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]

Since, two numbers are randomly selected, one from each set.
Therefore, sample space=

$$\begin{bmatrix} (2,11) & (2,12) & (2,13) & (2,14) & (2,15) \\ (3,11) & (3,12) & (3,13) & (3,14) & (3,15) \\ (4,11) & (4,12) & (4,13) & (4,14) & (4,15) \\ (5,11) & (5,12) & (5,13) & (5,14) & (5,15) \end{bmatrix}$$

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

The set with the favourable outcomes of two numbers randomly selected such that the sum of the two numbers is 16 is

$$\begin{bmatrix} (2,14) & (3,13) & (4,12) & (5,11) \end{bmatrix}$$

Therefore, favourable outcomes=4

So,
The probability that the sum of the two numbers equals 16

$$= \frac{\text{favourable outcomes}}{\text{sample space}} = \frac{4}{20} = 0.20 \tag{7.1}$$

Therefore, the correct option is (a).