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' ($Y > 35$)

$$\Pr(E + F) = 1 - \neg \Pr(E + F) \quad (3)$$
$$= 1 - \Pr(\bar{E}\bar{F}) \quad (4)$$
$$= 1 - \Pr(X = 1, Y \le 35) \quad (5)$$
$$= 1 - \frac{1}{5} \quad (6)$$
$$= \frac{4}{5} \quad (7)$$

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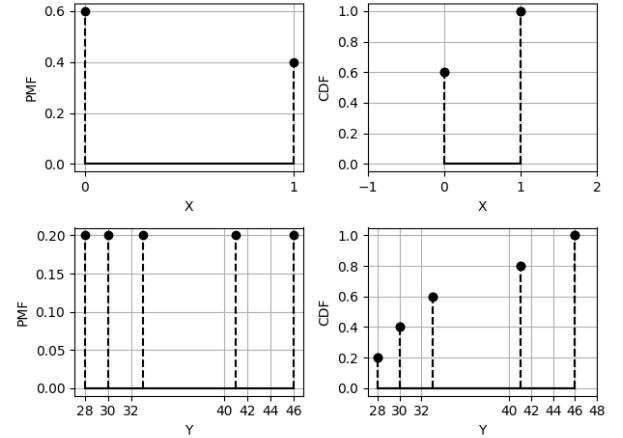

Fig. 0. PMF CDF plots for X and Y