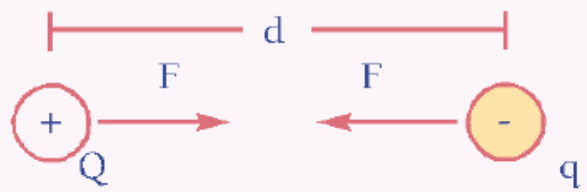
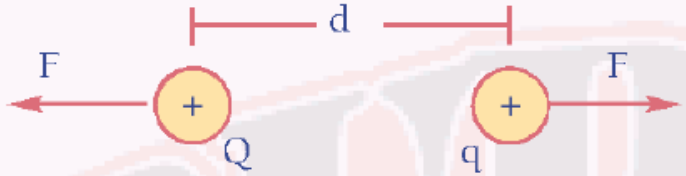
LEY DE COULOMB

Es una ley CUANTITATIVA: "La fuerza de atracción o repulsión en la línea que une los centros entre dos cargas electrostáticas, es directamente proporcional al producto de sus masas eléctricas, e inversamente proporcional al cuadrado de la distancia que separa sus centros".

Se atraen:



Se repelen:



$$F = K \frac{Q \cdot q}{d^2}$$

F, en newton "N"

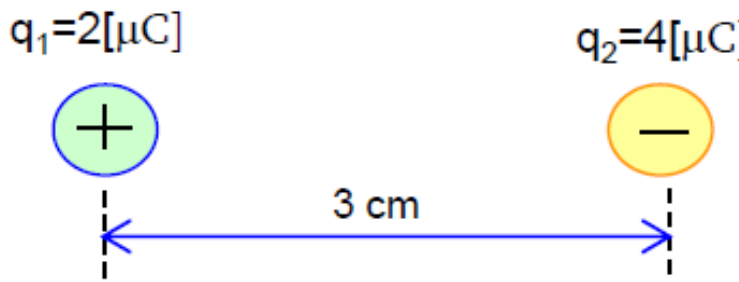
Q y q, en coulombio "C"

d, en metro "m"

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

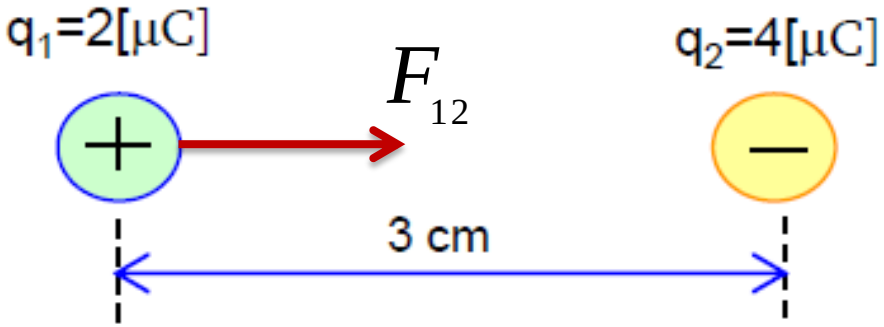
(en el vacío o en aire)

1. Hallar la fuerza en la carga q1.



A) 40i [N]
B) -40i [N]
C) 80i [N]
D) -80i [N]
E) N.A.

