

6. (a) The individual force magnitudes (acting on Q) are, by Eq. 22-1,

$$k \frac{|q_1| Q}{\left(-a - \frac{a}{2}\right)^2} = k \frac{|q_2| Q}{\left(a - \frac{a}{2}\right)^2}$$

which leads to $|q_1| = 9|q_2|$. Since Q is located between q_1 and q_2 , we conclude q_1 and q_2 are like-sign. Consequently, $q_1 = 9q_2$.

- (b) Now we have

$$k \frac{|q_1| Q}{\left(-a - \frac{3a}{2}\right)^2} = k \frac{|q_2| Q}{\left(a - \frac{3a}{2}\right)^2}$$

which yields $|q_1| = 25|q_2|$. Now, Q is not located between q_1 and q_2 , one of them must push and the other must pull. Thus, they are unlike-sign, so $q_1 = -25q_2$.