

Conditions

How many numbers superior to 50000 can be formed using the digits 1,2,4,6,8 ?

Solution

If we saying about 5-digit number, where all these digits meet only once, there are following numbers exist – all numbers with 1st digit 8 and all numbers with 1st digit 6. Others will be not bigger than 48621 which is less than 50000.

So, let's count how many numbers superior to 50000 exist.

After 1st digit “8” other 4 digits could be chosen in such ways:

2nd digit – in 4 ways, 3rd – in 3 ways, 4th – in 2 ways, 5th – which is last, 1 way.

That's why the amount of all permutations are:

$$4 \cdot 3 \cdot 2 \cdot 1 = 4! = 24$$

Also, for 1st digit “6” we have 24 permutations too.

Together there are 24+24=48 numbers which are superior than 50000.

Answer: 48