

PH 102 Quiz 2: Use the Force

$$\vec{\mathbf{F}} = k_e \frac{q_1 q_2}{r_{12}^2} \hat{\mathbf{r}}_{12} \quad k_e = 8.9875 \times 10^9 \frac{\text{N} \cdot \text{m}^2}{\text{C}^2} \quad \vec{\mathbf{E}} = \frac{\vec{\mathbf{F}}}{q_0} \quad |\vec{\mathbf{E}}| = k_e \frac{|q|}{r^2}$$

- Two charges of $+1 \mu\text{C}$ each are separated by 1 cm. What is the force between them?
 - 0.89 N
 - 90 N
 - 173 N
 - 15 N
- The electric field *inside* an isolated conductor is
 - determined by the size of the conductor
 - determined by the electric field outside the conductor
 - always zero
 - always larger than an otherwise identical insulator
- Which statement is false?
 - Charge deposited on conductors stays localized
 - Charge distributes itself evenly over a conductor
 - Charge deposited on insulators stays localized
 - Charges in a conductor are mobile, and move in response to an electric force
- Which of the following is true for the electric force, but not the gravitational force?
 - The force propagates at a speed of c
 - The force acts at a distance without any intervening medium
 - The force between two bodies depends on the square of the distance between them
 - The force between two bodies can be repulsive as well as attractive.
- Two charges of $+1 \mu\text{C}$ are separated by 1 cm. What is the magnitude of the electric field halfway between them?
 - $9 \times 10^7 \text{ N/C}$
 - $4.5 \times 10^7 \text{ N/C}$
 - 0
 - $1.8 \times 10^8 \text{ N/C}$