

## Tips and Tricks

1. Though concepts of NGT and NGC might seem a bit "non-intuitive", but when you do some examples you will get the fill of it. I advise you to do 2-3 such problem with step by step process.
2. Make sure to understand the case conditions for NGT and NGC. Only if problem satisfies the condition, we proceed.
3. Try to be an active reader and problem solver to grasp any concept of any subject. By active I mean consistency. Consistency is everything.
4. I have given similar types of problems in problem sections, try to solve them in timed manner. Timing your problem solving can make your study more efficient.
4. Solve of lots of problems from other reference books and coaching notes that are given below each video.

## Concepts and Formulas

### Numerically Greatest Coefficients (NGC) :

This is easy to get: just put  $a=1$  and  $b=1$

$${}^nC_r \text{ is maximum at } r = \begin{cases} \frac{n}{2}, & \text{if } n \text{ is even} \\ \frac{n-1}{2}, \frac{n+1}{2}, & \text{if } n \text{ is odd.} \end{cases}$$

Note:

1. Depending on the question putting  $a=1$ , and  $b=1$  can help in solving coefficient related problems.
2. Use of differentiation and integration to find the sum of binomial coefficients. Keep this point in mind.

Some important properties of binomial coefficients:

$$\begin{aligned} {}^nC_0 + {}^nC_1 + {}^nC_2 + \dots + {}^nC_n &= 2^n \\ {}^nC_0 - {}^nC_1 + {}^nC_2 - \dots + (-1)^n {}^nC_n &= 0 \\ {}^nC_1 - 2 \cdot {}^nC_2 + 3 \cdot {}^nC_3 - \dots + (-1)^{n-1} n \cdot {}^nC_n &= 0 \quad (\text{for } n > 1). \end{aligned}$$

### Numerically Greatest Term (NGT) :

Consider  $(1+x)^n$

Also define  $p$  such that:

$$p = \frac{(n+1)|x|}{|x|+1}.$$

Case-1: When  $p$  is an integer

NGT are  $T_n, T_{n+1}$

Case-2: When  $p$  is not integer

NGT is  $T_{c+1}$

here  $c$  is integer part of  $p$ .