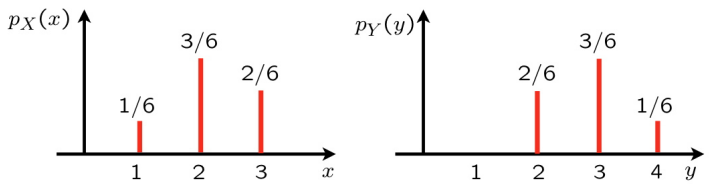
Exercise: Discrete convolution

(1/1 point)
The random variables X and Y are independent and have the PMFs shown in this diagram.



The probability that $X + Y = 6$ is: 1/4 ✔

Answer: 0.25

(Although you can find the answer by inspection, try to use the flip-and-shift graphical method.)

Answer:
We flip the PMF of Y to obtain a PMF on the set $\{-4, -3, -2\}$. We shift it to the right by 6 and place it underneath the PMF of X. By mutliplying the probabilities that are on top of each other in the resulting diagram, we obtain

$$p_{X+Y}(6) = \frac{1}{6} \cdot \frac{3}{6} + \frac{3}{6} \cdot \frac{2}{6} == \frac{9}{36} = 1/4.$$

You have used 2 of 2 submissions