Grübler's Equation

$$3\ell - 2j = 4$$

Consequences (cont'ed):

- Number of kinematic elements in one link cannot exceed half the number of links in the mechanism, $\ell_k, k \leq \ell/2$

  Consider type (a) link with maximum possible kinematic elements on it ($i = k$).

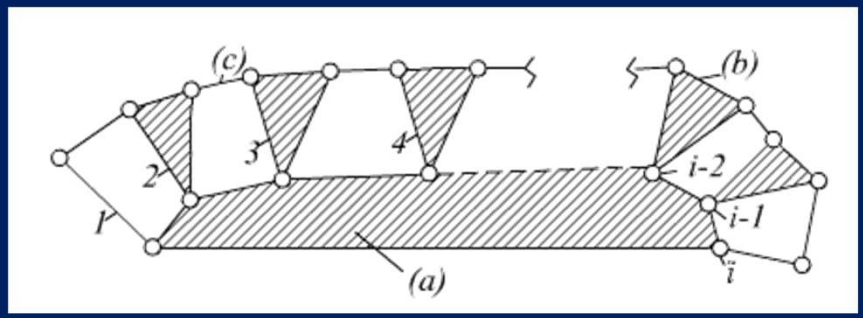
  Type (b) links (ternary) are connected to type (a) links (k - *2*).

  Type (c) links (binary) connect type (b) links (k - *1*) and two (2) are connected to type (a) link (k + *1*) .

  Total number of links in the mechanism for this case is
  $\ell = 1 + (k-2) + (k+1) = 2k$

  or

  $$k_{max} = \frac{\ell}{2}$$



Detailed explanation due Samed Ercan of ME 301 class 2026.
Figure from electronic lecture notes of Eres Söylemez https://ocw.metu.edu.tr/course/view.php?id=132