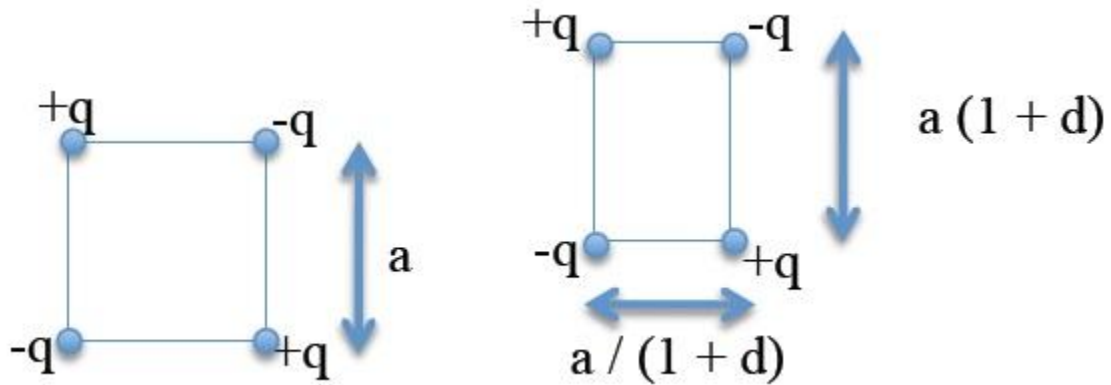Problem1: A. What is the Electrostatic energy of the following cells?

B. Are both lattices stable?

Problem 2:

Assume that the interaction between two ions of charge q_i and q_j is given by

$$U_{ij} = \frac{q_i q_j}{r} + \frac{e^2}{a} \left(\frac{a}{r}\right)^{12}$$

To see how good is the above form of interaction, determine the values of a for NaF and RbCl using the nearest neighbor separations in table 7 on page 66 of the Kittel book. Then calculate the lattice energy compared to free ions per NaF or RbCl. (Note $e^2/1\text{Å} = 14.39\text{eV}$.) Compare your result with the data in the table 7.

Problem 3: Work problem 6 at the end of chapter 3.

Problem 4: Work problem 7 at the end of chapter 3.