

# PROBABILITY

DIVYA SAI - FWC22094

**16.4.10 <sup>1</sup>The number lock of a suitcase has 4 wheels each labelled with ten digits i.e. from 0 to 9. The lock opens with a sequence of four digits with no repeats. What is the probability of a person getting the right sequence to open the suitcase?**

**Solution:**

Let, the wheels be  $X = \{0, 1, 2, 3\}$  and the digits be  $Y = \{0, 1, 2, \dots, 9\}$ .  
Possible placement of digits are,

$${}^{10}P_4 = \frac{10!}{(10-4)!} = \frac{10!}{6!} = \frac{10 \times 9 \times 8 \times 7 \times 6!}{6!} = 5040 \quad (16.4.10.1)$$

Let A be the event the correct sequence is selected So,  $n(A) = 1$ .

Probability of correct sequence is selected as  $P(A)$ ,

$$P(A) = \frac{n(A)}{n(s)} = \frac{1}{5040} \quad (16.4.10.2)$$

The probability of getting the right sequence to open the suitcase is  $\boxed{\frac{1}{5040}}$

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<sup>1</sup>Read question numbers as (CHAPTER NUMBER).(EXERCISE NUMBER).(QUESTION NUMBER)