

## Remarks

1.  $\text{var}(X + Y) = \text{var}X + \text{var}Y + 2\text{cov}(X, Y)$
2. If  $X \perp Y$ , then  $\text{cov}(X, Y) = 0$ , or  $X$  and  $Y$  are **uncorrelated**. However, the converse is not true.
3. If  $X_1, X_2, \dots, X_n$  are mutually independent, then

$$\text{var} \left( \sum_{i=1}^n X_i \right) = \sum_{i=1}^n \text{var} X_i$$