PROBABILITY

UDAY KUMAR - FWC22086

16.4.2 [1] Four cards are drawn from a well-shuffled deck of 52 cards. What is the probability of obtaining 3 diamonds and one spade?.

Solution:

RV	Values	Description
X	{0,1,2,3}	Cards drawn randomly
Y	{0,1}	0:diamond ,1:spade
X,Y	{00,10,20,31}	Desired set of cards (3 diamonds and one spade)

Table 2: Random variables X,Y and X,Y

Three diamonds and one spade can be selected such that X,Y = $\{00, 10, 20, 31\}$ where X denotes any card and Y denotes wether the card is diamond or spade.

$$\Pr(00, 10, 20, 31) = \frac{^{13}C_3 \times {}^{13}C_1}{^{52}C_4} \tag{16.4.2.1}$$

$$\therefore \Pr(00, 10, 20, 31) = \frac{286}{20285} \tag{16.4.2.2}$$

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