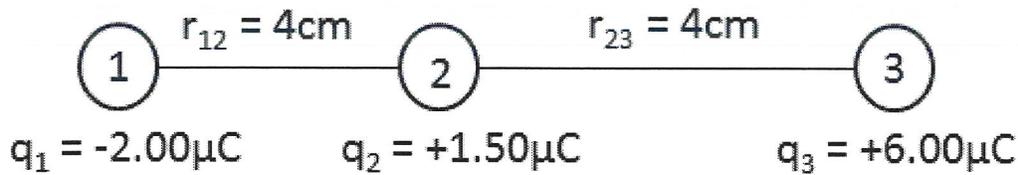


First Name: _____ Last Name: _____

L03 - Formative Quiz - Coulomb's Law in 2-Dimensions

Q1: If the second charge, q_2 , has a mass of 0.02kg, what is its instantaneous acceleration? (4 marks)



$$F_{12} = \frac{kq_1q_2}{r^2}$$

$$= \frac{0.02697}{0.0016}$$

$$= 16.85625 \text{ N [L]}$$

$$F_{23} = \frac{kq_2q_3}{r^2}$$

$$= \frac{0.08091}{0.0016}$$

$$= 50.56875 \text{ [L]}$$

$$a = \frac{F_{\text{net}}}{m}$$

$$= \frac{67.425 \text{ N}}{0.02 \text{ kg}}$$

$$= 3371.25 \text{ m/s}^2 \text{ [L]}$$

$$\vec{F}_{\text{net}} = \vec{F}_{12} + \vec{F}_{23}$$

$$= 16.85625 \text{ [L]} + 50.56875 \text{ [L]}$$

$$= 67.425 \text{ N}$$

Q2 (1 mark): A uniform metal sphere with a charge of +8.0 μC is momentarily brought into contact with an identical sphere of charge -6.0 μC . After they are separated, the charge on each sphere is:

- a) +0 μC and -0 μC
- b) +1 μC and +1 μC**
- c) +2 μC and +2 μC
- d) +8.0 μC and -6.0 μC

$$+8 - 6 = +2$$

MARKING:

Beginning	0.0 – 2.0
Progressing	2.5 – 3.0
Competent	3.5 – 4.5
Exemplary	5