

45. The magnitude of the net force on the  $q = 42 \times 10^{-6}$  C charge is

$$k \frac{q_1 q}{0.28^2} + k \frac{|q_2| q}{0.44^2}$$

where  $q_1 = 30 \times 10^{-9}$  C and  $|q_2| = 40 \times 10^{-9}$  C. This yields 0.22 N. Using Newton's second law, we obtain

$$m = \frac{F}{a} = \frac{0.22 \text{ N}}{100 \times 10^3 \text{ m/s}^2} = 2.2 \times 10^{-6} \text{ kg} .$$