

# Assignment 3

Aakash Kamuju (ai21btech11001)

**Abstract**—This document contains the solution to Question 18 of Exercise 15.1 of Chapter 15 (Probability) in the NCERT Class 10.

**Probability Exercise 15.1 Q18.** A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears

- 1) a two digit number.
- 2) a perfect square number.
- 3) a number divisible by 5.

**Solution.**

- 1) Let  $X \in \{0, 1\}$  is random variable that denote whether the number it bears is two digit number or not, let  $X = 0$  denotes the number that it bears is not two digit and  $X = 1$  denotes the number it bears is two digit.

Disc that bears two digits are 10 to 90 Total number of disc is 90

$$\Pr(X = 1) = \frac{\text{Discs that bears two digits}}{\text{Total no of disc}} \quad (1)$$

$$= \frac{81}{90} \quad (2)$$

$$= 0.9 \quad (3)$$

- 2) Let  $X \in \{0, 1\}$  is random variable that denote whether the number it bears is perfect square number or not, let  $X = 0$  denotes the number that it bears is not perfect square and  $X = 1$  denotes the number it bears is perfect square.

Disc that bears perfect squares are 1,4,9,16,25,36,49,64,81

Total number of disc is 90

$$\Pr(X = 1) = \frac{\text{Discs that bears squares}}{\text{Total no of disc}} \quad (4)$$

$$= \frac{9}{90} \quad (5)$$

$$= 0.1 \quad (6)$$

- 3) Let  $X \in \{0, 1\}$  is random variable that denote whether the number it bears is divisible by 5 or not, let  $X = 0$  denotes the number that it

bears is not divisible 5 and  $X = 1$  denotes the number it bears is divisible by 5.

Disc that bears perfect squares are 5,10,15,20,25,30,35,40,45,50,55,60,65,70,75,80,85,90.

Total number of disc is 90

$$\Pr(X = 1) = \frac{\text{Discs that bears 5 multiples}}{\text{Total no of disc}} \quad (7)$$

$$= \frac{18}{90} \quad (8)$$

$$= 0.2 \quad (9)$$