1. An electron has a charge of -1.6 ×10-19 C. How many electrons would be needed to produce a net charge of -4.8×106 C?
2. How many electrons are contained in 5C of charges? What is the total mass of these electrons?
3. An electron and a proton have charges of an equal magnitude but opposite sign of 1.6 × 10-19 C. If the electron and proton in a hydrogen atom are separated by a distance of 5×10-11 m, what are the magnitude and direction of the electrostatic force exerted on the electron by the proton?
4. Calculate the electric field intensity at a point 1m from the charge 100C in air.
5. What is the magnitude of the electric field strength E such that an electron placed in the field would experience an electric force equal to its weight
6. Find the flux through a spherical Gaussian surface of radius a = 1 m surrounding a charge of 8.85 pC
7. A uniform electric field of magnitude 1.1×104N/C is perpendicular to a square sheet with sides 2.0 m long. What is the electric flux through the sheet?
8. A point charge of 10μC10μC is at an unspecified location inside a cube of side 2 cm. Find the net electric flux though the surfaces of the cube.

**Example:**

**Problem 1:** A uniform electric field of magnitude E = 100 N/C exists in the space in X-direction. Using the Gauss theorem calculate the flux of this field through a plane square area of edge 10 cm placed in the Y-Z plane. Take the normal along the positive X-axis to be positive.

**Solution:**

The flux Φ = ∫ E.cosθ ds.

As the normal to the area points along the electric field, θ = 0.

Also, E is uniform so, Φ = E.ΔS = (100 N/C) (0.10m)2 = 1 N-m2/C