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$$p(x,y) = p(x)p(y) \leftarrow$$

$$\begin{aligned} E\{\underline{XY}\} &= \iint xy \underbrace{p(x,y)}_{\substack{\downarrow \\ p(x)p(y)}} dx dy = \\ &= \int x p(x) dx \int y p(y) dy \\ &= \underline{E\{X\} E\{Y\}} \end{aligned}$$

$$E\{XY\} - E\{X\}E\{Y\} = \underline{\sigma_{XY}} = 0 \leftarrow$$

