C = 5.00 nF  \quad U = 25.0 \text{ J stored energy}

parallel plate capacitor, how is $\epsilon$ must be moved to create the $C + U$ volume given above?

Energy storage problem at end chap 24.9, p. 518:

\[ U = \frac{Q^2}{2C} = \frac{1}{2} CV^2 - \frac{1}{2} QV \]

We don't have $V$ to use, $U = \frac{Q^2}{2C}$ from hint given $U + C$.

Need $Q$, so

\[ Q^2 = 24C \]

\[ Q = \sqrt{24(5.00 \times 10^{-9} \text{ C})} \]

\[ Q = 2.50 \times 10^{-9} \text{ C} \]

How many $e$'s in this?

\[ N = \frac{Q}{e} = \frac{5 \times 10^{-9} \text{ C}}{1.6 \times 10^{-19} \text{ C}} \]

\[ N = 3.12 \times 10^{10} \text{ electrons} \]