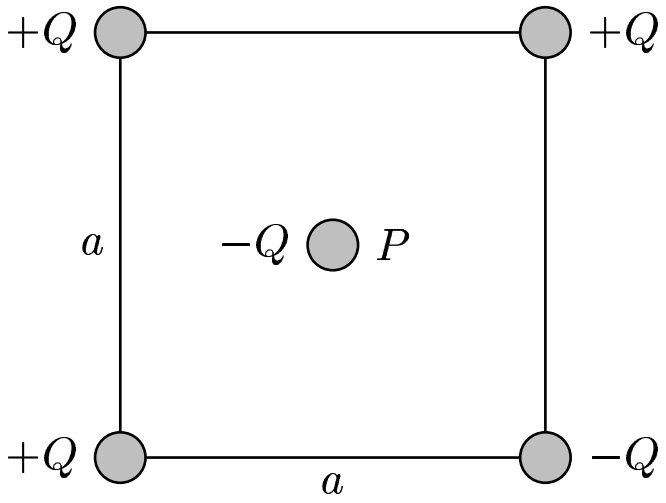
Four point charges are located a distance a apart at the corners of a square.



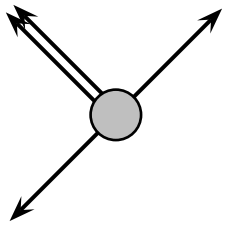
Determine the direction of the electric force on a negative charge $-Q$ located at the center of the square.

A) ↗ C) ↖

B) ↘ D) ↙

Coulomb's law is $\vec{F}_{AB} = k\,\dfrac{Q_A\,Q_B}{r^2}\,\hat{r}_{AB}$, which tells us that unlike charges attract and like charges repel.

$$\|\vec{F}\| = 2\,\frac{Q^2}{\left(\dfrac{a}{\sqrt{2}}\right)^2} = 4\,\frac{Q^2}{a^2}\,.$$



Answer **C**.