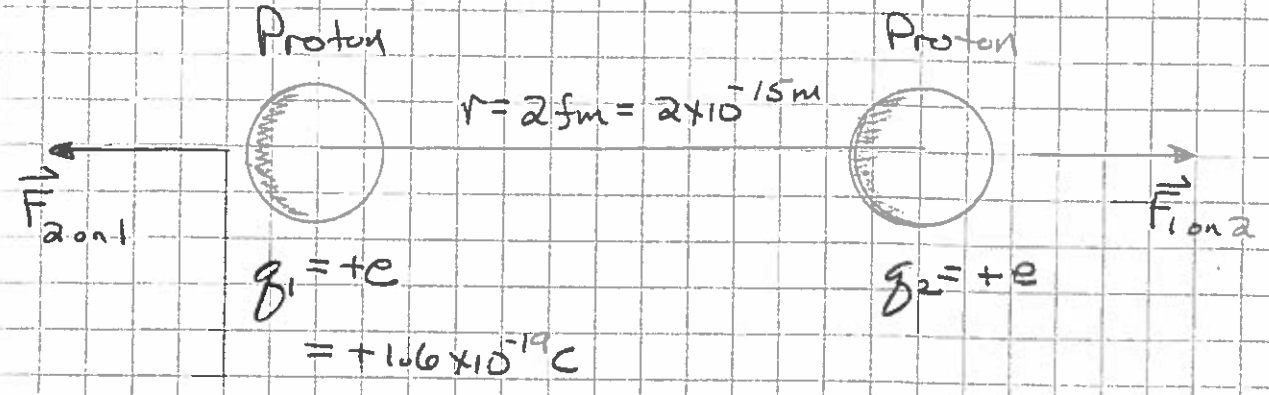

a.) Magnitude: $|\vec{F}| = F = \frac{K|q_1||q_2|}{r^2} = \frac{Ke^2}{r^2}$

$= 57.5\,N \left(.225\,\frac{lb}{N}\right)$

$= 12.95$ pounds !

b.) $F_G = \frac{G m_1 m_2}{r^2} = \frac{G m_p^2}{r^2}$ $\quad m_p = 1.67\times10^{-27}\,kg$

$= 4.65\times10^{-35}\,N$

c.) $\frac{F_{electric}}{F_{gravity}} = 1.236\times10^{36}$

If there are two protons in an atomic nucleus, gravity is far too weak to overcome their electric repulsion. The strong nuclear force provides an attractive force that is strong but very short range. It holds the nucleus together.