1) In the figure below, the four particles form a square of side length $a = 4.7 \text{ cm}$. The charges are $q_1 = -q_4 = 6.1 \text{ nC}$ and $q_3 = -q_2 = 21.0 \text{ nC}$. What is the magnitude and direction of the net $E$-field at the center of the square?

*Hint: Use symmetry! Find the field produced by $q_1$ and $q_4$, then find the field produced by $q_2$ and $q_3$, then add the two fields to find the net $E$-field.*

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**Diagram:**

- Four particles labeled $q_1$, $q_2$, $q_3$, and $q_4$ forming a square.
- Side length $a = 4.7 \text{ cm}$.
- Charges $q_1 = -q_4 = 6.1 \text{ nC}$ and $q_3 = -q_2 = 21.0 \text{ nC}$.

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