

AP Physics 1 - Coulomb's Law Practice Problems

Show all work for the following problems. It is probably best if you sketch the set up so you correctly identify directions when solving for net force. Remember to convert μC to C, Ex: $5 \mu\text{C} = 5 \times 10^{-6} \text{ C}$.

1. Two charges are aligned with a $-2.5 \times 10^{-6} \text{ C}$ charge 0.50 m directly below a $3.0 \times 10^{-6} \text{ C}$ charge. Calculate the force acting on both charges, including direction.
2. Three charges are in a straight line. The first charge is $5.0 \mu\text{C}$. The second charge is $-3.5 \mu\text{C}$ and placed 0.25 m to the right of charge 1. The third charge is $4.2 \mu\text{C}$ and placed 0.45 m to the right of charge 1. Calculate the net force acting on the first charge. (include direction)
3. Calculate the net force on charge 2 from the previous set up. Be careful with your distances here.
4. Three positive charges are placed in a line. Charge A is at the origin (0, 0) and has a charge of $7.2 \mu\text{C}$. Charge B is placed at (0.85 m, 0) and has a charge of $2.3 \mu\text{C}$. Charge C is located at (1.2 m, 0) and has a charge of $1.4 \mu\text{C}$. Determine the net force, including direction, acting on Charge B. Be careful with distances.