

Assignment 5

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Abstract—This document contains the solution to Question 1 of Exercise 16.2 of Chapter 16 (Probability) in the NCERT Class 11.

NCERT class 11

Exercise 16.2 Q1

A die is rolled. Let E be the event "die shows 4" and F be the event "die shows even number". Are E and F mutually exclusive?

Solution: Let's denote the solution of the outcome by a random variable $X \in \{1, 2, 3, 4, 5, 6\}$, where for each $X = i$, i denotes the number shown on the die. Therefore, the events E and F are

$$E = \{X = 4\} \quad (1)$$

$$F = \{X = 2 \cup X = 4 \cup X = 6\} \quad (2)$$

Two events A and B are said to be mutually exclusive if $A \cap B = \phi$.

Here $E \cap F = \{X = 4\} \neq \phi$

$\therefore E$ and F are not mutually exclusive events.