1. What is the variation impact on I_d:
   - W ?
   - L ?
   - t_{OX} ?
   - V_{th} ?

2. Assuming $V_{th,nom}$=250mV and $\sigma_{V_{th}}$=25mV, there is roughly a 96% probability that a given transistor has a V_{th} between 200mV and 300mV. What is the probability that **all** transistors in a 100 transistor circuit have a V_{th} between 200mV and 300mV?

3. Recompute the probability that **all** 100 transistors are in range when each transistor has a 99.8% probability of being in range.

4. If we need high and low brackets for N parameters, how many cases must we consider?

Resistive:

$$I_D = \mu_n C_{OX} \left(\frac{W}{L}\right) \left(\left(V_{GS} - V_{th}\right) V_{DS} - \frac{\left(V_{DS}\right)^2}{2} \right) \tag{1}$$

Saturated (Pinch Off):

$$I_D = \frac{1}{2} \mu_n C_{OX} \left(\frac{W}{L}\right) \left(V_{GS} - V_{th}\right)^2 \tag{2}$$

Velocity Saturated:

$$I_D = \nu_{sat} C_{OX} W \left(V_{GS} - V_{th} - \frac{V_{DSAT}}{2} \right) \tag{3}$$

Subthreshold:

$$I_D = I_S \left(\frac{W}{L}\right) e^{\frac{V_{GS} - V_{th}}{nkT/q}} \tag{4}$$