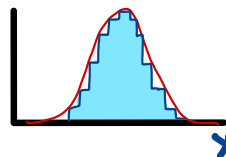
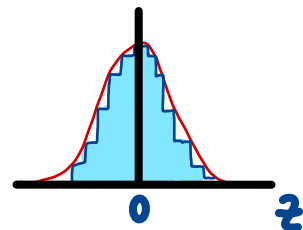


$N(m\mu, m\sigma^2)$



$$z = \frac{y - m\mu}{\sigma\sqrt{m}}$$

$N(0, \sigma^2)$



$$\begin{bmatrix} * \\ * \\ * \\ \vdots \\ * \\ * \end{bmatrix}_{X_1} + \begin{bmatrix} * \\ * \\ * \\ \vdots \\ * \\ * \end{bmatrix}_{X_2} + \dots + \begin{bmatrix} * \\ * \\ * \\ \vdots \\ * \\ * \end{bmatrix}_{X_m} = \begin{bmatrix} * \\ * \\ * \\ \vdots \\ * \\ * \end{bmatrix}_Y$$

$$E[X_1] = \mu$$

$$E[X_2] = \mu$$

$$E[X_m] = \mu$$

$$E[Y] = m\mu$$

$$V[X_1] = \sigma^2 \quad V[X_2] = \sigma^2$$

$$V[X_m] = \sigma^2$$

$$V[Y] = m\sigma^2$$

$$E[Y] = E[X_1 + X_2 + \dots + X_m] = E[X_1] + E[X_2] + \dots + E[X_m] = m\mu$$

$$V[Y] = V[X_1 + X_2 + \dots + X_m] = V[X_1] + V[X_2] + \dots + V[X_m] = m\sigma^2$$

$$z = \frac{y - m\mu}{\sigma\sqrt{m}}$$