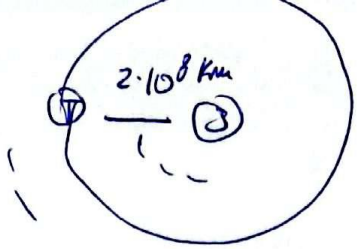
LA TELERIA di RUSSEL

$T = ?$

$R = 2 \cdot 10^8$ Km



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$\omega = \frac{2\pi}{T}$

$F_c = F_G$ oppure $m_T \omega^2 R = \frac{G M_S m_T}{R^2}$

$\frac{m_T v^2}{R} = \frac{G M_S m_T}{R^2}$

$\frac{4\pi^2}{T^2} = \frac{G M_S}{R^3} \rightarrow \frac{T^2}{R^3} = \frac{4\pi^2}{G M_S} \rightarrow T = 2\pi \sqrt{\frac{R^3}{G M_S}}$

$\frac{2^2 \pi^2 R^2}{T^2 \cdot R} = \frac{G M_S}{R}$

$T = \sqrt{\frac{4\pi^2 \cdot R^3}{G M_S}} = \sqrt{\frac{4\pi^2 \cdot (2 \cdot 10^{11}\,m)^3}{6{,}67 \cdot 10^{-11} \frac{N\,m^2}{kg^2} \cdot 2 \cdot 10^{30}\,kg}} = \frac{4{,}87 \cdot 10^6}{24 \cdot \sqrt{3600}}$ s

$\downarrow$

$(= 565$ giorni$)$

LE LEGGI di Kepler valgono anche per la TELERIA!

oppure $\frac{T^2}{R^3} = cost.$

$\frac{T_t^2}{R_t^3} = \frac{T_{Terra}^2}{R_{Terra}^3} \rightarrow T_t = T_{Terra} \cdot \sqrt{\frac{R_t^3}{R_{Terra}^3}} = 1\,anno \cdot \sqrt{\left(\frac{2 \cdot 10^8\,Km}{1{,}5 \cdot 10^8\,Km}\right)^3} = 1\,anno \cdot 1{,}54 = 562{,}3$ giorni

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