

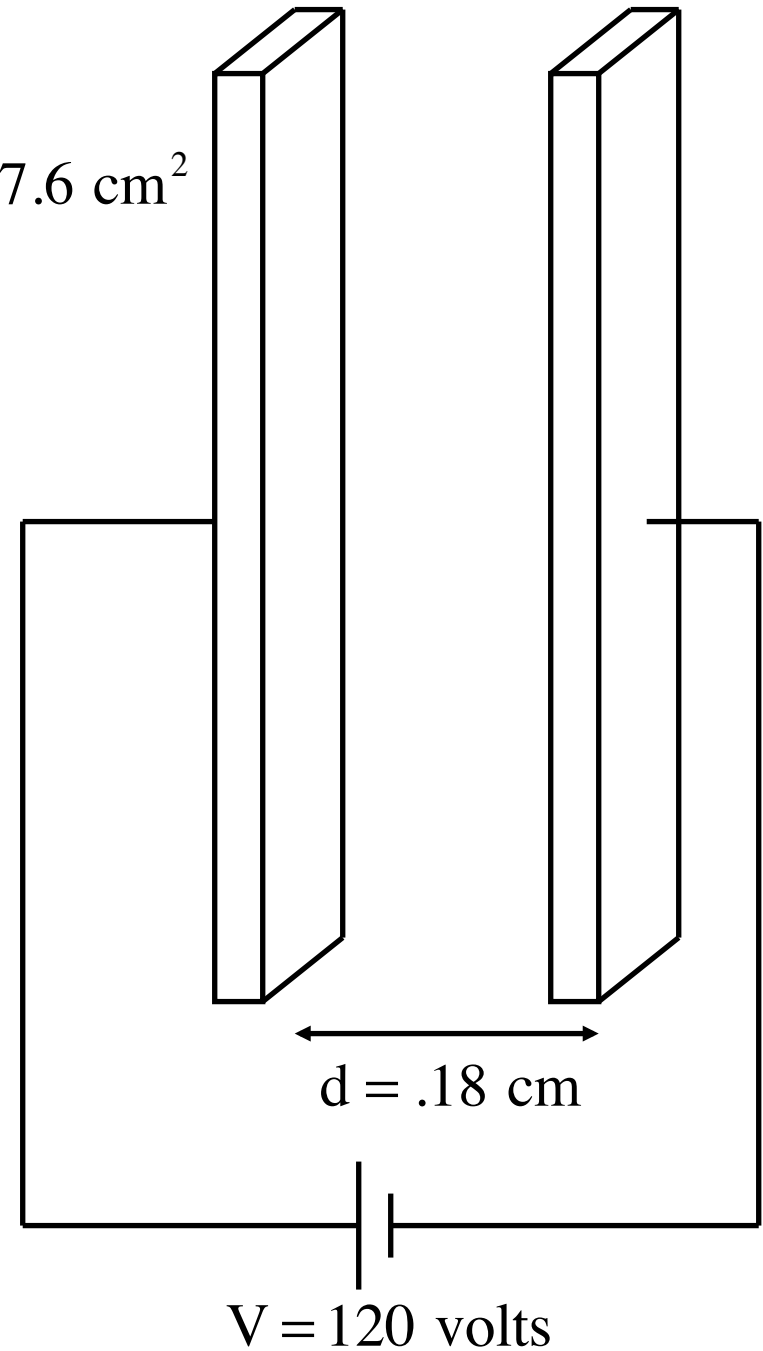
Problem 16.29

a.) What's E?

b.) What's C?

c.) What's q on each plate?

$$A = 7.6 \text{ cm}^2$$



a.) What's E?

We need to use $E \cdot d = -\Delta V$ fitted to the situation. Assume we start at the positive plate where the absolute electrical potential is 120 volts and proceed to the negative plate with zero voltage, we can write:

$$\begin{aligned} Ed \cos 0^\circ &= -(V_- - V_+) \\ \Rightarrow E &= \frac{-(0-120)}{.0018\text{m}} \\ \Rightarrow E &= 66,667 \text{ N/C} \end{aligned}$$

b.) What's C?

$$\begin{aligned} C &= \epsilon_0 \frac{A}{d} \\ &= \left(8.85 \times 10^{-12} \frac{\text{C}^2}{\text{N} \cdot \text{m}^2} \right) \left(\frac{.0076 \text{ m}^2}{.0018 \text{ m}} \right) \\ &= \text{whatever} \end{aligned}$$

c.) What's q on each plate?

$$C = \frac{q}{V_c} \Rightarrow q = CV_c$$

