

- 5 A charged metal sphere is isolated in space. Measurements of the electric potential V are made for different distances x from the centre of the sphere.

The variation with distance x of the potential V is shown in Fig. 5.1.

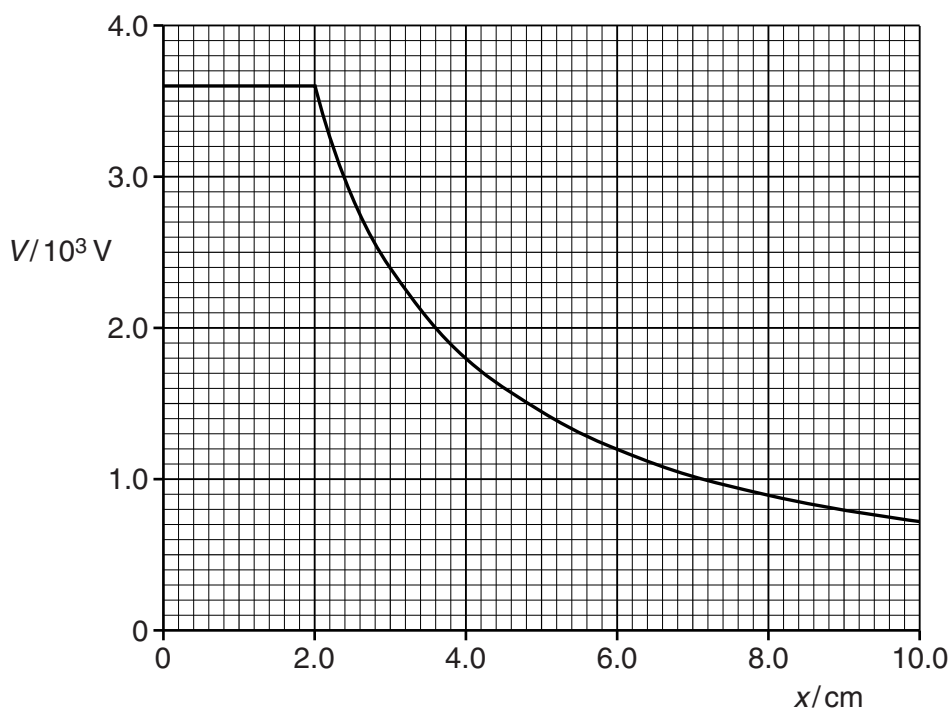


Fig. 5.1

- (a) Use Fig. 5.1 to determine the electric field strength, in NC^{-1} , at a point where $x = 4.0 \text{ cm}$. Explain your working.

electric field strength = NC^{-1} [3]

- (b) The charge on the sphere is $8.0 \times 10^{-9} \text{ C}$.

- (i) Use Fig. 5.1 to state the electric potential at the surface of the sphere.

potential = V [1]

- (ii) The sphere acts as a capacitor. Determine the capacitance of the sphere.

capacitance = F [2]