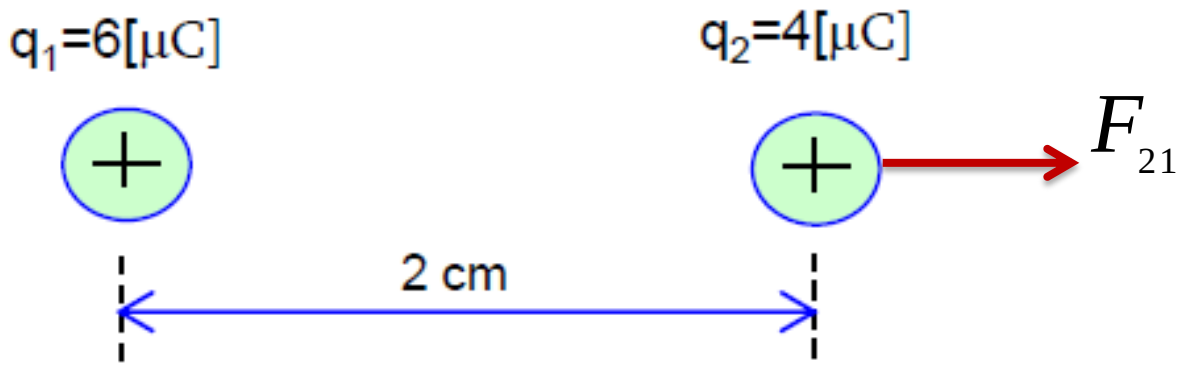
$$F_{12} = \frac{k\, q_1\, q_2}{d^2}$$



$$F_{12} = \frac{9.10^{9}\ 2.10^{-6}\ 4.10^{-6}}{(3.10^{-2})^2}$$

$$\vec{F}_{12} = 80i\,[N]$$

2. Hallar la fuerza en la carga q2.



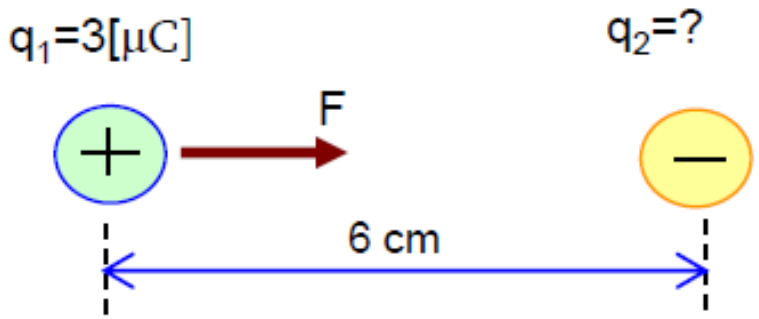
A) 540i [N]
B) -540i [N]
C) 800i [N]
D) -800i [N]
E) N.A.

$$F_{21} = \frac{k\, q_1\, q_2}{d^2}$$

$$F_{21} = \frac{9.10^{9}\ 6.10^{-6}\ 4.10^{-6}}{(2.10^{-2})^2}$$

$$\vec{F}_{12} = 540i\,[N]$$

3. Hallar la q2. Si F= 900[N].



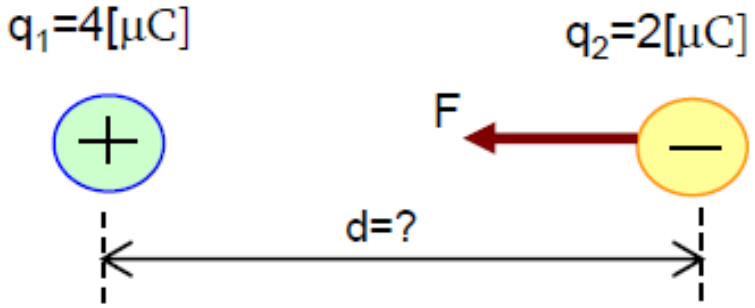
A) 100 [μC]
B) 120 [μC]
C) 140 [μC]
D) 160 [μC]
E) N.A.

$$F = \frac{k\, q_1\, q_2}{d^2} \qquad 900 = \frac{9.10^{9}\ 3.10^{-6}\ q_2}{(6.10^{-2})^2}$$

$$q_2 = 120\,[\mu C]$$

4. Hallar la distancia "d". Si F=20[N].

A) 2 [cm]
B) 4 [cm]
C) 6 [cm]
D) 8 [cm]
E) N.A.



