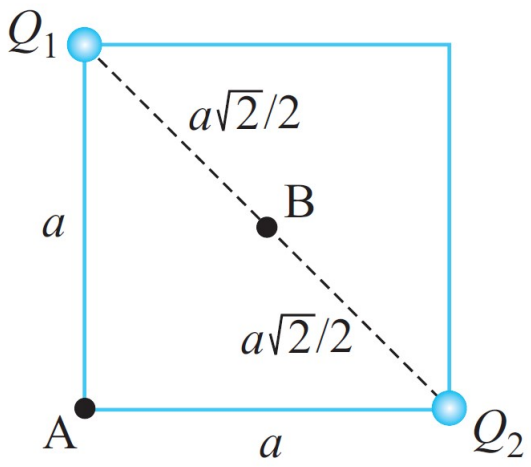
Two point charges $Q_1 = 7\,\mu\text{C}$, and $Q_2 = -3\,\mu\text{C}$, are located on two non-adjacent vertices of a square contour $a = 15\,\text{cm}$ on a side. Find the voltage between any of the remaining two vertices of the square and the square center.

Solution: If we look at the figure below, we are trying to find the voltage of A with respect to B or V_{AB}.



This can be done by finding the absolute voltages at A and B and then subtracting them. More specifically,

$$V_{AB} = V_A - V_B$$
$$V_{AB} = \left(\frac{Q_1}{4\pi\varepsilon_0 a} + \frac{Q_2}{4\pi\varepsilon_0 a}\right) - \left(\frac{Q_1}{4\pi\varepsilon_0 a\sqrt{2}/2} + \frac{Q_2}{4\pi\varepsilon_0 a\sqrt{2}/2}\right)$$
$$V_{AB} = -99.27\text{kV}$$

The voltage of the other vertex with respect to the center would be identical.

Answer: $-99.27\,\text{kV}$