First Name:_____   Last Name:_____

L06 – FQ – Electric Fields

Use the following information to answer Q1-Q5:

Two Point Charges
Two point charges are arranged at a right angle according to the diagram below.

$q_2 = +2.00\mu C$

(2)

12cm

$q_1 = -2.00\mu C$

(1)

P

$\vec{E_1}$

$\vec{E_2}$

12cm

Directions

2 3 5 6 7 ×9

1 4 8 •0

Q1: Use the vector directions above to fill in the blanks below.

Direction:	4	6	7
Description:	Direction of E-Field at Point P due to Charge 1	Direction of E-Field at Point P due to Charge 2	Direction of net E-Field at Point P

*(Record your **three-digit** answer in the Numerical Response boxes below)*

4	6	7	

Q2: The magnitude of the electric field at *Point P* due to *Charge 1* is **a.bc** x 10^d C, where **a, b, c,** and **d** are ___, ___, ___, and ___.

*(Record your **four-digit** answer in the Numerical Response boxes below)*
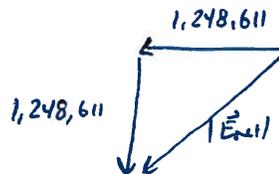
1	2	5	6

$$|\vec{E_1}| = \frac{kq_1}{r^2} = \frac{(8.99\times10^9)(2\times10^{-6})}{(0.12)^2} = 1,248,611.\overline{1} \text{ N/C}$$
$$\approx 1.25\times10^6 \text{ N/C}$$

Q3: The magnitude of the net electric field at *Point P* **a.bc** x 10^d C, where **a, b, c,** and **d** are ___, ___, ___, and ___.

*(Record your **four-digit** answer in the Numerical Response boxes below)*

1	7	7	6

$$a^2 + b^2 = c^2$$
$$|\vec{E_{net}}| = 1,765,802.767746 \text{ N/C}$$
$$\approx 1.77\times10^6 \text{ N/C}$$
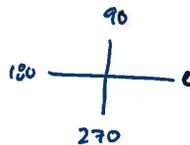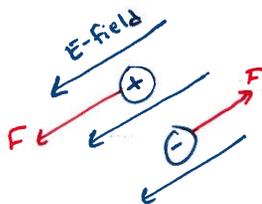
1,248,611

1,248,611

$|\vec{E_{net}}|$

Use the following additional information to answer Q4-Q5:

> *Charge C* has a charge of -2.5μC, and is placed at *Point P*.

Q4: *Charge* C will accelerate at an angle of ____ degrees, measured in Polar Coordinates.

*(Record your **three-digit** answer in the Numerical Response boxes below)*

4	5	.	0

E-field

F

F

Q5: The magnitude of the electrostatic force acting on *Charge C* is ____ N.

*(Record your **three-digit** answer in the Numerical Response boxes below)*

4	.	4	1

$$|\vec{E}| = \frac{|\vec{F}|}{q_{test}}$$

MARKING:

Beginning	0.0 – 2.0
Progressing	2.5 – 3.5
Competent	4.0 – 4.5
Exemplary	5.0

$$1,765,802.767746 \text{ N/C} = \frac{|\vec{F}|}{2.5\times10^{-6}}$$

$$|\vec{F}| = 4.41 \text{ N}$$