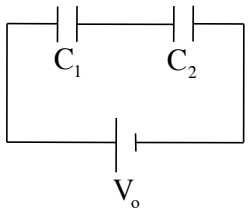
Problem 26.13

a.) In series combinations, the amount of charge on each cap is the same and will be the same as that on the equivalent capacitance, sooo . . .



$$\frac{1}{C_{equ}} = \frac{1}{C_1} + \frac{1}{C_2} + \ldots$$

$$\Rightarrow \quad C_{equ} = \frac{C_1 C_2}{C_1 + C_2}$$

$$= \frac{\left(2.50\text{x}10^{-6}\,\text{F}\right)\left(6.25\text{x}10^{-6}\,\text{F}\right)}{\left(2.50\text{x}10^{-6}\,\text{F}\right) + \left(6.25\text{x}10^{-6}\,\text{F}\right)}$$

$$= 1.79\text{x}10^{-6}\,\text{F}$$

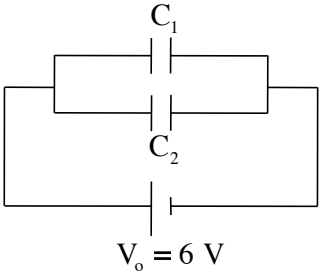
As $C_{eq} = \dfrac{Q}{V_o}$

$$\Rightarrow \quad Q = C_{eq} V_o$$

$$= \left(1.79\text{x}10^{-5}\,\text{F}\right)\left(6.00\ \text{V}\right)$$

$$= 10.7\text{x}10^{-5}\,\text{C}$$

This is the charge on each of the caps when in series.



b.) When in parallel, the common parameter is the voltage, so just as was the case in Problem 26.13:

$$Q_1 = C_1 V_o$$

$$= \left(2.5\ 0\mu\text{F}\right)\left(6.00\ \text{V}\right)$$

$$= 1.50\text{x}10^{-5}\,\text{C}$$

and

$$Q_2 = C_2 V_o$$

$$= \left(6.25\ 0\mu\text{F}\right)\left(6.00\ \text{V}\right)$$

$$= 3.75\text{x}10^{-5}\,\text{C}$$