

**Assignment Sheet  
Static Electricity**

## Objectives

You will be able to:

## Static Electricity

- A. Define conductor, insulator, free electron, electrical ground, induced charge, polarization  
Give the sign of the charge on the electron and proton.  
Explain polarization in insulators  
Describe qualitatively how charges within a metal object redistribute when a charged object is brought nearby. Explain how an object can be charged by conduction and by induction.  
Describe the charging by induction and conduction with pith balls, electroscopes, and metal spheres
- B. Define Coulomb's law, electric field lines, and electric field strength.  
Use Coulomb's law to find the force on a charge due to nearby point charges.
- C. Find the electric field at a point due to several specified point charges.  
Sketch the electric field lines in the vicinity of simple charged objects (point charge and parallel plate capacitor).  
Use the relationship  $F=qE$  in simple situations.
- D. Define electrical potential.  
Calculate electrical potential in simple situations (point charges, uniform fields).  
Calculate work done moving a particle across an electric potential.  
Sketch equipotential lines ("equipots") from field lines or field lines from equipots.  
Describe the importance of potential in the motion of charges.

## Reading

- A. 19-1, Electric Charge, p. 653–656  
19-2, Insulators and Conductors, p. 656–657  
19-6.1, Charging by Induction, p. 675–676
- B. 19-3, Coulomb's Law, p. 657–664
- C. 19-4, The Electric Field, p. 664–670  
19-5, Electric Field Lines, p. 670–673
- D. 20-1, Electric Potential Energy and the Electric Potential, p. 691–694  
20-2, Energy Conservation, p. 694–697  
20-3, The Electric Potential of Point Charges, p. 697–701  
20-4, Equipotential Surfaces and the Electric Field, p. 701–705

## Laboratory

Various demos

## Focus Questions:

Pick any three of the textbook questions (not problems) from the web site from chapters 19 and 20.