# 14. Exercise: Joint PMF calculation

Exercises due Feb 28, 2020 05:29 IST *Completed*

## Exercise: Joint PMF calculation

1/2 points (graded)

The random variable $V$ takes values in the set $\{0, 1\}$ and the random variable $W$ takes values in the set $\{0, 1, 2\}$. Their joint PMF is of the form

$$p_{V,W}(v, w) = c \cdot (v + w),$$

where $c$ is some constant, for $v$ and $w$ in their respective ranges, and is zero everywhere else.

a) Find the value of $c$.

$c =$ 0.1 ✖ **Answer:** 0.11111

b) Find $p_V(1)$.

$p_V(1) =$ 2/3 ✔ **Answer:** 0.66667

**Solution:**

a) The sum of the entries of the PMF is $c \cdot (0 + 0) + c \cdot (0 + 1) + c \cdot (0 + 2) + c \cdot (1 + 0) + \ldots = 9c$. Since this sum must be equal to 1, we have $c = 1/9$.

b)

$$p_V(1) = \sum_{w=0}^{2} p_{V,W}(1,w) = p_{V,W}(1,0) + p_{V,W}(1,1) + p_{V,W}(1,2) = \frac{1}{9}(1+2+3) = \frac{6}{9}.$$

Submit You have used 3 of 3 attempts

Answers are displayed within the problem

## Discussion

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? Condition of events occuring with the same probability 5
I am wondering if there needs to be a condition that each event occurs with the same probability (i.e., v takes ei...

I don't understand the answer 1 new
Counting the sum of the entries, I'm only coming up with 6 different entries: (0+0), (0+1), (0+2), (1+0), (1+1), (1+2...

Don't make a dumb mistake like me - label the w-axis and the v-axis correctly when drawing joint PMF table 1
it's not a square, they are not the same