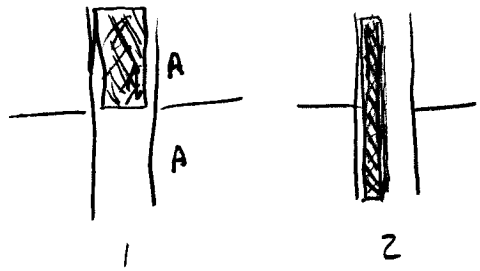
24-10 GIVEN:



EQUAL A, d

½ FILLED w/ DIELECTRIC

1 $C_1 = C_0 + K C_0$ $\qquad C_0 = \frac{\epsilon_0 A}{d}$

$= (1+K) C_0$

2 $\frac{1}{C_2} = \frac{1}{C_{0_{THIN}}} + \frac{1}{K C_{0_{THIN}}} = \frac{1+K}{K C_0}$ $\qquad C_{0_{THIN}} = \frac{\epsilon_0 2A}{d/2} = 4 C_0$

$C_2 = \frac{K C_{0_{THIN}}}{1+K} = \frac{4K C_0}{1+K}$

$\frac{C_1}{C_2} = \frac{(1+K) C_0}{\frac{4K}{1+K} C_0} = \frac{(1+K)^2}{4K} > 1$ FOR $K > 1$

$\therefore C_1 > C_2$