

PROBABILITY

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

Solution:

Let the cards drawn from the deck be $X = \{0, 1, 2, 3\}$ and $Y = \{0, 1\}$, where 0 denotes the card is from diamonds and 1 denotes the card is from spades. Three diamonds and one spade can be selected such that $XY = \{00, 10, 20, 31\}$ where X denotes type of the card and Y denotes whether the card is from diamonds or spades.

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

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

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