Electric Field Example Problems
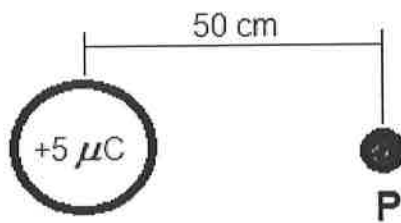
1. A positive 1.0×10^{-5}C charge experiences a force of 0.2 N when located at a point in an electric field. What is the electric field strength at that point. (2.0×10^4 N/C)

$$F = Eq \qquad E = \frac{0.2}{1 \times 10^{-5}} = 20,000 \text{ N/C}$$

$$E = F/q$$

2. What is the electric field strength at point "P" 50 cm from to the right of the $+5 \mu$C charge?

50 cm

$+5 \mu$C

P

$$F = \frac{KQ}{d^2} = \frac{9 \times 10^9 \left(5 \times 10^{-6}\right)}{(0.50)^2} = 180,000 \frac{N}{C}$$

a. What is the direction of the field at point "P"

$\rightarrow$ AwAy FRom a Positive Charge.

b. What is the force on an on a particle with a -3.5 μC charge placed at point "P"?

$$F = Eq = (180,000)(3.5 \times 10^{-6}) = 0.63 N$$

c. What is the direction of the force on the -3.5 μC charge placed at point "P"?

$\leftarrow$ Negative charges move Against The Field.