#9

Given:

$q_1 = -2.0 \times 10^{-4}\ C$

$q_2 = 8.0 \times 10^{-4}\ C$

$r = 0.30\ m$

$K = 8.99 \times 10^{9}\ \frac{N m^2}{C^2}$

Unknown:

$F_E = \_\_\_\_\ N$

Equation

$$F_E = \frac{K q_1 q_2}{r^2}$$

$$F_E = \frac{(8.99 \times 10^{9})(-2.0 \times 10^{-4})(8.0 \times 10^{-4})}{(0.30)^2}$$

$F_E = -15982.222$

$F_E = -16000\ N$

or

$F_E = -1.6 \times 10^{4}\ N$

#10

Given:

$q_1 = -6.0 \times 10^{-6} C$

$F_E = -65 N$

↳ negative b/c attractive

$r = 0.050 m$

$K = 8.99 \times 10^9 \frac{Nm^2}{C^2}$

Unknown:

$q_2 = \_\_\_\_ C$

Equation:

$r^2 * F_E = \frac{K q_1 q_2}{r^2} * r^2$

$\frac{F_E r^2}{K q_1} = \frac{K q_1 q_2}{K q_1}$

$\therefore q_2 = \frac{F_E r^2}{K q_1}$

$q_2 = \frac{(-65)(.050)^2}{(8.99 \times 10^9)(-6.0 \times 10^{-6})}$

$q_2 = 3.0126 \times 10^{-6} C$

$q_2 = 3.0 \times 10^{-6} C$