

34. Let the two charges be  $q_1$  and  $q_2$ . Then  $q_1 + q_2 = Q = 5.0 \times 10^{-5} \text{ C}$ . We use Eq. 22-1:

$$1.0 \text{ N} = \frac{\left(8.99 \times 10^9 \frac{\text{N} \cdot \text{m}^2}{\text{C}^2}\right) q_1 q_2}{(2.0 \text{ m})^2} .$$

We substitute  $q_2 = Q - q_1$  and solve for  $q_1$  using the quadratic formula. The two roots obtained are the values of  $q_1$  and  $q_2$ , since it does not matter which is which. We get  $1.2 \times 10^{-5} \text{ C}$  and  $3.8 \times 10^{-5} \text{ C}$ .