

# Assignment 4

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**PROBLEM:** Find the sample space associated with the experiment of rolling a pair of dice (one is blue and the other red) once. Also, find the number of elements of this sample space.

**Solution:**

Given, a pair of dice( one is blue and the other red).

**To find:** sample space of the experiment and number of elements in the sample space.

let us denote the events of rolling one dice and two dice by random variables  $X$  and  $Y$  respectively. Sample space of  $X = S_x$ , where

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

The sample space for rolling two dice is,

$$S_y = S_x \times S_x \text{ (CARTESIAN PRODUCT)}$$

So, the sample for rolling two dice is given by

$$S_y = \{(x, y) : x \text{ is number on blue die and } y \text{ is number on blue die}\}$$

And  $S_y = \{(1,1), (1,2), (1,3), (1,4), (1,5), (1,6), (2,1), (2,2), (2,3), (2,4), (2,5), (2,6), (3,1), (3,2), (3,3), (3,4), (3,5), (3,6), (4,1), (4,2), (4,3), (4,4), (4,5), (4,6), (5,1), (5,2), (5,3), (5,4), (5,5), (5,6), (6,1), (6,2), (6,3), (6,4), (6,5), (6,6)\}$

Also, The number of elements in the sample space  $(S_y) = 6 \times 6 = 36$ .