

CONSIDER POLLACHI,

TOTAL VOTERS ≈ 10 Lakhs $= N$

IN OUR CASE, LET US CONSIDER A DIRECT CONTEST BETWEEN ADMK & DMK.

LET ADMK'S TOTAL VOTES $= AD$
& PROBABILITY OF WINNING $= p$

iii) LET DMK'S TOTAL VOTES ~~AD~~ $= DM$
& PROBABILITY OF WINNING $= q$ ①

$$\Rightarrow p AD + q DM = N = 10,00,000$$

IN A CLOSE CONTEST, WHERE $10,00,000^{\text{th}}$ VOTE DECIDES TIE,

$$AD \approx DM \approx 5,00,000$$

$$\text{LET } \begin{array}{l} p' = p \pm \Delta p \\ q' = q \pm \Delta q \end{array} \quad \left| \quad \begin{array}{l} AD' = AD \pm \Delta AD \\ DM' = DM \pm \Delta DM \end{array} \right.$$

$$\Rightarrow AD' = AD - \left| p - \frac{1}{2} \right| N \\ = N(1 - \Delta p) \quad \text{--- ②}$$

② IS A BINOMIAL DISTRIBUTION WITH A MEAN np

WE KNOW THAT, BINOMIAL DISTRIBUTION TENDS TO NORMAL DISTRIBUTION WHEN $SD = \sqrt{Npq}$

$$\text{ASSUME } p = 0.48, q = 0.52$$

$$\Rightarrow DM' = 5,00,000 \pm 12,500$$

$$+ \sqrt{Npq} = \sqrt{10,00,000 \times 0.48 \times 0.52} \\ = 353.27$$

FOR 10 SD'S AWAY $P(10SD'S) = C$ //