

12. The charge is

$$q = 4\pi\epsilon_0 RV = \frac{(10\text{ m})(-1.0\text{ V})}{8.99 \times 10^9 \frac{\text{N}\cdot\text{m}^2}{\text{C}^2}} = -1.1 \times 10^{-9} \text{ C} .$$