

How many different 3-digit odd numbers can be formed with the digits 0, 1, 2 up to 9 if repetition of digits is not allowed?

Solution

If repetition is allowed and 0 can be in first position

$$N = 10 * 10 * 10.$$

If repetition is allowed and 0 can't be in first position

$$N = 9 * 10 * 10.$$

If repetition is not allowed and 0 can be in first position

$$N = 10 * 9 * 8.$$

If repetition is not allowed and 0 can't be in first position

$$N = 9 * 9 * 8.$$

If repetition is not allowed and 0 can't be in first position, and numbers must be odd

$$N = 9 * 9 * 4.$$

And we have:

1st position: 9 allowable (0 can't be in this position)

2nd position: 9 (no repeats, but we can use 0)

3rd position: 4 (numbers must be odd)

So

$$N = 9 * 9 * 4 = 324$$

Answer: 324.