Assignment 2

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Download all python codes from

https://github.com/Digjoy12/probability/blob/main/Assignment%202/main.py

and latex codes from

https://github.com/Digjoy12/probability/blob/main/Assignment%202/main.tex

GATE Problem-7

Given set A= [2,3,4,5] and set B= [11,12,13,14,15], two numbers are randomly selected, one from each set. What is the probability that the sum of the two numbers equals 16?
(a) 0.20 (b) 0.25 (c) 0.30 (d) 0.33

Solution

Given,
Set A= [2,3,4,5]
Set B= [11,12,13,14,15]

From the above matrix,total number of element in the sample space is 20.

Let us define a random variable$X \in \{0, 1\}$
where,

X=0 refers to the event when A+B=16

X=1 refers to the event when A+B$\neq$ 16

Now, probability of selecting an element from set A such that $\Pr(X = 0) = \Pr(A + B)$=16 is 1.

So,the probability of selecting an element from set B after selecting an element from set A such that $\Pr(X = 0) = \Pr(A + B)$=16 is 1/5.

Therefore,
Overall probability of randomly choosing elements from set A and set B such that $\Pr(X = 0)$= $\Pr(A + B)$=16 is

$$\Pr(X = 0) = 1 \times 1/5 = 1/5 = 0.2$$

Therefore, the correct option is (a).