COULOMB'S LAW - 3 POINT CHARGES

Example 1

Three-point charges are in a straight line as shown below. All three points have a charge of 2.5x10⁻⁵ C, but point q1 and q2 are negative and q3 is positive.

q1 and q2 are separated by a distance of 0.5 m. q2 and q3 are separated by a distance of 0.25 m.







- 1. Label the diagram: positives, negatives, distances, attracting, and repelling.
- 2. What direction is the net force on q2? Why?

Example 2

q1 has a charge of -2x10⁻³ C, q2 has a charge of 2x10⁻³ C, and q3 has a charge of -4.3x10⁻³ C. q1 and q2, and q3 are each separated by a distance of 0.3 m.







- 1. Label the diagram: positives, negatives, distances, attracting, and repelling.
- 2. What direction is the net force on q2? Why?

Example 3

q1 and q2 are separated by a distance of 0.35 m. q2 and q3 are separated by a distance of 0.5 m. q1 has a charge of 3.0x10⁻⁶ C, q2 has a charge of -3.5x10⁻⁶ C, and q3 has a charge of -4.2x10⁻⁶ C.







Calculate the net force acting on q1.

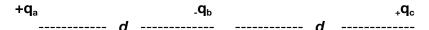
- 1) Label the diagram: positives, negatives, distances, attracting, and repelling.
- 2) Calculate the force between q1 and q2
- 3) Determine the direction that q1 will move because q2
- 4) Calculate the force between q1 and q3
- 5) Determine the direction that q1 will move because of q3.
- 6) Calculate the net force on q1 using the equation $F_{net} = F_1 + F_2$. You must include the direction as (+) and/or (-).

Practice

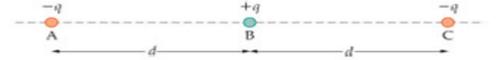
1. Three identical charged particles are aligned along the x-axis with an equal distance "**d**" apart, as shown in the diagram. Find the **direction** of the Net Force on **Particle B**.



2.	Three identical charged particles A, B, and C are aligned along the x-axis with an equal distance "d"
	apart, as shown in the diagram. They have the same size of charges, but particle A is positive,
	particle B is negative and particle C is positive. Find the direction of the Net Force on Particle C .



3. Rank the strength of electrical force on particle A, B and C.



4. Three-point charges are aligned on the horizontal axis as shown below. q1 and q2 are separated by a distance of 0.35 m. q2 and q3 are separated by a distance of 0.5 m. q1 has a charge of 3.2x10⁻⁷ C, q2 has a charge of -2.5x10⁻⁷ C, and q3 has a charge of -4.1x10⁻⁷ C.







Calculate the net force acting on q2.

- a. Label the diagram: positives, negatives, distances, attracting, and repelling.
- b. Calculate the force between q1 and q2.
- Determine the direction that q2 will move because q1.
- d. Calculate the force between q2 and q3.
- e. Determine the direction that q2 will move because of q3.
- f. Calculate the net force on q2 using the equation $F_{net} = F_1 + F_2$. You must include the direction as (+) and/or (-).

Calculate the net force on q3.

- g. You already calculated the magnitude of the forces acting on q3. Calculate the force of q1 on q3.
- h. Determine the direction that q3 will move because of q1.
- Determine the direction that q3 will move because of q2.
- j. Calculate the net force on q3 using the equation $F_{net} = F_1 + F_2$. You must include the direction as (+) and/or (-).