

AI1110: Assignment 4

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Abstract—This document contains the solution to Question of Chapter 16 (Probability) in the NCERT Class 11 Textbook.

Probability Miscellaneous Exercise Q2: 4 cards are drawn from a well-shuffled deck of 52 cards. What is the probability of obtaining 3 diamonds and one spade?

Solution: Let X and Y be the events defined as follows,

Event	Description
X	Picking 3 diamond cards
Y	Picking a spade card

TABLE I: Events and Description

$$n(X) = \binom{13}{3} \quad (1)$$

$$n(Y) = \binom{13}{1} \quad (2)$$

$$n(XY) = \binom{13}{3} \times \binom{13}{1} \quad (3)$$

$$n(S) = \binom{52}{4} \quad (4)$$

Here, S is the sample space.

Probability of getting 3 diamonds and 1 spade is given by,

$$\Pr(XY) = \frac{n(XY)}{n(S)} \quad (5)$$

$$= \frac{\binom{13}{3} \times \binom{13}{1}}{\binom{52}{4}} \quad (6)$$

$$= \frac{3178}{270725} \quad (7)$$

$$= 0.0137 \quad (8)$$

Therefore, the probability of getting 3 diamonds and 1 spade is 0.0137.