Problem 26.1

By definition: $C = \frac{Q}{V}$,

where the "V" defines the voltage difference across the plates, is always positive and is often characterized as "V_C," and "Q" is the magnitude of the charge on ONE plate of the capacitor (as there is equal and opposite charge on the two plates, the total, net charge on them is zero). As such:

a.)

$$C = \frac{Q}{V}$$

$$\Rightarrow \quad \left(4.00 \text{x} 10^{-6}\ \text{F}\right) = \frac{Q}{(12.0\ \text{V})}$$

$$\Rightarrow \quad Q = 4.80 \text{x} 10^{-5}\ \text{C} \qquad (48.0\ \mu\text{C})$$

b.)

$$C = \frac{Q}{V}$$

$$\Rightarrow \quad \left(4.00 \text{x} 10^{-6}\ \text{F}\right) = \frac{Q}{(1.50\ \text{V})}$$

$$\Rightarrow \quad Q = 6.00 \text{x} 10^{-6}\ \text{C} \qquad (6.00\ \mu\text{C})$$