

# Assignment 5

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**Abstract**—This document contains the solution for Assignment 5 (NCERT Class 11 Miscellaneous Q.8)

- (8) From the employees of a company, 5 persons are selected to represent them in the managing committee of the company. Particulars of five persons are as follows: A person is

S.No.	Name	Sex	Age in years
1	Harish	M	30
2	Rohan	M	33
3	Sheetal	F	46
4	Alis	F	28
5	Salim	M	41

TABLE I

selected at random from this group to act as a spokesperson. What is the probability that the spokesperson will be either male or over 35 years? **Solution:** Let the bernoulli random variable  $X \in \{0, 1\}$

$$X = \begin{cases} 1 & \text{spokesperson is female} \\ 0 & \text{spokesperson is male} \end{cases} \quad (1)$$

Let the random variable  $Y$  'represent the age of spokesperson'

$$Y \in \{30, 33, 46, 28, 41\} \quad (2)$$

Let  $E$  be the event 'spokesperson is a male' ( $X = 0$ ) Let  $F$  be the event 'spokesperson is over 35 years' ( $Y > 35$ )

$$\Pr(E \cup F) = 1 - \Pr(\bar{E} \cap \bar{F}) \quad (3)$$

$$= 1 - \Pr(\bar{E} \cap \bar{F}) \quad (4)$$

$$= 1 - \Pr(X = 1 | Y \leq 35) \quad (5)$$

$$= 1 - \frac{1}{5} \quad (6)$$

$$= \frac{4}{5} \quad (7)$$

Hence, the probability that the spokesperson will be either male or over 35 years is  $\frac{4}{5}$

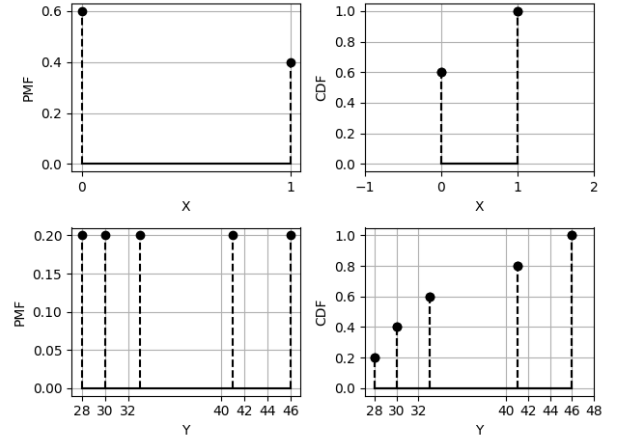


Fig. 0. PMF CDF plots for  $X$  and  $Y$