

$$F = \frac{q_1 q_2}{4\pi\epsilon_0 r^2} \Rightarrow F = q_1 \times q_2 \times \frac{1}{4\pi\epsilon_0} \times \frac{1}{r^2}$$

$$9 \times 10^{-1} = F$$

$$q_2 = q_1 - 6 \times 10^{-6} \quad (\text{Since } q_1 - q_2 = 6 \times 10^{-6})$$

↓  
Given data

$$\frac{1}{4\pi\epsilon_0} = 9 \times 10^9$$

$$r = 40 \times 10^{-2} \text{ m}$$

$$\text{So } 9 \times 10^{-1} = \frac{q_1 \times (q_1 - 6 \times 10^{-6}) \times 9 \times 10^9}{(40 \times 10^{-2})^2}$$

$$9 \times 10^{-1} = \frac{q_1^2 - 6 \times 10^{-6} q_1 \times 9 \times 10^9}{16 \times 10^{-2}}$$

$$\begin{aligned} (40 \times 10^{-2})^2 &= 1600 \times 10^{-4} \\ &= 16 \times 10^2 \times 10^{-4} \\ &= 16 \times 10^{-2} \end{aligned}$$

$$\frac{9 \times 10^{-1}}{9 \times 10^9} = \frac{q_1^2 - 6 \times 10^{-6} q_1}{16 \times 10^{-2}}$$

$$10^{-10} \times 16 \times 10^{-2} = q_1^2 - 6 \times 10^{-6} q_1$$

$$q_1^2 - 6 \times 10^{-6} q_1 - 16 \times 10^{-12} = 0$$