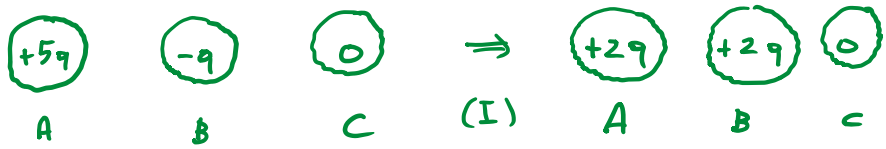
8.1 Il faut retirer une charge $q = n \cdot e = 3{,}8\,\mu C = 3{,}8 \cdot 10^{-6}\,C$

$\Rightarrow$ n = nombre d'électrons à retirer $= \dfrac{q}{e} = \dfrac{3{,}8 \cdot 10^{-6}\,C}{1{,}6 \cdot 10^{-19}\,C} \simeq 2{,}4 \cdot 10^{13}$

8.2 Q = charge nette $= +8{,}0\,\mu C - n \cdot e = +8{,}0 \cdot 10^{-6} - 6 \cdot 10^{13} \cdot 1{,}6 \cdot 10^{-19} = -1{,}6 \cdot 10^{-6}\,C$

$= -1{,}6\,\mu C$

8.3



I, II, III

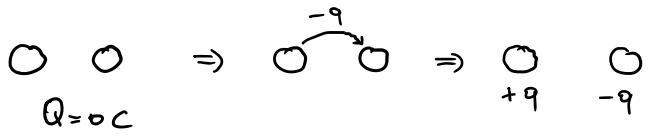
3 manipulations successives, selon la consigne !

(a) . $+4q$ (b) . $+4q$ (c) . $+\frac{3}{2}q$

8.5 2 protons $q_p = +e = 1{,}6 \cdot 10^{-19}\,C$, $d = 3{,}0 \cdot 10^{-15}\,m$

$\Rightarrow F_E = k \dfrac{q_p^2}{d^2} = 9 \cdot 10^9 \cdot \dfrac{(1{,}6 \cdot 10^{-19})^2}{(3 \cdot 10^{-15})^2} = 25{,}6\,N$

8.6



$|q| = 3 \cdot 10^{13} \cdot e = 3 \cdot 10^{13} \cdot 1{,}6 \cdot 10^{-19}$

$= 4{,}8 \cdot 10^{-6}\,C$

La force F_E est attractive !

$F_E = k \cdot \dfrac{|q|^2}{d^2} = 9 \cdot 10^9 \cdot \dfrac{(4{,}8 \cdot 10^{-6})^2}{0{,}5^2} \simeq 8{,}3 \cdot 10^{-1}\,N$

8.7 $F_G = G \cdot \dfrac{m \cdot M_T}{R_T^2} = F_E = k \cdot \dfrac{q^2}{R_T^2}$ $\Rightarrow$ $G\,m\,M_T = k\,q^2$ $\Rightarrow$ $q = \left\{ \dfrac{G\,m\,M_T}{k} \right\}^{1/2}$

$q = \left[\dfrac{6{,}67 \cdot 10^{-11}}{9 \cdot 10^9} \cdot 215 \cdot 6 \cdot 10^{24} \right]^{1/2} \simeq 3{,}1 \cdot 10^3\,C$