Maximum Length of Hung Chain.

A uniform chain of length l is placed on the table in such a manner that its l' part is hanging over the edge of table without sliding. Since the chain have uniform linear density therefore the ratio of mass or ratio of length for any part of the chain will be equal.

We know $\mu = \dfrac{m_2}{m_1} = \dfrac{\text{mass hanging from the table}}{\text{mass lying on the table}}$ [From article 5.15]

∴ For this expression we can rewrite above expression in the following manner

$\mu = \dfrac{\text{length hanging from the table}}{\text{length lying on the table}}$ [As chain have uniform linear density]

∴ $\mu = \dfrac{l'}{l - l'}$

by solving $l' = \dfrac{\mu l}{(\mu + 1)}$