

Example. Suppose that (X, Y) is a bivariate discrete random variable such that the point $(1, 2)$ occurs with probability $1/8$, $(1, 3)$ with probability $3/8$, $(2, 3)$ with probability $1/4$, and $(3, 1)$ with probability $1/4$. Then (X, Y) assumes as values only one of these for points.

	$Y = 1$	$Y = 2$	$Y = 3$	marginal of X
$X = 1$	0	$1/8$	$3/8$	$1/2$
$X = 2$	0	0	$1/4$	$1/4$
$X = 3$	$1/4$	0	0	$1/4$
marginal of Y	$1/4$	$1/8$	$5/8$	1

Note that, similarly to the univariate case, (i) all the probabilities must be non-negative and (ii) $\sum_{\mathbf{x} \in \mathbb{R}} P[\mathbf{X} = \mathbf{x}] = 1$ (for both marginal and joint probabilities).