

## 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 1<sup>st</sup> digit 8 and all numbers with 1<sup>st</sup> 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 1<sup>st</sup> digit "8" other 4 digits could be chosen in such ways:

2<sup>nd</sup> digit – in 4 ways, 3<sup>rd</sup> – in 3 ways, 4<sup>th</sup> – in 2 ways, 5<sup>th</sup> – 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 1<sup>st</sup> digit "6" we have 24 permutations too.

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

**Answer: 48**