Obtain an expression for the Fermi wavevector and the Fermi energy for a gas of electrons at absolute zero. Show that the density of states at the Fermi surface, dN/dE_F, can be written as $3N/2E_F$. Estimate the value of E_F for a monovalent metal such as copper.

Now consider a two dimensional gas of electrons, calculate the Fermi energy and the density of states at the fermi surface.