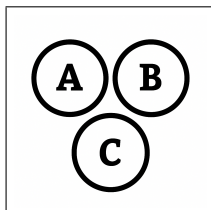


F

Variance / SD

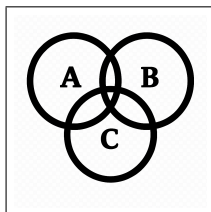
F



$$X = \{1, 2, 3, 4, 5, 6\}$$

$$P(X = x) = \frac{1}{6}$$

$$\text{Var}(4X + 2) = 16 \text{Var}(X)$$



$$E(X) = \sum_{x=1}^6 x \cdot \frac{1}{6} = \frac{1+2+3+4+5+6}{6} = \frac{21}{6} = 3.5$$

$$E(X^2) = \sum_{x=1}^6 x^2 \cdot \frac{1}{6} = \frac{1^2+2^2+3^2+4^2+5^2+6^2}{6} = \frac{91}{6}$$

$$\text{Var}(X) = E(X^2) - [E(X)]^2 = \frac{91}{6} - (3.5)^2 = \frac{91}{6} - \frac{49}{4} = \frac{182-147}{12} = \frac{35}{12} = \frac{35}{12}$$

$$\text{Var}(AX + B) = A^2 \text{Var}(X)$$



$$\text{Var}(X) = 9$$

$$Y = 4X + 5$$

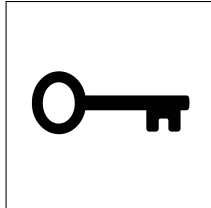
$$E(Y) = ?$$

$$\text{Var}(Y) = ?$$

F

Variance / SD

F



$$\begin{aligned}\text{Var}(X) &= 9 \\ Y &= 4X + 5 \\ E(Y) &= ? \\ \text{Var}(Y) &= ?\end{aligned}$$

$$\begin{aligned}\text{Var}(Y) &= \text{Var}(4X + 5) \\ &= 4^2 \text{Var}(X) \\ &= 16 \cdot 9 \\ &= 144\end{aligned}$$

$$E(Y) = E(4X + 5) = 4E(X) + 5 = 4 \cdot 4 + 5 = 21$$