

ASSIGNMENT- 3

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Abstract

- This document contains the solution to Question of Chapter 6 (Probability) in the NCERT Class 11 Textbook.

Two dice are thrown . The events A,B and C are as follows:

A: getting an even number on first dice

B: getting an odd number on first dice

C: getting sum of the number on the dice less than or equal to 5

Describe the events

1. A'
2. not B
3. A or B
4. A and B
5. A but not C
6. B or C
7. B and C
8. A and B' and C'

The sample space for throwing two dice is:-

$$S = \{\{1,1\}, \{1,2\}, \{1,3\}, \{1,4\}, \{1,5\}, \{1,6\}, \{2,1\}, \{2,2\}, \{2,3\}, \{2,4\}, \{2,5\}, \{2,6\}, \{3,1\}, \{3,2\}, \{3,3\}, \{3,4\}, \{3,5\}, \{3,6\}, \{4,1\}, \{4,2\}, \{4,3\}, \{4,4\}, \{4,5\}, \{4,6\}, \{5,1\}, \{5,2\}, \{5,3\}, \{5,4\}, \{5,5\}, \{5,6\}, \{6,1\}, \{6,2\}, \{6,3\}, \{6,4\}, \{6,5\}, \{6,6\}\}$$

The three events A, B and C are defined below:-

$$A = \{\{2,1\}, \{2,2\}, \{2,3\}, \{2,4\}, \{2,5\}, \{2,6\}, \{4,1\}, \{4,2\}, \{4,3\}, \{4,4\}, \{4,5\}, \{4,6\}\}$$

$$B = \{\{1,1\}, \{1,2\}, \{1,3\}, \{1,4\}, \{1,5\}, \{1,6\}, \{3,1\}, \{3,2\}, \{3,3\}, \{3,4\}, \{3,5\}, \{3,6\}\}$$

$$C = \{\{1,1\}, \{1,2\}, \{1,3\}, \{1,4\}, \{2,1\}, \{2,2\}, \{2,3\}, \{3,1\}, \{3,2\}, \{4,1\}\}$$

1. A'-Getting an odd number on the first dice

$A' = \{\{1,1\}, \{1,2\}, \{1,3\}, \{1,4\}, \{1,5\}, \{1,6\}, \{3,1\}, \{3,2\}, \{3,3\}, \{3,4\}, \{3,5\}, \{3,6\}\}$

2. not B- Getting an even number on the first dice

$B' = \{\{2,1\}, \{2,2\}, \{2,3\}, \{2,4\}, \{2,5\}, \{2,6\}, \{4,1\}, \{4,2\}, \{4,3\}, \{4,4\}, \{4,5\}, \{4,6\}\}$

3. A or B-getting even number or getting an odd number on first dice.

A or

$B = \{\{1,1\}, \{1,2\}, \{1,3\}, \{1,4\}, \{1,5\}, \{1,6\}, \{2,1\}, \{2,2\}, \{2,3\}, \{2,4\}, \{2,5\}, \{2,6\}\}$

4. A and B=Getting an odd and even number on first dice.

A and B=NULL

5. A but not C- Getting an even number on the first dice and the sum is more than 5.

A but not

$$C = \{\{2,4\}, \{2,5\}, \{2,6\}, \{4,2\}, \{4,3\}, \{4,4\}, \{4,5\}, \{4,6\}, \{6,1\}, \{6,2\}, \{6,3\}, \{6,4\}\}$$

6.B or

$$C = \{\{1,1\}, \{1,2\}, \{1,3\}, \{1,4\}, \{1,5\}, \{1,6\}, \{3,1\}, \{3,2\}, \{3,3\}, \{3,4\}, \{3,5\}, \{3,6\}\}$$

7.B and C- Getting an odd number on the first dice and sum is less than or equal to 5

$$B \text{ and } C = \{\{1,1\}, \{1,2\}, \{1,3\}, \{1,4\}, \{3,1\}, \{3,2\}, \{3,3\}\}$$

8. A and B' and C'-Getting an even number on the first dice and sum on both dice is greater than 5.

A and B' and

$$C' = \{\{2,4\}, \{2,5\}, \{2,6\}, \{4,2\}, \{4,3\}, \{4,4\}, \{4,6\}, \{6,1\}, \{6,2\}, \{6,3\}, \{6,4\}, \{6,5\}\}$$