

Assignment 5

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Abstract—This document contains the solution for Assignment 5 (NCERT Class 11 16.3 Example 7)

16.3 Example 7 [NCERT 11] : Two dice are thrown and the sum of the numbers which come up on the dice is noted. Let us consider the following events associated with this experiment

A : 'the sum is even'.

B : 'the sum is a multiple of 3'.

C : 'the sum is less than 4'.

D : 'the sum is greater than 11'.

Which pairs of these events are mutually exclusive?

Solution:

Denote the outcome of the experiment by a random variable $X \in \{2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$, where $X = i$ denotes the outcomes obtained when sum of the numbers on the dice is i .

$$A = \{X = 2 \cup X = 4 \cup X = 6 \cup X = 8 \cup X = 10 \cup X = 12\} \quad (1)$$

$$B = \{X = 3 \cup X = 6 \cup X = 9 \cup X = 12\} \quad (2)$$

$$C = \{X = 2 \cup X = 3\} \quad (3)$$

$$D = \{X = 12\} \quad (4)$$

Hence C and D are the only mutually exclusive events as $C \cap D = \phi$.