

$$P((X = x) \cap (Y = y)) = P(X = x)P(Y = y)$$

$$\Leftrightarrow$$

and



$$P(X = x, Y = y) = P(X = x)P(Y = y)$$

$$\Leftrightarrow$$

$$P_{X,y}(x, y) = P_X(x)P_Y(y)$$