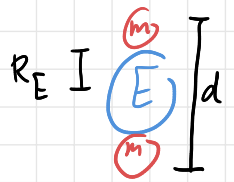

Geogons

$m = 6g$

$R_{earth} = 6.378 \times 10^6 m$

$G = 6.674 \times 10^{-11}\ N m^2/kg^2$

* m is randomly generated and may be different value from what is worked out here

a) $F_G = G\frac{mm}{d^2} = \left(6.674\times10^{-11}\frac{Nm^2}{kg^2}\right)\frac{(0.006\,kg)(0.006\,kg)}{(2\times 6.378\times10^6 m)^2} = 1.477\times10^{-29}\,N$

b) (m gas) = (m proton) × (Number of protons)

$N = \frac{m}{m_p} = \frac{0.006\,kg}{1.673\times10^{-27}\,kg} = 3.587\times10^{24}$

c) $F_E = k\frac{QQ}{d^2} = k\frac{(Nq_e)(Nq_e)}{d^2} = k\frac{(N\cdot q_e)^2}{d^2} = k\left(\frac{m}{m_p}\varepsilon_e\right)^2\frac{1}{d^2}$

$= (8.99\times10^9\,Nm^2/C^2)\left(\frac{0.006\,kg}{1.673\times10^{-27}\,kg}\,1.602\times10^{-19}\,C\right)^2\frac{1}{(2\times6.378\times10^6 m)^2}$

$= 1.824\times10^7\,N$

$\approx$ thrust of Space shuttle boosters at take off

d) Grav force isn't detectable

Electric force is too strong for you to hold together