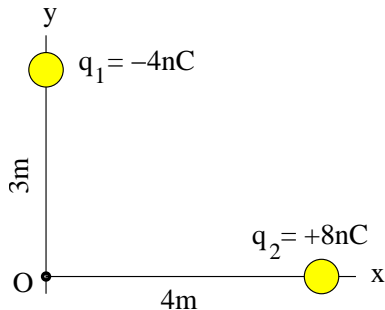


Unit Exam I: Problem #1 (Spring '08)



Consider two point charges positioned in the xy -plane as shown.

- (a) Find the magnitude F of the force between the two charges.
- (b) Find the components E_x and E_y of the electric field at point O .
- (c) Find the electric potential V at point O .
- (d) Find the potential energy U of charge q_2 in the presence of charge q_1 .



Unit Exam I: Problem #1 (Spring '08)

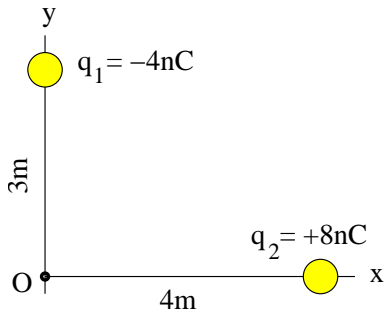


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Solution:

(a) $F = k \frac{|q_1 q_2|}{(5\text{m})^2} = 1.15 \times 10^{-8} \text{N}.$





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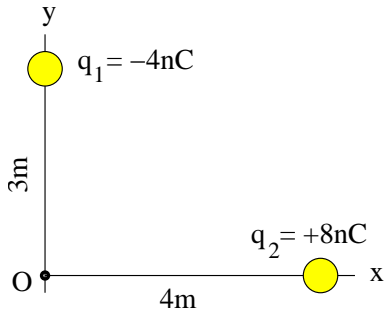
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Solution:

$$(a) F = k \frac{|q_1 q_2|}{(5\text{m})^2} = 1.15 \times 10^{-8} \text{N}.$$

$$(b) E_x = -k \frac{|q_2|}{(4\text{m})^2} = -4.5 \text{ N/C},$$

$$E_y = +k \frac{|q_1|}{(3\text{m})^2} = +4.0 \text{ N/C}.$$





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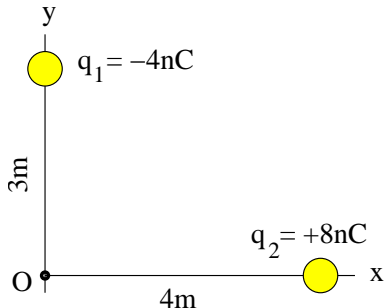
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