Problem 26.27

There is no rhyme or reason to a problem like this. You just have to take what you know and play with it until something pops. Here goes:

--The equivalent capacitance for a parallel combination of like capacitors will be:

$$\begin{aligned} C_p &= C_1 + C_2 + C_3 + \ldots + C_n \\ &= nC \end{aligned}$$

as there are "n" of them and they are all the same size.

--The equivalent capacitance for a series combination of like capacitors will be:

$$\begin{aligned} \frac{1}{C_s} &= \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3} + \ldots + \frac{1}{C_n} \\ \Rightarrow C_s &= \frac{1}{\frac{1}{C} + \frac{1}{C} + \frac{1}{C} + \ldots} = \frac{1}{n\left(\frac{1}{C}\right)} \\ &= \frac{C}{n} \end{aligned}$$

But we are told that:

$$\begin{aligned} C_p &= 100 C_s \\ \Rightarrow \quad nC &= 100\left(\frac{C}{n}\right) \\ \Rightarrow \quad n^2 &= 100 \\ \Rightarrow \quad n &= 10 \end{aligned}$$

As I said, just playing around . . .