Honors Physics Electrostatics

Electric Field Calculations

Name _____

Period _____

$$F = qE \qquad E = K\frac{Q}{d^2} \qquad K = 9x10^9$$

1. What force will an object with a charge of 3.5 µC when it is placed in an electric field of 650 N/C.

$F_E = E \cdot q = 650(3.5 \times 10^{-6})$

$= 0.002275\ N$ $\quad 2.275 \times 10^{-3}$

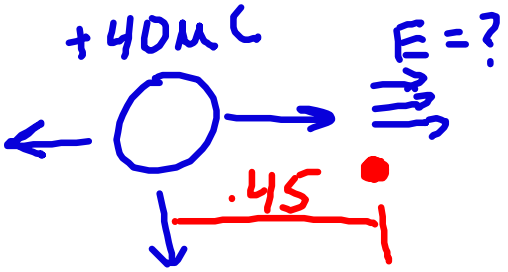
2. A pith ball with a charge of 0.90 µC is located in an electric field and experiences a force of 0.0025 N, what is the strength of the electric field?

$F = Eq \qquad E = \frac{0.0025}{0.9 \times 10^{-6}} = 2,778\ \frac{N}{C}$

$E = F/q \qquad 2.778 \times 10^3\ N/C$

QUEST HOH #10 $\quad q_p = 1.602 \times 10^{-19}\ C$

3. A pith ball with a charge of -0.90 µC is located 0.45 m to the right of balloon with a charge of +40.0 µC. Calculate the electric field strength and direction at the location of the pith ball.



$E = \frac{KQ}{d^2}$

$E = \frac{(9 \times 10^9)(40 \times 10^{-6})}{(.45)^2}$

$= 1,777,777$

$1.78 \times 10^6\ N/C$

If the pith ball is released and free to move, in what direction will it move?