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9/21/23   **Quiz 3**

a. $C = k \varepsilon_0 \frac{A}{d}$ $C = 460 \cdot 10^{-9}$ $A = 8.6$ $k = 2.2$ $d = ?$

$d = k \varepsilon_0 \frac{A}{C}$ $d = (2.2)(8.85 \cdot 10^{-12})\left(\frac{8.6}{460 \cdot 10^{-9}}\right)$ $d = 3.60 \cdot 10^{-4} \, m$

$\boxed{d = 360 \, \mu m}$

b. $U_c = \frac{1}{2} C V^2$ $U_c = 17 \cdot 10^{-3}$ $C = 460 \cdot 10^{-6}$ $V = ?$

$V = \sqrt{2 \frac{U_c}{C}}$ $V = \sqrt{2\left(\frac{17 \cdot 10^{-3}}{460 \cdot 10^{-6}}\right)}$ $\boxed{V = 270 \, V}$