standard molar entropy (S) = 188.8 J/(mol*K)

W_T - ?

$S = k \ln W_T$

$k = \frac{R}{N_A}$

$W_T = e^{S/k} = e^{136.82*10\text{^}23}$

$S/k = 188.8 \text{ J/(mol*K)} / 1{,}38 *10^{-23} \text{ J/(mol*K)} = 136.82*10^{23}$

$k = 1{,}38 *10^{-23} \text{ J/(mol*K)}$