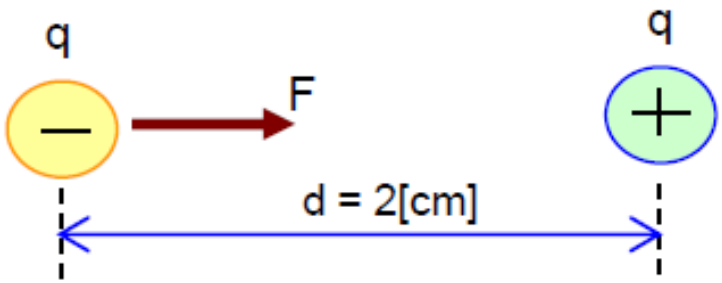
$$F = \frac{k\, q_1\, q_2}{d^2}$$

$$20 = \frac{9.10^{9}\ 4.10^{-6}\ 2.10^{-6}}{d^2}$$

$$d = 6[cm]$$

5. Hallar la carga "q" . Si F= 90[N].

A) 1 [μC]
B) 2 [μC]
C) 3 [μC]
D) 4 [μC]
E) N.A.



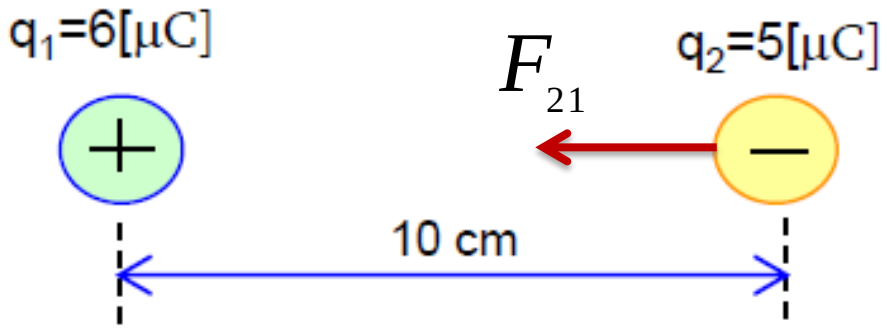
$$F = \frac{k\, q_1\, q_2}{d^2} \qquad F = \frac{k\, q^2}{d^2}$$

$$90 = \frac{9.10^9\, q^2}{(2.10^{-2})^2}$$

$$q = 2\,[\mu C]$$

6. Hallar la fuerza en la carga q2.

A) 27i [N]
B) -27i [N]
C) 28i [N]
D) -28i [N]
E) N.A.



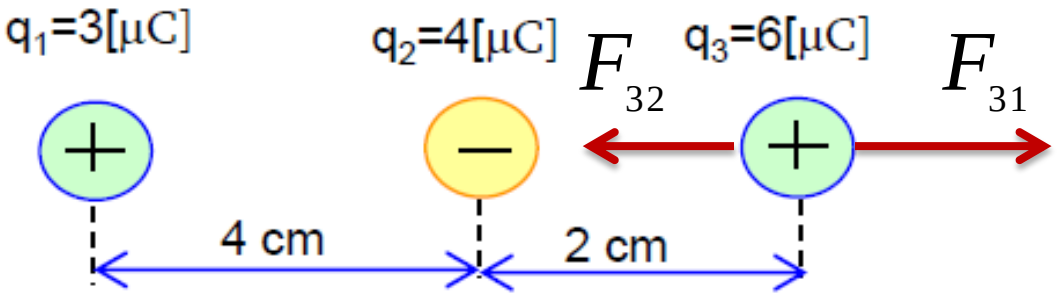
$$F_{21} = \frac{k\, q_1\, q_2}{d^2}$$

$$F_{21} = \frac{9.10^{9}\ 6.10^{-6}\ 5.10^{-6}}{(10.10^{-2})^2}$$

$$\vec{F}_{12} = -27i\,[N]$$

7. Hallar la fuerza resultante en "q3".

A) -490i [N]
B) -495i [N]
C) 500i [N]
D) 505i [N]
E) N.A.



$$F_{31} = \frac{k\, q_3\, q_1}{d_{31}^{\,2}} \qquad F_{31} = \frac{9.10^{2}\ 6.10^{-6}\ 3.10^{-6}}{(6.10^{-2})^{2}}$$

$$F_{31} = \frac{9.10^{2}\ 6.10^{-6}\ 3.10^{-6}}{(6.10^{-2})^{2}}$$