PROBABILITY

T SIVA PARVATHI - FWC22089

13.2.2 [1] Two cards are drawn at random and without replacement from a pack of 52 playing cards. Find the probability that both the cards are black.

Solution: Given cards are drawn at random without replacement.

RV	Values	Description
X	{0,1}	number of cards drawn 2
Y	{0,1}	0: black card, 1: red card
XY	{00,10}	card drawn is black

Table 2: Random variables(RV) X,Y and XY

Without replacement means only one card is random at a time and is excluded from the total while next card is drawn at random.

Probability that both the cards are black is,

$$\Pr(00,10) = \frac{^{26}C_1}{^{52}C_1} \times \frac{^{25}C_1}{^{51}C_1} = \frac{1}{2} \times \frac{25}{51} = 0.24 \tag{13.2.2.1}$$

[1] Read question numbers as (CHAPTER NUMBER).(EXERCISE NUMBER).(QUESTION NUMBER)