

How many 4-letter words can we form s.t. each word has 4 distinct letters in increasing alphabetical order?

We will use the method of 1-1 correspondence.

Let  $A$  be the set of 4-letter words whose letters are all different and in alphabetical order. Let  $B$  be the set of unordered sets of 4 distinct letters.

Given an element of  $A$ , we take the letters in that word as the element of  $B$ .

Given an element of  $B$ , we list the letters in alphabetical order and take the resulting word as our element in  $A$ .

So every element in  $A$  corresponds uniquely to an element in  $B$ , and every element in  $B$  corresponds uniquely to an element in  $A$ .

Since A and B are in 1-1 correspondence, they have the same size.

The number of elements in B is  ${}^{26}C_4$

So the answer is **14950**