

19. The mass of an electron is $m = 9.11 \times 10^{-31}$ kg, so the number of electrons in a collection with total mass $M = 75.0$ kg is

$$N = \frac{M}{m} = \frac{75.0 \text{ kg}}{9.11 \times 10^{-31} \text{ kg}} = 8.23 \times 10^{31} \text{ electrons .}$$

The total charge of the collection is

$$q = -Ne = -(8.23 \times 10^{31})(1.60 \times 10^{-19} \text{ C}) = -1.32 \times 10^{13} \text{ C .}$$