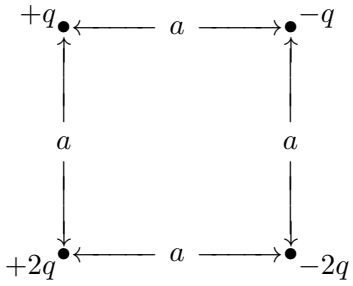
Problems

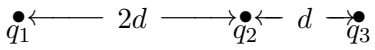
Chapter 1

1. Two point charges q_1 and q_2 ($q_1 = 25\mu$C, $q_2 = -50\mu$C) exert a force of magnitude 8.0 N on each other. What is the distance between the charges?

2. For the following arrangement of point charges, use an appropriate coordinate system and find the components of the electric force on the charge of $+2q$. Here $q = 2.0 \times 10^{-6}$ C and $a = 0.040$ m.



3. In the following arrangement of point charges, the charge q_3 experiences no net force (equilibrium). Find q_1 in terms of q_2.



4. Two point charges q_1 ($= 1.0\mu$C) and q_2 ($= -2\mu$C) are placed 2.0 m apart. Where must a third charge q_3 be placed such that no net electric force acts on it?

5. If two protons are placed a distance d apart, find the ratio of the electrostatic force (magnitude) and the gravitational force (magnitude) between them.