

1. How many 3-digit numbers can be formed from the digits 1, 2, 3, 4 and 5 assuming that

(i) Repetition of the digits is allowed?

(ii) Repetition of the digits is not allowed?

**Solution:**

(i) Let the 3-digit number be ABC, where C is at the units place, B at the tens place and A at the hundreds place.

Now when repetition is allowed,

The number of digits possible at C is 5. As repetition is allowed, the number of digits possible at B and A is also 5 at each.

Hence, the total number possible 3-digit numbers =  $5 \times 5 \times 5 = 125$

(ii) Let the 3-digit number be ABC, where C is at the units place, B at the tens place and A at the hundreds place.

Now when repetition is not allowed,

The number of digits possible at C is 5. Let's suppose one of 5 digits occupies place C, now as the repetition is not allowed, the possible digits for place B are 4 and similarly there are only 3 possible digits for place A.

Therefore, The total number of possible 3-digit numbers =  $5 \times 4 \times 3 = 60$