Looking at INNER SQUARE: Each charge has an equal charge on opposite side of square → Net Field = 0

This is true also for the charges on the outer square except for the charges halfway up the vertical sides

\[
E_{\text{tot}} = \frac{1}{4\pi \varepsilon_0} \left( \frac{-2q}{d^2} + \frac{q}{d^2} \right) = \frac{-q^2}{4\pi \varepsilon_0 d^2}
\]

to left \quad to right \quad to left

Note: \( E = 0 \) inside inner shell

b) \(|q_1| = |q_2|\)

E = 0 outside outer shell as net charge = 0

c) \(|q_1| < |q_2|\)

All field lines from inner shell end on outer shell. Additional lines come from \(-q_1\) and end on outer shell

\[ E(\pm q) = \frac{q}{4\pi \varepsilon_0 (d/L)^2} \quad \text{to right} \]

\[ E(-q) = \frac{q}{4\pi \varepsilon_0 (d/L)^2} \quad \text{to right} \]

\[ E_{\text{net}} = \frac{2q}{4\pi \varepsilon_0 (d/\ell)^2} = \frac{(2)(2 \times 10^{-7} \text{C})(9 \times 10^9 \text{N} \cdot \text{m}^2 \cdot \text{C}^{-2})}{(0.075 \text{m})^2} = 6.4 \times 10^5 \text{ N/C to right} \]