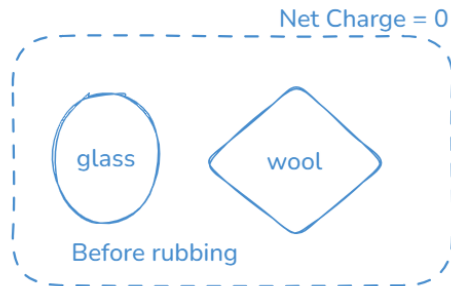


Electrostatics

Fundamental Laws - Practice Questions

Q1. List the fundamental laws of Electrostatics

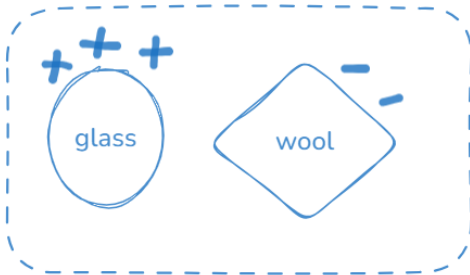
Q2. A system consists of a glass ball and a woolen linen as shown below:



After they are rubbed with each other (with insulated hands so that no charges leak), it was observed both get charged - depicted by the diagrams below, which represent possible cases after the interaction. For each of the diagrams below calculate or explain,

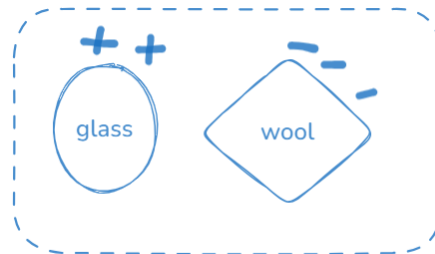
- What is the net charge on the system?
- Whether it violates the law of *conservation of charge*.

Case 1



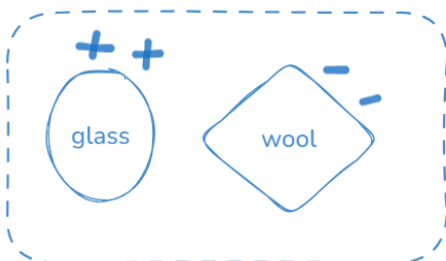
Net charge = ?
Violates the law?

Case 2



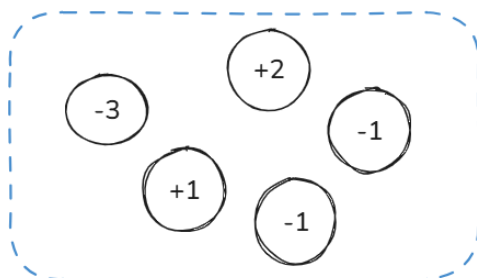
Net charge = ?
Violates the law?

Case 3



Net charge = ?
Violates the law?

Q3. A system shown below, which is insulated from outside, contains a few charged particles, with the corresponding charges in SI units, indicated as integers. Find the net charge in the System:



Q4. The SI unit of charge is **coulomb**. 1 coulomb is an enormous amount of charge!

- Using Coulomb's law of force from your book/handout, calculate the amount of force exerted by 1 coulomb charge on another identical charge which is 1 cm away from the former. [Note: The calculated force would be equivalent to approximately 5.7% of the weight of Mount Everest!]
- How many electrons would it take to produce 1 coulomb of negative charge?
- THINK and ANSWER:** If our human body has those many electrons (within the millions of trillions of atoms of the organic molecules, that constitute the live cells and tissues), then why can't we lift mountains with such enormous electrostatic force generated?