3-1)

Consider a parallel plate capacitor that meets the requirements for the approximations we made in our derivation for C_{PPC}. The plate separation is 2.5 mm and the square plates are 15 cm on an edge. Let's move 20 nC of charge from one plate to the other.

A) What is the capacitance of this capacitor?
B) What is the potential difference between the plates?
C) What is the electric field in the region between the plates?

Now, fill the space between the plates with a dielectric material of constant 1.7. If the charge is still 20 nC,

D) what is the capacitance of this capacitor?
E) what is the potential difference between the plates?
F) what is the electric field in the region between the plates?