In $\Delta\, ABC$:

$$\left(m_a^7 + m_b^7 + m_c^7\right)\left(\frac{1}{m_a^3} + \frac{1}{m_b^3} + \frac{1}{m_c^3}\right) \ge s^4,\ s - \text{semiperimeter}$$

Proposed by Daniel Sitaru – Romania

Solution by Soumava Chakraborty – Kolkata – India

$$\left(m_a^7 + m_b^7 + m_c^7\right)\left(\frac{1}{m_a^3} + \frac{1}{m_b^3} + \frac{1}{m_c^3}\right)$$

$$\overset{C-B-S}{\ge} \left(m_a^2 + m_b^2 + m_c^2\right)^2 = \left\{\frac{3}{4}\left(a^2 + b^2 + c^2\right)\right\}^2$$

It suffices to show $\frac{3}{4}\left(a^2 + b^2 + c^2\right) \ge s^2 = \frac{(a+b+c)^2}{4}$

$\Leftrightarrow a^2 + b^2 + c^2 \ge ab + bc + ca \rightarrow$ true (Proved)