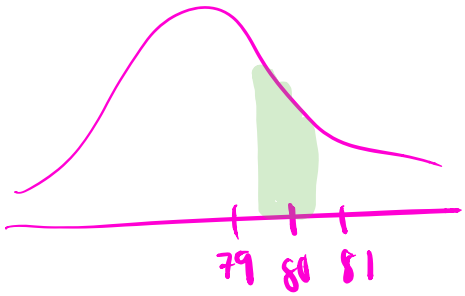
$$M_n = \frac{1}{n}\sum_{i=1}^{n} X_i \to N\left(\mu, \frac{\sigma^2}{n}\right)$$

$X_i \sim \text{Ber}(0.2)$ $\qquad \sum_{i=1}^{100} X_i \sim \text{Bin}(100, 0.2)$

$$\Pr\left(\sum_{i=1}^{100} X_i = 80\right)$$

$$\Downarrow$$

$$\simeq \Pr\left(79.5 \leq \sum_{i=1}^{100} X_i \leq 80.5\right)$$



"continuity correction"