In this case there is no suggestion of any frequency dependent effects so we can assume that all measurements are static, $\omega = 0$.

The expression given (which has been encountered in lectures) $\Rightarrow$ $\chi \propto 1/T$ so we should add an additional line to the table:

T	500	333	250	200
1/T	0.0020	0.0030	0.0040	0.0050
χ	0.0032	0.0042	0.0052	0.0062

A plot of χ versus 1/T is clearly going to give a straight line in this case.

The gradient of the line is equal to $\dfrac{Np_0^2}{3k_B\varepsilon_0} = 1$ in this case (it's so obvious that it's not even necessary to plot it) and the χ-axis intercept indicates contributions to χ which don't have any temperature dependence (i.e. electronic, ionic).

Plugging in the values then gives $p_0^2 = 3k_B\varepsilon_o / N \Rightarrow \underline{\underline{p_0 = 3.6\times10^{-30}}}$ Cm

with $p_0 = qs = 1.6\times10^{-19}$ s (1 electron assumed transferred from H to Cl) this gives $s = \underline{\underline{2.25\times10^{-11}}}$ m or 0.225 angstroms.