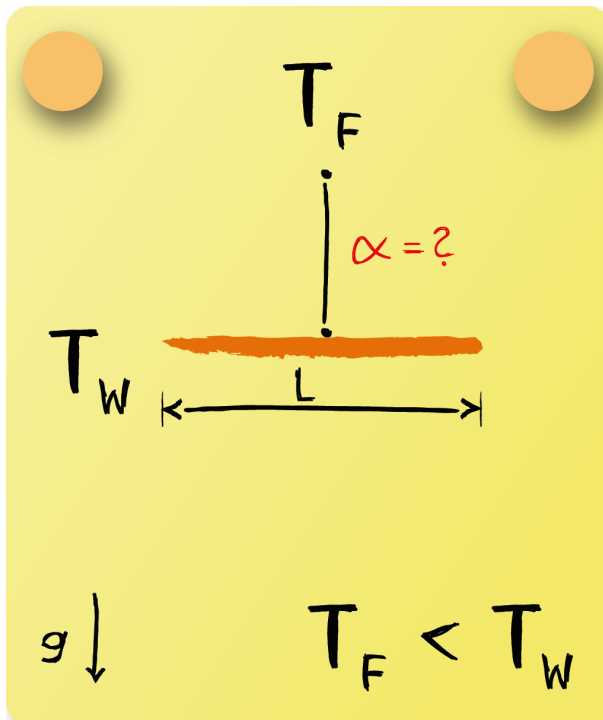# Heat Transfer Correlation: Task 19

The image describes a horizontal plate with length L and a constant temperature T_W standing in a non-moving ideal gas of temperature T_F. The temperature of the upper surface T_W is higher than the fluid temperature T_F.

1 HTC.23a: $\overline{Nu_L} = 0.15(Gr_L Pr)^{1/3}$ for $8\cdot 10^6 < Gr_L Pr < 10^{11}$ with $\beta = \frac{1}{T_\infty} = \frac{1}{T_F}$ (ideal gas)

2 Results: $Gr_L = 1.18 \cdot 10^9$ $\overline{Nu_L} = 147.32$ $\overline{\alpha} = 5.24$

3 **Important:** Use temperatures in Kelvin!