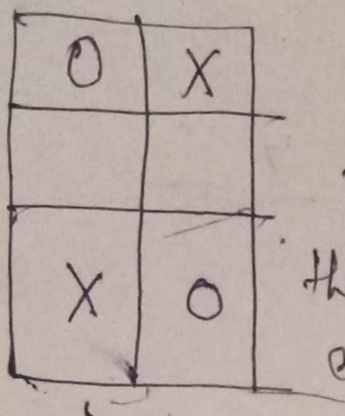
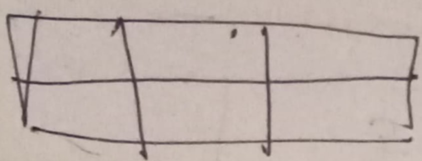


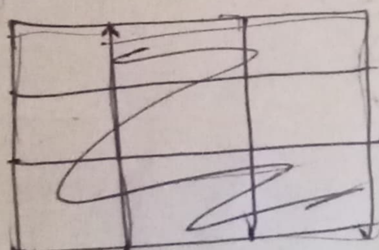
So given 2×3 grid there are two ways in which the two knights attack each other.



for a give 3×2 grid there are two ways in which the two knights attack each other.

$\times n-1 + n-1 = 2n-2$

$\cancel{(n-2)\times(n-1)} \times 2$



Now in a $n\times n$ grid no. of ways to select 2×3 box $= (n-1)\times(n-2)$

$^{n^2}C_2 - (n-2)(n-1)$

$= \frac{n^2(n^2-1)}{2} - (n-2)(n-1)$

$n = 2,$ 4×6 4

$n = 3,$ $\frac{9\times 8}{2} - 1\times 2\times 2$

Now: in a $n \times n$ grid no. of ways to select 3×2 box $= (n-2) \times (n-1)$

∴ in each 2×3 and 3×2 there are two positions where ~~were~~ the knights attack each other and these ~~are~~ are ~~complete~~, exhaustive

∴ the no. of positions where the two knights attack each other $= 2[(n-2)(n-1) + (n-1)(n-2)]$

$= 4(n-1)(n-2)$

∴ total no. of positions for $n \times n$ grid

$= {}^{n^2}C_2 - 4(n-1)(n-2)$

$= \frac{n^2(n^2-1)}{2} - 4(n-1)(n-2)$