

I. Evaluating a double Summation

$$\sum_X \sum_Y X_i p(X_i, Y_i)$$

$y \backslash x$	0	1	
0	$P(0,0)$	$P(0,1)$	$P(Y=0)$
1	$P(1,0)$	$P(1,1)$	$P(X=1)$
	$P(X=0)$	$P(X=1)$	

$y \backslash x$	0	1	
0	1/8	1/8	1/4
1	3/8	3/8	3/4
	1/2	1/2	

First sum over Y

$$\begin{aligned} \sum_{x_i} \sum_{y_i} X_i p(X_i, Y_i) &= [0 * p(0,0) + 0 * p(0,1)] + [1 * p(1,0) + 1 * p(1,1)] \\ &= [0 * 1/8 + 0 * 3/8] + [1 * 1/8 + 1 * 3/8] \\ &= [0 * 1/2] + [1 * 1/2] \end{aligned}$$

This gives the marginal probabilities of X so we're left with

$$\begin{aligned} \sum_{x_i} X_i p(X_i) &= [0 * 1/2] + [1 * 1/2] \text{ to be summed over } x \\ \sum_{x_i} \sum_{y_i} X_i p(X_i, Y_i) &= .5 \end{aligned}$$

II. Using the Standardized normal table

1. Find area between 0 and 1.