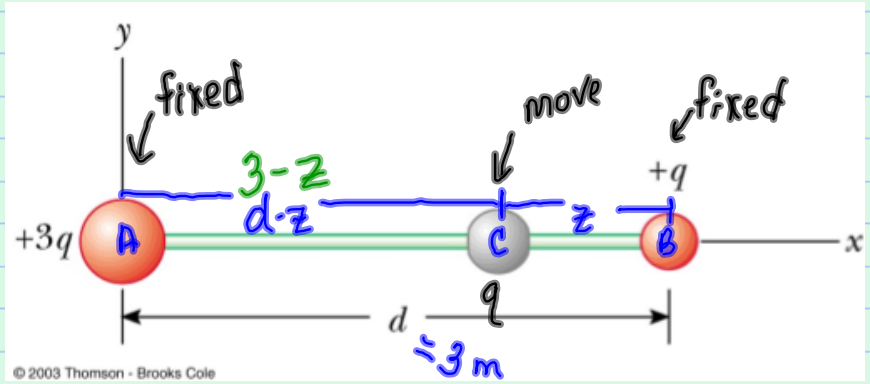
14.

$q = 1.6 \times 10^{-19} C$

$\frac{kq_1q_2}{r^2} = F$



$K = 9 \times 10^9 \frac{Nm^2}{C^2}$

$q = 1.6 \times 10^{-19} C$ quantized

q in whole #s

$F_A = \frac{k(3q)q}{(d-z)^2}$

$F_B = \frac{kqq}{z^2}$

$\frac{k3qq}{(d-z)^2} = \frac{kqq}{z^2}$

$3z^2 = (d-z)(d-z)$

$3z^2 = d^2 - 2dz + z^2$

$3z^2 - d^2 + 2dz - z^2 = 0$

$2z^2 + 2dz - d^2 = 0$

$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ if $d = 3$ $2z^2 + 6z - 9 = 0$ ← use solver

$z = 1.1 m$