

# AI1103-Assignment 3

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Download all python codes from

<https://github.com/asishcs2011010/demo/blob/main/assignment-3/assignment-3.py>

and latex-tikz codes from

[https://github.com/asishcs2011010/demo/blob/main/assignment-3/assignment-3\(3\).tex](https://github.com/asishcs2011010/demo/blob/main/assignment-3/assignment-3(3).tex)

given that first ball drawn is red is  $= \Pr(Y = 0|X = 1) = \frac{8}{15}$

$$\Pr(Y = 0|X = 1) = \frac{8}{15} \quad (0.0.2)$$

We know that

$$\Pr(X = x|Y = y) = \frac{\Pr(X = x, Y = y)}{\Pr(Y = y)} \quad (0.0.3)$$

The probability that the first ball drawn is red and the second ball drawn is green  $= \Pr(X = 1, Y = 0)$

$$\Pr(X = 1, Y = 0) = \Pr(X = 1) \times \Pr(Y = 0|X = 1) \quad (0.0.4)$$

$$\Pr(X = 1, Y = 0) = \frac{8}{16} \times \frac{8}{15} = \frac{4}{15} \quad (0.0.5)$$

## QUESTION NO

GATE 2019 (IN), Q.3 (IN Engg. section)

## QUESTION

A box has 8 red balls and 8 green balls . Two balls are drawn randomly in succession from the box without replacement. The probability that the first ball drawn is red and the second ball drawn is green is

- 1)  $\frac{4}{15}$
- 2)  $\frac{7}{16}$
- 3)  $\frac{1}{2}$
- 4)  $\frac{8}{15}$

## SOLUTION

let  $X \in \{0, 1\}$  and  $Y \in \{0, 1\}$  be the random variable which denotes whether the picked up ball is red or green in the first draw and second draw respectively.

1 represents picking up of red ball

0 represent picking up of green ball

X	X = 0	X = 1
Pr	8/16	8/16

(0.0.1)

The probability that the second ball drawn is green