

$$X \sim \text{neg Bin}(80, 0.2) \quad , P(X=k) = \binom{k-1}{79} 0.2^{80} \cdot (0.8)^{k-80} \quad \swarrow 80 \text{ times}$$

$$E(X) = \frac{80}{0.2} = 400$$

$$P(X < 350) = \sum_{k=80}^{349} P(X=k) = \Phi\left(\frac{350-400}{\sqrt{40}}\right) - \Phi(-\infty)$$

$$= 9.86\%$$

$$X = X_1 + X_2 + X_3 + \dots + X_{80}$$

$$X \sim \text{neg Bin}(80, 0.2) \sim N(400, 40)$$

$$+ \frac{1}{2} = -\Phi(1.25) + 0.5$$

$$= 0.5 - 0.3944$$

$$= 0.1056 = 10.56\%$$

$$\frac{\sum x}{n}$$

$$\boxed{n \cdot \frac{1-p}{p^2}}$$

$$E(X) = \frac{80}{0.2} = 400$$

$$= D(X) = 80 \cdot \frac{0.8}{0.2^2} = 1600$$

